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STUDY I

NATURE AND SCOPE OF FINANCIAL MANAGEMENT

LEARNING OBJECTIVES

The object of the study is enable the students understand

- Nature, Significance, and Scope of Financial Management
- Financial Management Decision- Investment, Financial and Dividend
- Decision Making Process
- Objective of Financial Management
- Economic Value Added – real growth of the organization
- Liquidity and Profitability
- Financial Distress and Insolvency
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NATURE, SIGNIFICANCE AND SCOPE OF FINANCIAL MANAGEMENT

In modern times, we cannot imagine a world without the use of money. In fact, money is the life-blood of the present day world and all our economic activities are carried out through the use of money. For carrying on business we need resources which are pooled in terms of money. It is used for obtaining physical resources, carrying out productive activities and business operations, affect sales and pay compensation to suppliers of resources — physical as well as monetary. Hence financial management is considered as an organic function of a business and has rightly become an important one.

A group of experts defines Financial Management as simply the task of providing funds needed by the business or enterprise on terms that are most favourable in the light of its objectives. The approach, thus, is concerned almost exclusively with the procurement of funds and could be widened to include instruments, institutions and practices through which to raise funds. It also covers the legal and accounting relationship between a company and its sources of funds. Financial Management is certainly broader than procurement of funds — there are other functions and decisions too.

Other set of experts assume that finance is concerned with cash. Since every business transaction involves cash directly or indirectly, finance may be assumed to be concerned with everything that takes place in the conduct of a business. Obviously, it is too broad.

The third set of people whose point of view has been widely accepted considers Financial Management as procurement of funds and their effective utilisations in the business; though there are other organisations like schools, associations, government agencies etc., where funds are procured and used. Financial Management has not only to see that funds can be raised for installing plant and machinery at a cost; but it has also to see that additional profits adequately compensate for the costs and risks borne by the business while setting up the project.

Thus from the point of view of a corporate unit, financial management is related not only to 'fund-raising' but encompasses wider perspective of managing the finances for the company efficien 1 the developed state of a capital market, raising funds is not a problem; th oroblem is to put the capital resources to efficient use through effective financial planning, financial organisation and financial control and to deal with tasks like ensuring the availability of funds, allocating them for different uses, managing them, investing funds, controlling costs, forecasting financial requirements, doing profit planning and estimating rate of return on investment and assessment of working capital etc.

Financial Management, to be more precise, is, thus concerned with investment, financing and dividend decisions in relation to objectives of the company. Such decisions have to take care of the interests of the shareholders. They are upheld by maximisation of shareholders' wealth which depends upon increase in the net worth — capital invested in the business plus ploughed back profits for growth and

prosperity of the company. It is for such reasons that the market is prepared to pay a lower or higher price for the shares of some company or the other. Nature of Financial Management, therefore can be judged by the study of the nature of investment decisions, nature of financing decisions and the nature of dividend decisions.

INVESTMENT DECISIONS

Investment ordinarily means utilisation of money for profits or returns. This could be done by creating physical assets with the money and carrying on business or purchasing shares or debentures of a company or sometimes, though erroneously, purchasing a consumer durable like building. In an economy, money flows from one type of business to another depending upon profits expected or in a capital market securities of a concern are purchased or sold in the expectation of higher or lower profits or gains. However within a firm, a finance manager decides that in which activity resources of the firm are to be channelised, and more important who should be entrusted with the financing decisions. A marketing manager may like to have a new show room, a production manager a new lathe and a personnel manager higher wages for labour, which may lead to regular and efficient production. Over and above, the top management may like to enter an entirely new area of production like a textile company entering electronics. All these are the ventures which are likely to increase profits. But resources are limited. Hence, the problem of accepting one proposal and leaving other.

Capital budgeting is a major aspect of investment decision making process. Investment decisions and capital budgeting are considered as synonymous in the business world. Investment decisions are concerned with the question whether adding to capital assets today will increase the revenue of tomorrow to cover costs. Thus investment decisions are commitments of monetary resources at different times in expectation of economic returns in future. Choice is required to be made amongst available resources and avenues for investment. As such investment decisions are concerned with the choice of acquiring real assets, over the time period, in a productive process. In making such a choice consideration of certain aspects is essential viz., need for investment, factors affecting decisions, criteria for evaluating investment decisions and selection of a particular alternative from amongst the various options available.

Investment decisions have, thus, become the most important area in the decision making process of a company. Such decisions are essentially made after evaluating the different proposals with reference to growth and profitability projections of the company. The choice helps achieve the long term objectives of the company i.e., survival and growth, preserving market share of its products and retaining leadership in its production activity. The company likes to avail of the economic opportunity for which investment decisions are taken viz., (1) expansion of the productive process to meet the existing excessive demand in local market, exploit the global market, and to avail of the advantages and economies of the expanded scale of production. (2) replacement of an existing asset, plant and machinery or building, necessary for taking advantages of technological innovations, minimising cost of production by replacing obsolete and worn out plants, increasing efficiency of labour, etc. (3) The choice of equipment establishes the need for investment

decisions based on the question of quality and latest technology. (4) Re-allocation of capital is another area of investment, to ensure asset allocation in tune with the production policy. (5) Mergers, acquisitions, re-organisations and rehabilitation are all concerned with economic and financial involvement and are governed by investment decisions.

Thus, investment decisions encompass wide and complex matters involving the following areas:

- capital budgeting
- cost of capital
- measuring risk
- management of liquidity and current assets
- expansion and contraction involving business failure and re-organisations
- buy or hire or lease an asset.

Factors affecting investment decisions are essentially the ingredients of investment decisions. Capital is a scarce resource and its supply cost is very high. Optimal investment decisions need to be made taking into consideration such factors as are given below viz. (1) Estimation of capital outlays and the future earnings of the proposed project focusing on the task of value engineering and market forecasting; (2) availability of capital and considerations of cost of capital focusing attention on financial analysis; and (3) a set of standards by which to select a project for implementation and maximising returns therefrom focusing attention on logic and arithmetic.

FINANCING DECISIONS

Financing decision is the next step in financial management for executing the investment decision once taken. A look at the balance-sheet of a sample company indicates that it obtains finances from shareholders — ordinary or preference, debentureholders on long-term basis, financial institutions as long-term loans, banks and others as short-term loans and the like. There are variations in the provisions governing the issue of preference shares, debentures, loan papers, etc. Financing decisions are concerned with the determination of how much funds to procure from amongst the various avenues available i.e. the financing mix or capital structure. Efforts are made to obtain an optimal financing mix for a particular company. This necessitates study of the capital structure as also the short and intermediate term financing plans of the company.

In more advanced companies, financing decision today, has become fully integrated with top-management policy formulation via capital budgeting, long-range planning, evaluation of alternate uses of funds, and establishment of measurable standards of performance in financial terms.

Financial decision making is concerned more and more with the questions as to how cost of funds be measured, proposals for capital using projects be evaluated, or how far the financing policy influences cost of capital or should corporate funds be committed to or withheld from certain purposes and how the expected returns on projects be measured.

Optimal use of funds has become a new concern of financing decisions and top managements in corporate sector are more concerned with planning the sources and uses of funds and measuring performance. New measurement techniques, utilising computers, have facilitated efficient capital allocation through financing decisions.

Application of computers, in the area of financial management has made it possible to handle a large number of operations particularly of repetitive nature. Ranging from routine record-keeping activities like accounting, computers are now being used in inventory management, budgeting, capital investment decisions, evaluating uncertainties in decision making, cost estimation, information analysis, security analysis, etc. Processing of accounting data including general ledger information and trial balance and preparing income statement and balance sheet has been rendered easy through the use of computers in financial planning and control. Analysis of funds flow, cash flow and income statement and balance sheet is done through the use of computers. A great variety of computer analysis are available for forecasting financial needs and making the best choice from amongst the various sources of finance. Thus, the nature of financial decisions and the process therefor has undergone a considerable change with the introduction of computer technology in financial management.

The computer has made making efficient investment decisions and financing decisions easy. These decisions are jointly made as an effective way of financial management in corporate units. No doubt, the purview of these decisions is separate, but they affect each other. Financial decisions, as discussed earlier, encompass determination of the proportion of equity capital to debt to achieve an optimal capital structure, and to balance the fixed and working capital requirements in the financial structure of the company. This important area of financing decision making, aims at maximising returns on investment and minimising the risk. The risk and return analysis is a common tool for investment and financing decisions for designing an optimal capital structure of a corporate unit. It may be mentioned that debt adds to the riskiness of the capital structure of a firm.

DIVIDEND DECISIONS

The dividend decision is another major area of financial management. The financial manager must decide whether the firm should distribute all profits or retain them or distribute a portion and retain the balance. Theoretically, this decision should depend on whether the company or its shareholders are in the position to better utilise the funds, and to earn a higher rate of return on funds. However, in practice, a number of other factors like the market price of shares, the trend of earning, the tax position of the shareholders, cash flow position, requirement of funds for future growth, and restrictions under the Companies Act etc. play an important role in the determination of dividend policy of business enterprise.

DECISION CRITERIA

Decision criteria depends upon the objective to be achieved through the instrumentality of decision making process. The main objectives which a business organisation pursues are maximisation of return and minimisation of costs.

A fair decision criterion should distinguish between acceptable and unacceptable

proposals and solve the problem of selection of the best alternatives from amongst the various alternatives available in a given situation to achieve the above objectives. A fair decision criterion should follow the following two fundamental principles i.e. (1) the "Bigger and Better" principle; (2) "A Bird in Hand is Better than Two in the Bush" principle. The first principle suggests that bigger benefits are preferable to smaller ones; whereas the second one suggests that early benefits are preferable to later benefits.

Both the above principles are based on the assumption "other things being equal" which is a rare reality. But in practice the decision process very much adheres to these principles particularly in the areas of capital budgeting decisions and determining the cost of capital in project financing proposals.

Decision criteria in financial management can be studied under two separate heads viz. The criteria for investment decisions; and the criteria for the financing decisions.

Criteria for investment decisions are mainly concerned with planning and control of capital expenditure through budgeting process following the tools of analysis viz. — pay back period, accounting rate of return, discounted cash flow methods e.g., net present value method, etc. We shall discuss these methods for evaluating investment decisions in detail in the study relating to capital budgeting. However, the essence and the inherent spirit in these techniques is based on logic which helps in the decision making process.

As a matter of fact, these techniques have been founded on the following decision criteria:

1. *Urgency:* The use of 'urgency' is treated as criterion for selection of investment projects in many corporate units/business enterprises/government set up. Urgecy is assessed on the following basis:

(a) it provides sufficient justification for undertaking a project;

(b) it provides immediate contribution for attainment of objectives of the project; and

(c) it maximises profits.

Although urgency as criterion lacks objectivity, being non-quantifiable, yet it definitely provides a ordinal ranking scale for selection of projects on preferential pre-exemption basis.

2. *Pay back:* Time is of essence while selecting this criterion for investment decisions. The decision is taken on the basis of quickness in pay off of the investments. Pay back simply measures the time required for cash flows from the project to return the initial investment to the firm's account. Projects, on the basis of this criterion, having quicker pay backs are preferred.

Pay back decision criterion does not follow the principles laid down above viz. "the bigger and better" and "bird in hand". It ignores the first principle completely as it does not take into account the cash flows after investment has been recovered. It also does not satisfy entirely the second principle as it assigns zero value to the

receipts, subsequent to recovery of the amount.

3. *Rates of return:* It provides another decision criterion based on accounting records or projected statements to measure profitability as annual percentage of capital employed. Rate of return is arrived at following two different methods for treating income in the analysis which give different results. In the first case, average income generated from investment is taken after deduction of depreciation charge. In second case, the original cost is taken as denominator rather than average investment. This gives the simple yearly rate of return. This is based on "bigger and better" principle. This criterion can be applied either against average investment in the year selected for study or simply against initial cost.

4. *Undiscounted benefit-cost ratio:* It is the ratio between the aggregate benefits and the cost of project. Benefits are taken at face value. The ratio may be "gross" or "net". It is "gross" when calculated with benefits without deducting depreciation. In the net version, depreciation is deducted from benefits before computing the results. Both ratios give identical ranking. Net ratio equals the gross ratio minus 1.0. This relationship makes it simple to calculate gross ratio and then to arrive at net ratio.

This criterion is compatible with the "bigger and better" principle. But it does not follow the second principle of "bird in hand" as early receipts are given identical weights to later receipts in the project's life.

5. *Discounted benefit-cost ratio:* This ratio is more reliable as it is based on present value of future benefits and costs. It may also be gross or net like the one discussed earlier. It takes into account all incomes whenever received and to this extent complies with "bigger and better" principle. Early receipts are given more weight than late receipts on account of introduction of discount factor.

This ratio satisfies the requirements of both the principles and is a good criterion for decision making.

6. *Present value method:* This concept is useful as a decision criterion because it reveals the fact that the value of money is constantly declining as a rupee received today is more in value than the rupee at the end of a year. Besides, if the rupee is invested today it will fetch a return on investment and accumulate to Re. 1 $(1+i)$ at the end of 'n' period. Hence a rupee received at the end of 'n' period is worth $1/(1+i)^n$ now. Investment decisions require comparison of present value with the cost of assets, and if the present value exceeds the cost, the investment is rendered acceptable.

Another off-shoot of this criterion is net present value method which is closely related to cost-benefit ratio. It takes into account all income and its timing with appropriate weights. Here difference of present value of benefits and costs is considered as against the ratio in cost-benefit analysis. This criterion is useful for acceptance of projects showing positive net present value at the company's cost of capital rate. It can be used for choosing between mutually exclusive projects by considering whether incremental investment yields a positive net present value.

7. *Internal rate of return:* It is a widely used criterion for investment decisions. It takes interest factor into account. It is known as marginal efficiency of capital or rate of

return over cost. It stipulates rate of discount which will equate the present value of the net benefits with the cost of the project. This method satisfies both these principles.

The criteria used in financing decisions, with particular reference to capital structure of a corporate unit can be discussed here precisely.

The capital structure of a corporate unit contains two important parameters viz., the owners' capital known as equity and the debt which represents interest of debentureholders in the assets of the company. The factors responsible for inclusion of debt in the capital structure of a company are tax-savings, easier to sell, lower cost of floatation and services, lower cost of capital, the advantage of leverage, no dilution of equity and probable loss of control, logical to consolidate and fund short-term indebtedness by a bond issue, advantageous in the inflationary trends of rising interest rates and improvement in financial ratios.

There is no alternative for a company to equity financing to meet its requirement for funds. Debt can be raised by a company only on an adequate equity base which serves as a cushion for debt financing. The study of effect of leverage is the main focus point to determine the best mix of debt and equity sources of funds. It is, therefore, desired to consider this criterion for financing decision making in relation to leverage and cost of capital.

OBJECTIVES OF FINANCIAL MANAGEMENT

Financial management of any business firm has to set goals for itself and to interpret them in relation to the objective of the firm. Broadly, there are only two alternative objectives a business firm can pursue viz.

(a) Profit maximisation;

(b) Wealth maximisation.

(a) Profit Maximisation

Profit maximisation is considered as an important goal in financial decision-making in an organisation. It ensures that firm utilizes its available resources most efficiently under conditions of competitive markets. But in recent years, under the changed corporate environment, profit maximisation is regarded as unrealistic, difficult, unappropriate and socially not much preferred goal for business organisation. Profit maximisation as corporate goal is criticised by scholars mainly on the following grounds:

(i) It is vague conceptually.

(ii) It ignores timing of returns.

(iii) It ignores the risk factor.

(iv) It may tempt to make such decisions which may in the long run prove disastrous.

(v) Its emphasis is generally on short run projects.

(vi) It may cause decreasing share prices.

(vii) The profit is only one of the many objectives and variables that a firm considers.

(b) Wealth maximisation

Presently, maximisation of present value (or wealth) of a course of action is considered appropriate operationally flexible goal for financial decision-making in an organisation. The net present value or wealth can be defined more explicitly in the following way:

$$W = \frac{A_1}{(1+K_1)} + \frac{A_2}{(1+K_2)} + \frac{A_3}{(1+K_3)} + \ldots + \frac{A_n}{(1+K_n)} - Co = \frac{\sum A_t}{\sum (1+K)^t} - Co$$

Where $A_{1.....}A_2$ represent the stream of benefits expected to occur if a course of action is adopted. Co is the cost of that action and K is the appropriate discount rate, and W is the Net present worth or wealth which is the difference between the present worth or wealth of the stream of benefits and the initial cost.

The management of an organisation maximises the present value not only for shareholders but for all including employees, customers, suppliers and community at large. This goal for the maximum present value is generally justified on the following grounds:

(i) It is consistent with the object of maximising owners economic welfare.

(ii) It focuses on the long run picture.

(iii) It considers risk.

(iv) It recognises the value of regular dividend payments.

(v) It takes into account time value of money.

(vi) It maintains market price of its shares.

(vii) It seeks growth in sales and earnings.

However, profit maximisation can be part of a wealth maximisation strategy. Quite often two objectives can be pursued simultaneously but the maximisation of profit should never be permitted to overshadow the objectives of wealth maximisation.

The objective of the firm provides a framework for optimal decision making in the area of business management. The term ‘objective’ should be used in the sense of ‘decision criteria’ for taking decisions involved in financial management. It means that what is relevant is not overall objective of the business but operationally useful criterion against which the investment, financing and dividend policy decisions are to be judged. Another point to note in this context is that objective provide a ‘normative’ framework. In other words, it implies that the focus is on what a firm should try to achieve and on policies that it should follow if the objectives are to be achieved.

PROFIT MAXIMIZATION *VERSUS* SHAREHOLDER WEALTH MAXIMIZATION

Profit maximization is basically a single-period or, at the most, a short-term goal. It is usually interpreted to mean the maximization of profits within a given period of time. A firm may maximize its short-term profits at the expense of its long-term profitability and still realize this goal. In contrast, shareholder wealth maximization is a long-term goal shareholders are interested in future as well as present profits. Wealth maximization is generally preferred because it considers (1) wealth for the long-term, (2) risk or uncertainty, (3) the timing of returns, and (4) the shareholders' return. The following table provides a summary of the advantages and disadvantages of these two often conflicting goals.

Profit Maximization Vs. Shareholder Wealth Maximization

Goal	*Objective*	*Advantages*	*Disadvantages*
Profit maximisation	Large amount of profits	1. Easy to calculate profits 2. Easy to determine the link between financial decisions and profits	1. Emphasizes the short term 2. Ignores risk or uncertainty 3. Ignores the timing of returns 4. Requires immediate resources
Shareholder wealth maximisation	Highest market value of common stock	1. Emphasizes the long term 2. Recognizes risk or uncertainty 3. Recognizes the timing of returns 4. Considers return	1. Offers no clear relationship between financial decisions and stock price 2. Can lead to management anxiety and frustration

Economic Value-Added (EVA)

Economic value added (EVA) is the after tax cash flow generated by a business minus the cost of the capital it has deployed to generate that cash flow. Representing real profit versus paper profit, EVA underlines shareholder value, increasingly the main target of leading companies strategies. Shareholders are the players who provide the firm with its capital; they invest to gain a return on that capital.

The concept of EVA is well established in financial theory, buy only recently has the term moved into the mainstream of corporate finance, as more and more firms adopt it as the base for business planning and performance monitoring. There is growing evidence that EVA, not earnings, determines the value of a firm. There is difference between EVA, earnings per share, return on assets, and discounted cash flow, as a measure of performance.

Earnings per share tells nothing about the cost of generating those profits. If the cost of capital (loans, bonds, equity) as say, 15 per cent, then a 14 per cent earning is actually a reduction, not a gain, in economic value. Profits also increase taxes, thereby reducing cash flow.

Return on assets is a more realistic measure of economic performance, but it ignores the cost of capital. Leading firms can obtain capital at low costs, via favourable interest rates and high stock prices, which they can then invest in their operations at decent rates of return on assets. That tempts them to expand without paying attention to the real return, economic value-added.

Discounted cash flow is very close to economic value-added, with the discount rate being the cost of capital.

There are two key components to EVA. The net operating profit after tax (NOPAT) and the capital charge, which is the amount of capital times the cost of capital. In other words, it is the total pool of profits available to provide cash return to those who provided capital to the firm. The capital charge is the product of the cost of capital times the capital tied up in the investment. In other words, the capital charge is the cash flow required to compensate investors for the riskiness of the business given the amount of capital invested. On the one hand, the cost of capital is the minimum rate of return on capital required to compensate debt and equity investors for bearing risk-a cut-off rate to create value and capital is the amount of cash invested in the business, net of depreciation (Dierks and Patel, 1997). In formula form,

$$\text{EVA} = (\text{Operating Profit}) - (\text{A Capital Charge})$$

$$\text{EVA} = \text{NOPAT} - (\text{Cost of Capital} \times \text{Capital})$$

However, in practical situations there are adjustments to both NOPAT and the capital employed to reduce non-economic accounting and financing conventions on the income statement and balance sheet.

These are adjustments that turn a firm's accounting book value into an economic book value, which is more accurate measure of the cash that investors have put at risk in the firm and upon which they expect to accrue some returns. These adjustments turn capital-related items into more accurate measures of capital and include revenue- and expense-related items in NOPAT, thus better reflecting the financial base upon which investors expect to accrue their returns. Furthermore these adjustments are made to address the distortions suffered by traditional measures, such as return on equity, earnings per share and earnings growth, that change depending upon the generally accepted accounting principles adopted or the mix of financing employed.

Implementing EVA in a company is more than just patting one additional row in the income statement. It is of course some kind of change process which should be given some management effort. However, if right actions are taken straight from the beginning then implementing EVA should be one of the easiest change process that a company goes through. The actions might include e.g.:

- Gaining the understanding and commitment of all the members of the management group through training and discussing and using this support prominently during the process.
- Training of the other employees, especially all the key persons.
- Adopting EVA in all levels of organization.

However, there are a few common mistakes that are often taken in implementing or using EVA. Most of them are bound up with either misunderstanding and thus misusing the concept at upper levels or not training all the employees to use EVA and thus not using the full capacity of the concept. These common mistakes include defining capital costs intentionally wrongly (usually too high for some reason), using EVA only in the upper management level and investing too little in training of employees.

Although EVA is a value based measure, and it gives in valuations exactly same answer as discounted cash flow, the periodic EVA values still have some accounting distortions.

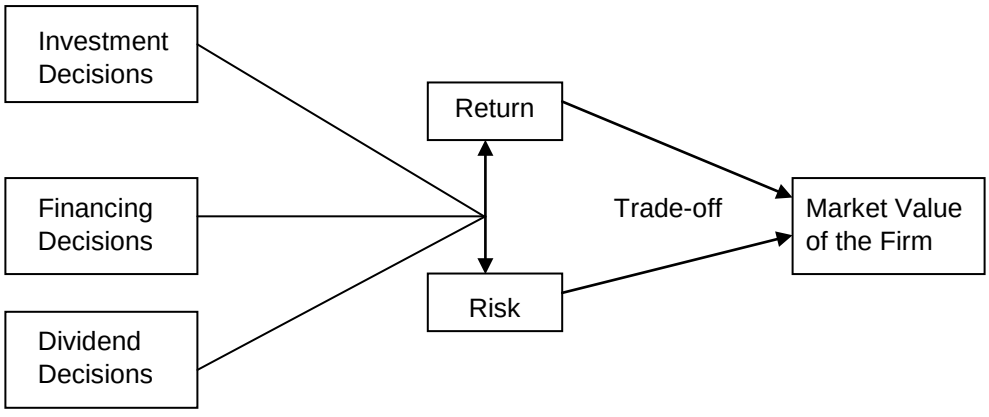
That is because EVA is after all an accounting-based concept and suffers from the same problems of accounting rate of returns (ROI etc.). In other words, the historical asset values that distort ROI distort EVA values also.

In EVA valuations, the historical asset values (book value) are irrelevant and only the cash flows are left to give the end result.

VALUE OF FIRM-RISK AND RETURN

The financial manager tries to achieve the proper balance between the considerations of 'risk and return' associated with various financial management decisions to maximise the market value of the firm.

It is well known that 'higher the return, other things being equal, higher the market value; higher the risk, other things being equal, lower the market value'. In fact, risk and return go together. This implies that a decision alternative with high risk tends to promise higher return and the reverse is also true. The figure demonstrates the relationship between market value of the firm, return and risk, on the one hand and financial management decisions on the other.



LIQUIDITY

It is an important concept in financial management and is defined as ability of the business to meet short-term obligations. It shows the quickness with which a business/company can convert its assets into cash to pay what it owes in the near future. According to Ezra Soloman, it measures a company's ability to meet expected as well as unexpected requirements of cash to expand its assets, reduce its liabilities and cover up any operating losses. Liquidity, as a decision criterion, is widely used in financial management. It is used for managing liquid resources or current assets or near cash assets so as to enhance the effectiveness with which they are utilised with a view to minimising costs. It also focuses attention on the availability of funds. Enhancement of liquidity enables a corporate body to have more funds from the market.

While using liquidity as a decision criterion, the management makes use of ratios. They give a bird's eye view of the current liquidity position or shortages thereof. A company will like to have liquid resources for transaction purposes, as a precautionary measure and for speculative opportunities. The management's attitude towards these i.e., transaction motive, precautionary motive and speculative motive (taking advantage of lower prices of raw materials etc., in the market) is an important determinant of a company's liquidity position.

Liquidity is assessed through the use of ratio analysis. Liquidity ratios provide an insight into the present cash solvency of a firm and its ability to remain solvent in the event of calamities.

Current Ratio which is the ratio of current assets to current liabilities, is widely used by corporate units to judge the ability to discharge short-term liabilities covering the period upto one year. The interpretation of the current ratio is that 'higher the ratio, greater is the ability of the firm to pay off its bills'.

Nevertheless, it is a crude ratio and does not take into account the difference amongst different categories of assets. For example, inventory may not be turned into cash as quickly as Account Receivables. The main difficulty that arises in treating inventory as a quick item is that unless one has ensured about the quality, condition and marketability of the inventory it may be impossible to turn it into cash immediately at the estimated value. Therefore, to assess quick liquidity position, inventory is excluded while calculating Quick Ratio. The ingredients of current assets while computing the Quick Ratio are cash, marketable securities and receivables. Besides cash, the other two items are near cash and at very short notice can easily be converted into cash. Therefore, for taking financial decisions particularly for assessing cash position of the company and its ability to discharge current obligations, Quick Ratio is frequently relied upon. Nevertheless, the main shortcoming of the Quick Ratio is that it ignores inventories and concentrates on cash, marketable securities and receivables in relation to current obligations although inventory is also a basic input in current ratio without which company's decision process cannot be complete.

Liquidity ratio enables a company to assess its Net Working Capital. Working Capital is denoted by the combination of current assets or current liabilities of a company, and for calculation of net working capital we deduct current liabilities from current assets. Having done so we are left with the ready money in our hands to meet

day to day needs of the business. If we still want to know as to how much is available with the company per rupee of sales then Net Working Capital is divided by sales.

Tailor-made measurement can be devised for calculating liquidity ratio in different situations. For example, the principle of liquidity can be extended to study liquidity of receivables (or inventories) separately to enable the executives to take decisions about the collection period of bills.

Liquidity of receivables is assessed through Average Collection Period (ACP). ACP tells us the average number of days receivables are outstanding i.e., the average time a bill takes to convert into cash. The inverse to this ratio is Receivables Turnover Ratio (RTR). Either of the two ratios can be used as both depict the slowness of recovery, but the readings are different. For financial decisions and to use liquidity as criterion the average collection period ratio is used, and receivables turnover ratio is used to help in taking corrective steps for maintaining the optimum liquid position for the company at any given time to avoid risk of losing goodwill and chances of bankruptcy. The ratio, in short, reveals the following results:

(1) Too low an average collection period may suggest excessively restricted credit policy of a company.

(2) Too high an average collection period (ACP) may indicate too liberal a credit policy. A large number of receivables may remain due and outstanding, resulting in less profits and more chances of bad debts.

Average collection period and receivables turnover ratio should be compared to the average age of accounts payable or accounts payable turnover ratio. Though adequate liquidity could be maintained by accelerating collections and deferring payments, yet this has its own limitations and drawbacks. It affects the credit standing of the company in business and banking circles.

In the same spirit, decisions are made to maintain a proper inventory level in the company. For the purpose, it becomes essential to assess the liquidity of inventory. Inventory Turnover Ratio i.e., cost of goods sold divided by average annual inventory, shows the rapidity with which inventory is turned into receivables through sales. The higher the ratio, the more efficient is the inventory management system of the company.

To conclude, liquidity, as a decision criterion is an important tool in financial management. Financial decisions are affected by liquidity analysis of a company in the following areas:

1. Management of cash and marketable securities;
2. Credit policy of a firm and procedures for realisation;
3. Management and control of inventories;
4. Administration of fixed assets;
5. Taking decisions for efficient use of current assets at minimum cost; and
6. Decisions to keep the company's position on sound basis to avoid eventualities.

The above analysis of liquidity suggests evaluation of current assets of a company. On liabilities side also, liquidity position is analysed and managed through assessment of long and medium term debts of the company, and the arrangements for their repayments. This is done purely from the precautionary point of view so that the company could be saved from the risk of bankruptcy for non-payment of its debt to the lenders.

PROFITABILITY

Profitability as a decision criterion is another important tool in financial management for taking decisions from different angles after evaluating the performance of the company in different spheres. For example, if it becomes essential for the company to examine profit per unit of sale then it is done by estimating profitability per rupee of sales. It is used as a measure of comparison and standard of performance. Similarly, there could be other ratios.

Because different users look at the profitability of a company from different angles, they use different ratios. Short-term creditors, long-term lenders, equity shareholders, investors, etc. all are interested in profitable operations of a concern. They use the ratios which best suit their requirements. Profitability can be related to sales or to total capital employed or to net worth of the company. But then different figures for profits are taken into account.

Profitability to sales ratio, reflects the company's ability to generate profits per unit of sales. If sales lack sufficient margin of profit, it is difficult for the business enterprise to cover its fixed cost, including fixed charges on debt, and to earn profit for shareholders. From investors point of view profits are compared by the investors as percentage to the capital employed in the business enterprise. Absence of adequate profitability ratio on sales reflects the company's inability to utilise assets effectively. This is analysed through the asset turnover ratio.

One of the important profitability ratios is profits on equity – profit figure after interest, before dividend and taxes, drawn from the profit and loss account is related to the equity of the shareholders as shown in balance sheet. This is an indicator of profits earned on funds invested by the owners. It is an indicator of actual returns received by them. This ratio may assume two forms:

(1) $\dfrac{\text{Earning available to common shareholders}}{\text{Total Equity}}$

(2) $\dfrac{\text{Net income after tax}}{\text{Total Equity}}$

[The ratio at (2) is used where the company has no preference shareholders].

Profit margin is another measure of viewing profitability. The revenue bearing property of sales can be easily assessed from the profit margin. It is derived by dividing operating income from business by sales. This ratio indicates the efficiency of operations as well as how products are priced. Inadequacy of profit margin is an evidence of company's inability to achieve satisfactory results. Pricing decisions are made by financial executives in consultation with the marketing departments of the

company. Policy decisions relating to increase or decrease in price are taken in respect of different products keeping in view the competitiveness of the market. Profit margin ratio is constantly used by business executives for this purpose. To look into the cash generating capacity of sales, gross profit margin is used by deducting the cost of goods sold from sales and dividing by sales.

The gross profit margin ratio indicates the profits relative to sales after deduction of direct production cost. It indicates efficiency of production operations and the relationship between production costs and selling price.

The difference between the above two ratios i.e. gross profit margin and net profit margin ratios is that general and administrative expenses are excluded while computing gross margin. Thus net profit margin ratio is calculated as under:

$$\text{Net Profit Margin (NPM)} = \frac{\text{Net Profit after Taxes}}{\text{Sales}}$$

NPM ratio is an indicator of company's ability to generate profits after paying all taxes and expenses. Decline in this ratio reflects the presence of either higher expenses relative to sales or higher tax burden on the company, affecting its profitability adversely. For assessment of profitability as a decision criterion return on investment (ROI) is a frequently used ratio.

Return on Investment: This is an important profitability ratio from the angle of shareholders and reflects on the ability of management to earn a return on resources put in by the shareholders. The beauty of the ROI ratio is that earning of the company can be viewed from different angles so as to take decisions on different causes responsible, to reduce or to enhance the profitability of the company. One way of finding out rate of return on assets employed in the company is to find the ratio of earnings before interest and taxes (EBIT) to capital employed. This ratio indicates operating income to the assets used to produce income.

Another way of computing the ratio of return is through the assets turnover ratio and margin of profit which gives the same results, as EBIT to capital employed. It may be seen from the following:

$$\frac{\text{EBIT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} = \frac{\text{EBIT}}{\text{Assets}}$$

A high ratio indicates efficient use of assets and low ratio reflects inefficient use of assets by a company.

Another off-shoot of profitability ratio is the times interest earned ratio, which gives a clue to the interest bearing capacity of the income character of business operations. This ratio relates operating profits to fixed charges created by the company's borrowings, and provides an indication of margin of safety between financial obligations and Net income after tax. A company may earn profits but may find it difficult to make payments of excess interest charges or may face inability to meet such obligations. EBIT should be 5 to 6 times interest charges as a satisfactory guideline for this ratio. Lenders, particularly banks and financial institutions, greatly rely on this ratio particularly in profitability assessment through projections of income

of the borrower in the coming years after investment of borrowed funds.

In this way we find that profitability as decision making criterion in financial management, is crucial for business managers. Business works as a system comprised of sub-systems. Different criteria assess different aspects and assist in viewing different situations which have an aggregate impact on business activity, and therefore form the basis of financial management.

COSTING AND RISK

In financial management, costing relates to the system adopted for assessing cost of capital from various sources viz., equity and preference shares, debentures/bonds, long-term borrowings from financial institutions, etc. Equity capital is owner's money employed in the business whereas borrowed funds are creditors' funds carrying an interest obligation and repayment schedule. There are thus, risks involved if interest is not paid or on account of default in repayment of principal. It is ordinarily expected that every rupee obtained on loan enhances the chances of increasing the returns on owners' capital and the net worth. The rate of interest on borrowed funds is usually lower than the returns expected by the investors or risk-takers in the business. Moreover, interest paid is deductible for tax purposes. The following illustration gives an idea of the phenomenon stated above:

	Company A	*Company B*
Total Capital	Rs. 100	Rs. 100
Owners' capital	Rs. 100	Rs. 50
Borrowed capital	NIL	Rs. 50
Rate of earnings	20%	20%
Rate of interest	—	15%
Earnings before interest and taxes	Rs. 20	Rs. 20
Interest paid	—	Rs. 7.50
Earnings before taxes	Rs. 20	Rs. 12.50
Taxes at 50%	Rs. 10	Rs. 6.25
Earnings after taxes	Rs. 10	Rs. 6.25
Percentage of earnings on owners' funds	10%	12.5%

But if the company is not able to earn sufficient returns, the returns on owners' funds are reduced and risk increases. Using borrowed funds or fixed cost funds in the capital structure of a company is called financial gearing. High financial gearing will increase the earnings per share of a company if earnings before interest and taxes are rising, as compared to the earnings per share of a company with low or no financial gearing. It may be understood that leverage and gearing are used interchangeably. (The former is used in the USA and the latter in U.K.). So at times when the economy is doing well, the shareholders of a highly geared company will do better than the shareholders of a low geared company. However, if the company is not doing well, when its profits before interest and taxes are falling, the earnings per share of highly geared company will fall faster than those of the low geared company. The higher this level of financial gearing, the greater the risk. Those who take risk should appreciate that in difficult times their reward will be below average but in good times they will receive above average rewards. The lower the levels of financial

gearing, the more conservative are the financial policies of the company and the less will be deviations over time to earnings per share.

Risk is associated with fixed charges in the shape of interest on debt capital. Higher the fixed charges, the greater the chance that it will not be covered by earnings and so greater the risk. Large companies financed by heavy borrowings, need to continue to produce and search for new markets for their output. Any internal disturbance or external constraint that may hamper the company's production and sales will reduce inflow of funds but fixed interest charges have to be paid. A study of the effects of capital gearing on cost of capital is quite important for financial decisions. Given that a company has to minimise the cost of capital, it should fix up a level of gearing where is costs of capital is minimum.

As against the traditional theory of capital structure suggesting that the average cost of capital does depends on the level of gearing, the alternative theory on cost of capital as propounded by Modigliani and Miller argues that the cost of capital is independent of the capital structure. The essence of the Modigliani and Miller argument is the arbitrage process. Should the value of two firms with identical incomes and the same risk class ratios vary (which would be possible under the traditional theory) the investors would arbitrage so as to make the market value of the two firms equal. A key assumption of the model is that the investors can arbitrage between companies, and between loan and equity capital, without increasing the risk of their individual investment portfolios.

Despite all the above theoretical explanations the fact remains that debt is associated with risk which enhances with increase in the leverage. There are two major reasons for this increased risk viz., (1) interest is a fixed charge and is required to be paid by the company whether or not it earns profits; and (2) a substantial decrease in liquidity or increased demands from creditors for payment if the company has higher proportion of debt capital in its capital structure. For these reasons, the risk of a company not being able to meet its obligations is greater than in the case of a company in which the proportion of borrowed sum is substantially smaller.

Distinction may be made between different types of risk to which an enterprise is exposed in the business environment.

The risk which we have discussed is financial risk that arises in relation to owners' return created by the utilization of funds in the enterprise particularly fixed cost securities i.e. debt and preference shares. Financial risk is distinguished from "business risks" which is associated with the chance of loss due to variability of return, in general, created by the enterprise and as such it is known as operating risk. It is concerned with EBIT (earning before interest and taxes) whereas financial risk is concerned with EAIT (earning after interest and taxes). If there is preference capital then the financial risk is concerned with earnings available to ordinary (equity) shareholders after dividends have been paid to preference shareholders. Financial risk encompasses the risk of possible insolvency and the variability in the earnings on equity. In case the enterprise does not employ debt or preference capital there will be no financial risk and over all risk for the firm will be low. It is only because of application of debt financing, that overall risk increases and originates into financial risk to equity holders.

Besides, there are other types of risk which are related to investment decisions and not cost of financial sources viz., purchasing power risk, market risk, interest rate risk, social or regulatory risk and other risks. Purchasing power risk affects all investors. The risk is associated with changes in the price level on account of inflation. Under inflationary conditions, the purchasing power of money decreases over time, and the investor is faced with the possibility of loss on account of investments made to the extent of inflation. Under inflationary conditions, therefore, the real rate of return would vary from the nominal rate of return (viz., the percent return on the face value of investment made). Interest rate risk is concerned with holders of the bonds due to changes in interest rates. These bonds are high quality bonds not subject to business or financial risk but their prices are determined by there prevailing level of interest rates in the market. As a result, if interest rate falls, the price of these bonds will rise and *vice versa*. The risk is more in case of long-term bonds because the rate of interest may fluctuate, over a wider range as compared to a short-term bond. As regards social and regulatory risks, they arise due to harsh regulatory measures like licensing, nationalisation, price controls limiting profits, etc. Other types of risks may depend upon the nature of investment. Detailed discussion is not required at this stage.

FINANCIAL DISTRESS AND INSOLVENCY

Generally the affairs of a firm should be managed in such a way that the total risk – business as well as financial – borne by equity holders is minimised and is manageable, otherwise, the firm would obviously face difficulties. In managing business risk, the firm has to cope with the variability of the demand for its products, their prices, input prices, etc. It has also to keep a tab on fixed costs. As regards financial risk, high proportion of debt in the capital structure entails a high level of interest payments. If cash inflow is inadequate, the firm will face difficulties in payment of interest and repayment of principal. If the situation continues long enough, a time will come when the firm would face pressure from creditors. Failure of sales can also cause difficulties in carrying out production operations. The firm would find itself in a tight spot. Investors would not invest further. Creditors would recall their loans. Capital market would heavily discount its securities. Thus, the firm would find itself in a situation called distress. It may have to sell its assets to discharge its obligations to outsiders at prices below their economic values i.e. resort to distress sale. So when the sale proceeds is inadequate to meet outside liabilities, the firm is said to have failed or become bankrupt or (after due processes of law are gone through) insolvent.

Failure of a firm is technical if it is unable to meet its current obligations. The failure could be temporary and might be remediable. When liabilities exceed assets i.e. the net worth becomes negative, bankruptcy, as commonly understood, arises. Technical bankruptcy can be ascertained by comparing current assets and current liabilities i.e. working out current ratio or quick ratio. On the other hand, solvency ratios indicate long term liquidity i.e. the ability of the firm to discharge its term-liabilities. Examples of solvency ratios are Debt to Equity ratio, Debt to total Funds Ratios, and Interest coverage ratio. Trend analysis should be made for the past three to five years to pick up signals of bankruptcy, if any.

FINANCIAL MANAGEMENT AS SCIENCE OR ART

Financial management is a subject within the compass of social science as it deals with people. Its nature is nearer to applied sciences as it envisages use of classified and tested knowledge as a help in practical affairs and solving business.

Theory of financial management is based on certain systematic principles, some of which can be tested in mathematical equations like the law of physics and chemistry. Financial management contains a much larger body of rules or tendencies that hold true in general and on the average. The use of computers, operations research, statistical techniques and econometric models find wide application in financial management as tools for solving corporate financial problems like budgeting, choice of investments, acquisition or mergers etc. This takes the financial management nearer to treatment as a subject of science. Nevertheless, there remains a wide scope for application of value judgement in financial decisions making. Most practical problems of finance have no hard and fast answers that can be worked out mathematically or programmed on a computer. They must be solved by judgement, intuition and the "feel" of experience. Thus, despite its frequent acceptance as an applied science, finance remains largely an art. Because, according to George A. Christy and Peyton Foster Roden (Finance: Environment and Decisions) knowledge of facts, principles and concepts is necessary for making decisions but personal involvement of the manager through his intuitive capacities and power of judgement becomes essential. This makes financial management and managing a company's finance both an art and a science. It requires a feel for the situation and analytical skills alongwith a thorough knowledge of the techniques and tools of financial analysis and the know-how to apply them and interpret the results.

A very interesting presentation has been made by Weston in his book "Methodology in Finance". The finance functions are mainly three viz., planning, organisation and financial control. In each of these finance functions elements of science and art can be observed. Wherever methodology is to be applied in decision making in all these areas, the subject matter becomes a science confronted with the framework of techniques and tools. On the other hand, when the question of choice to make selection out of the alternative results arises the subject matter becomes an art requiring human skills for value judgement. For example, in planning function there are certain goals, which may be short-term goals or long-term goals. Each falls within the area of art. Another parameter of planning is estimating funds, which may again be short-term or long-term involving techniques and skills. When involvement to techniques is there the subject matter remains science and when the skills are required to be interpreted, the subject matter becomes an art. It so happens in all aspects of planning, organisation and control.

Thus, in the entire study of financial management whether it is related to investment decision, financing decisions i.e. deciding about the sources of financing, or dividend decision, there is a mixture of science as well as art. When techniques for analytical purposes are used it is science and when choice in appreciation of the results is made it is an art. Thus, people will like to call financial management as science as well as art. But it is better if we say that the discipline of financial management has both the aspects of science as well as art; where there is theory of systematic knowledge it is science and where there is application it is art.

FUNCTIONS OF FINANCIAL EXECUTIVES

To achieve the objective of the financial management i.e. to maximise the owner's wealth, the financial executives have to perform variety of tasks to discharge their responsibilities. With the evolution of finance from being mere a descriptive study to the one that is highly developed discipline, the role of financial managers has also undergone a sea change. His areas of responsibilities now extend far beyond keeping records, reports, the firm's cash position, paying bills and obtaining funds, and he is now concerned with and is fully involved in the decision making processes to decide investment of funds in assets, determining the best mix of financing and dividends in relation to overall valuation of the firm. The responsibilities of the financial manager are linked to the goal of ensuring liquidity, profitability or both and is also related to the management of assets and funds of any business enterprise. When the Financial Manager is involved in management of asset, he is performing the role of the decision-maker and when he is managing funds, he is performing the staff function. In the light of different responsibilities of the financial manager, he performs mainly the following duties:

1. *Forecasting of Cash Flow:* This is necessary for the successful day to day operations of the business so that it can discharge its obligations as and when they arise. In fact, it involves matching of cash inflows against outflows and the manager must forecast the sources and timing of inflows from customers and use them to pay the liability.

2. *Raising Funds:* The Financial Manager has to plan for mobilising funds from different sources so that the requisite amount of funds are made available to the business enterprise to meet its requirements for short term, medium term and long term.

3. *Managing the Flow of Internal Funds:* Here the Manager has to keep a track of the surplus in various bank accounts of the organisation and ensure that they are properly utilised to meet the requirements of the business. This will ensure that liquidity position of the company is maintained intact with the minimum amount of external borrowings.

4. *To Facilitate Cost Control:* The Financial Manager is generally the first person to recognise when the costs for the supplies or production processes are exceeding the standard costs/budgeted figures. Consequently, he can make recommendations to the top management for controlling the costs.

5. *To Facilitate Pricing of Product, Product Lines and Services:* The Financial Manager can supply important information about cost changes and cost at varying levels of production and the profit margins needed to carry on the business successfully. In fact, financial manager provides tools of analysis of information in pricing decisions and contribute to the formulation of pricing policies jointly with the marketing manager.

6. *Forecasting Profits:* The Financial manager is usually responsible for collecting the relevant data to make forecasts of profit levels in future.

7. *Measuring Required Return:* The acceptance or rejection of an investment proposal depends on whether the expected return from the proposed investment is equal to or more than the required return. An investment project is accepted if the

expected return is equal or more than the required return. Determination of required rate of return is the responsibility of the financial manager and is a part of the financing decision.

8. *Managing Assets:* The function of asset management focuses on the decision-making role of the financial manager. Finance personnel meet with other officers of the firm and participate in making decisions affecting the current and future utilisation of the firm's resources. As an example, managers may discuss the total amount of assets needed by the firm to carry out its operations. They will determine the composition or a mix of assets that will help the firm best achieve its goals. They will identify ways to use existing assets more effectively and reduce waste and unwarranted expenses.

The decision-making role crosses liquidity and profitability lines. Converting the idle equipment into cash improves liquidity. Reducing costs improves profitability.

9. *Managing Funds:* Funds may be viewed as the liquid assets of the firm. In the management of funds, the financial manager acts as a specialised staff officer to the Chief Executive of the company. The manager is responsible for having sufficient funds for the firm to conduct its business and to pay its bills. Money must be located to finance receivables and inventories, to make arrangements for the purchase of assets, and to identify the sources of long-term financing. Cash must be available to pay dividends declared by the board of directors. The management of funds has therefore, both liquidity and profitability aspects. If the firm's funds are inadequate, the firm may default on the payment of liabilities and may have to pay higher interest. If the firm does not carefully choose its financing methods, it may pay excessive interest costs with a subsequent decline in profits.

FINANCIAL SECTOR – ROLE AND FUNCTIONS

In any economy, the financial sector plays a major role in the mobilisation and allocation of savings. Financial institutions, instruments and markets which constitute the financial sector act as conduit for the transfer of financial resources from net savers to net borrowers, i.e., from those who spend less than they earn to those who spend more than they earn.

The financial sector performs this basic economic function of intermediation essentially through four transformation mechanisms:

(i) Liability-asset transformation (i.e., accepting deposits as a liability and converting them into assets such as loans);

(ii) Size-transformation (i.e., providing large loans on the basis of numerous small deposits);

(iii) Maturity transformation (i.e., offering savers alternate forms of deposits according to their liquidity preferences while providing borrowers with loans of desired maturities); and

(iv) Risk transformation (i.e., distributing risks through diversification which substantially reduces risks for savers which would prevail while directly in the absence of financial intermediation).

The process of financial intermediation supports increasing capital accumulation through the institutionalisation of savings and investments and as such, fosters economic growth. The gains to the real sector of the economy, therefore, depend on how efficiently the financial sector performs this basic function of financial intermediation.

A distinction is often made in the literature between operational efficiency and allocational efficiency; while the former relates to transaction costs, the latter deals with the distribution of mobilised funds among competing demands. Sustained improvements in economic activity and growth are greatly enhanced by the existence of a financial system developed in terms of both operational and allocational efficiency in mobilising savings and in channelling them among competing demands. In addition, functional efficiency of a financial system must be judged in terms of (a) the soundness of the appraisals as measured by the level of overdues, (b) the resource cost of specific operations, and (c) the quality and speed of delivery of services. Both operational and allocational efficiency, to a large extent, are influenced by market structure and the regulatory framework, and on both grounds the Central Bank has an important role to play in developing economy like India.

I. Financial Sector Reforms in India – Background

The financial sector reforms (initiated in 1991) currently underway in India must be seen as a component, of the overall scheme of structural reforms. The overall package is aimed at enhancing the productivity and efficiency of the economy as a whole and also increasing international competitiveness. The reforms are comprehensive in scope covering besides financial sector reforms, several other components of economic policy including, liberalisation and deregulation of domestic investment, opening up to key infrastructure areas hitherto reserved for the public sector for private sector participation, opening up the economy to foreign competition by reducing protective barriers such as import controls and high tariff, encouraging direct foreign investment as source of technology upgradation and also as a source of non-debt finance for investment, reform of the public sector to impart greater efficiency of operations and reform of the tax system to create a structure with moderate rates of tax, broader base of taxation and greater ease of administration. All these reforms are closely inter-related, and progress in one area helps to achieve objectives in others. Since the reforms are being introduced in a phased manner the extent of progress differs from area to area. Importance of the financial sector reforms such as structured package needs to be delineated clearly. Structural reforms in areas such as industrial and trade policy can succeed only if resources are redeployed towards more efficient producers which are encouraged to expand under the new policies. This reallocation is possible only if the financial system plays a crucial supportive role. The reforms in the banking sector and in the capital markets are aimed precisely at achieving this primary objective.

The Indian financial system comprises an impressive network of banks and financial institutions and a wide range of financial instruments. There is no doubt that there has been a considerable widening and deepening of the Indian financial system in the last decade.

II. Financial Sector Reforms in India: Philosophy and Strategy

The ongoing financial sector reforms aim at promoting a diversified, efficient and competitive financial sector with the ultimate objective of improving the allocative efficiency of available resources, increasing the return on investments and promoting an accelerated growth of the real sector of the economy.

According to Economic Development Institute of the World Bank while dealing with structure reforms and development of financial system has specified the following key areas of reforms:

- Reforms of structure of financial systems;
- Policies and Regulations to deal with insolvency and illiquidity of financial intermediaries;
- The development of markets for short and long term financial instruments;
- The role of institutional elements in development of financial systems;
- The links between financial sector and the real sectors, particularly in the case of restructuring financial and industrial institutions or enterprises.
- The dynamics of financial systems management in terms of stabilisation and adjustment, and
- Access to International Markets.

More specifically, the financial sector reform in India seeks to achieve the following:

(i) suitable modifications in the policy framework within which various components of the financial system operate, such as rationalisation of interest rates, reduction in the levels of resources, pre-emptions and improving the effectiveness of directed credit programmes.

(ii) improvement in the financial health and competitive capabilities by means of prescription of prudential norms, recapitalisation of banks, restructuring of weaker banks, allowing freer entry of new banks and generally improving the incentive system under which banks function;

(iii) building financial infrastructure relating to supervision, audit, technology and legal framework; and

(iv) upgradation of the level of managerial competence and the quality of human resource of banks by reviewing relating to recruitment, training, and placement.

Pre-requisites for Reforms

There are certain ‘commandments’ for pre-requisites for systemic reform of the financial sector. First and foremost, macroeconomic stabilisation is a must during the reform process. Fiscal and external policies must support monetary policy in maintaining the overall macro-economic balance. Secondly, during the reform period, prudential regulation must be introduced and adhered to in order to help safeguard against a financial crisis and prevent the undermining of monetary control and macro-economic adjustment. Thirdly, the Government must simultaneously implement wide-ranging reforms in other sectors, specially those which require support from the financial system to get the best results.

III. Salient Features of Financial Sector Reforms in India

In conformity with the broad philosophy and strategy for reforms, salient features of the financial sector reforms in India could be analysed under three broad categories:

(a) Policy framework,

(b) Improvement in financial health, and

(c) Institutional strengthening.

(a) Policy Framework

The external factors bearing on the profitability of the banking system related to the administered structure of interest rates, high levels of pre-emptions in the form of reserve requirements and credit allocation to certain sectors. Easing of these external constraint constitutes a major part of the reform agenda.

(i) Interest Rate Policy

The reform of the interest rate regime constitutes an integral part of the financial sector reforms. For long, an administered structure of interest rates was in vogue. The purpose behind this structure was largely to direct implicit subsidy to certain sectors and enable them to obtain funds at concessional rates of interest. An element of cross subsidisation automatically got built into a system where concessional rates of interest provided to some sectors were compensated by higher rates charged to other non-concessional borrowers. The regulation of lending rates, *ipso factor*, led to the regulation of the deposit rates mainly to keep the cost of funds to banks in reasonable relation to the rates at which they are required to lend. This systems of setting the interest rates through administrative fiat became extremely complex and was characterised by detailed prescriptions on the lending as well as the deposit side.

In recognition of the problems arising from administrative control over the interest rates, such as, market fragmentation, inefficient allocation of resources, and the like. Several attempts were made since the mid-1980s to rationalise the level and structure of interest rates in the country. Initially, steps were taken to develop the domestic money market and freeing of the money market rates. The rates of interest offered on Government securities were progressively raised so that the government securities were progressively raised so that the Government borrowing could be carried out a market-related rates. The rates at which the corporate entities could borrow from the capital market were also freed.

In respect of banks, a major effort was undertaken to simplify the administered structure of interest rates. In September 1990, a process of simplification was undertaken by reducing the number of slabs for which lending rates had hitherto been prescribed. Until some time ago, the Reserve Bank was prescribing a minimum lending rate, two concessional rates of lending for small borrowers and a maximum deposit rate. The rationalisation in the structure of interest rates culminated in the Reserve Bank abolishing and minimum lending rate in October 1994 and leaving banks to determine their prime lending rates. On the deposit side, since July, 1996 the Reserve Bank prescribes only a maximum rate for deposits upto one year.

A gradual approach has thus far been adopted in reforming the interest rates structure in India. Care has been taken to ensure that banks and financial intermediaries do not have incentives which tempt them to lend at high rates of interest assuming higher risks. A major safeguard in this regard has been the prescription of prudential norms relating to provisioning and capital adequacy. These combined with higher standards of operational accountability and appraisal of credit risks would ensure that banks lend prudently and with care.

(ii) Pre-emption of Deposits

In the past, the cash reserve ratio (CRR) and the statutory liquidity ratio (SLR) had to be maintained at high levels because of rising fiscal and monetised deficits. Reduction in these deficits is now the stated goal of fiscal policy and several steps have already been taken in this direction. As the containment of deficits occurs, reductions in the reserve requirements are being effected. These measures will help to increase the lendable resources available with the banking industry. It must be noted, however, that being an instrument of monetary control, CRR will continue to be used flexibly, depending on the monetary situation.

(iii) Directed Credit

In respect of directed lending, it is prescribed that 40 per cent of the net bank credit should go to certain sectors—the priority sector—such as agriculture, small scale industry and small businesses and the programmes for poverty alleviation. Give the imperfections of the credit market, credit allocation for certain sectors becomes necessary in the Indian context. The prescription of 40 per cent of net bank credit to the priority sector as well as prescription of two concessional rates of interest applicable for small loans have been retained. Since the bulk of borrowers with such credit needs fall within the priority sector, they will continue to obtain bank finance at concessional rates. Priority sector borrowers with credit needs of higher amounts will however, be governed by the general interest rate prescriptions. This will ensure that a certain proportion of bank credit goes to the designated sector and to the needy borrowers, without unduly affecting the viability and profitability of banks.

(b) Improvement in Financial Health

Another major element of the financial sector reforms has been the introduction of prudential norms and regulations aimed at ensuring the safety and soundness of the financial system, imparting greater transparency and accountability in operations and restoring the credibility of and confidence in the Indian financial system. Prudential norms serve two primary purposes—first, they bring out the true position of a bank's loan portfolio and secondly, they help to arrest its deterioration. In the absence of an effective prudential framework, the reform process can run into difficulties. Introduction of prudential regulations as part of the reform process is therefore a must. Prudential reforms introduced in India relate to income recognition, asset classification, provisioning for bad and doubtful debts and capital adequacy. A proper definition of income is essential in order to ensure that banks take into account income which is actually realised. Banks have now been given a clear definition of what constitutes a 'non-performing' asset and instructions have been issued that no interest should be charged and taken to income account on any 'non-performing'

asset. The definition of 'non-performing' asset is also being tightened over a time. Banks are now required to make provisions on advances depending on the classification of assets into the four broad groups: (i) standard assets, (ii) sub-standard assets, (iii) doubtful assets, and (iv) loss assets. The provisioning requirement ranges from 10 per cent to 100 per cent depending on the category of the asset. Banks have now fully met with the new provisioning requirements.

Prudential regulations also include norms relating to capital adequacy. A capital risk weighted asset system has been introduced more or less in conformity with international standards. Indian banks which have branches abroad were required to achieve the norm of 8 per cent as on March 31, 1995. Foreign banks operating in India achieved this norms as on March 31, 1993.

(c) Institutional Strengthening

Along with relaxing the external constraints and introducing the prudential norms, a major effort has been to strengthen the banking system in general, and public sector banks, in particular, through appropriate institution building measures of (i) recapitalisation, (ii) improving the quality of loan portfolio, (iii) instilling a greater element of competition and (iv) strengthening the supervisory process.

A more competitive environment is also being created. Banks are already facing competition from non-bank finance companies primarily on the lending side and from mutual funds and other similar institutions on the deposit side. They, therefore, need to gear themselves up to meet this challenge. But significantly, banks are also facing competition from within their industry. New banks are now being set up in the private sector, although the challenge from these new banks will for some time be minimal. The improvement in the efficiency of the public sector banks will have to come from within and from the need to improve their profitability. Banks with strong balance sheets are now going to the capital market and raising funds. This will also make them accountable to a wider base of shareholders resulting in better performance.

A strong system of supervision is essential for a sound banking system. There has to be an alert mechanism for monitoring compliance with prudential regulation and directives of the Reserve Bank and other regulatory agencies. The system of external supervision of banks has been revamped with the setting up of a separate Board for Financial Supervision (BFS) within Reserve Bank, concentrating exclusively on supervisory issues. The Board will ensure compliance with regulations and guidelines in the areas of credit management, asset classifications, income recognition, capital adequacy, provisioning and treasury operations. Supervision, however, can at best be a second line of defence; the main mechanism of compliance and control must operate within the financial institutions.

IV. Financial Sector Reforms –Present Scenario

Financial Sector Policies

With increasing financial sector liberalisation and emergence of financial conglomerates, financial sector stability has emerged as a key objective of the Reserve Bank. In this context, the recent emphasis in the regulatory framework in India on ensuring good governance through "fit and proper" owners, directors and

senior managers of the banks infuses a qualitative dimension to the conventional discharge of financial regulation through prescribing prudential norms and encouraging market discipline. In totality, however, these measures interact to produce a positive impact on the overall efficiency and stability of the banking system in India.

The thrust of the Reserve Bank's financial sector policies is on strengthening the health of financial institutions as well as on improving the efficiency of financial markets. Policy initiatives encompassed the adoption of international standards and codes in the banking system, strengthening urban cooperative banks (UCBs) and non-banking financial companies (NBFCs) and improvement in customer services. The Reserve Bank undertook several initiatives to improve corporate governance in the banking system.

The Reserve Bank continued to stress the need to improve customer services by banks to ensure that the benefits of financial liberalization percolate to the widest sections of society. Several measures were undertaken to further improve the functioning of the money, the debt and the foreign exchange markets. Internal technical groups on the money market, the Government securities market and the foreign exchange market were set up to chart a medium-term framework for the future course of market development in the context of the ongoing changes in the institutional framework and market dynamics.

In the capital market, policy initiatives are directed towards further broadening and deepening the markets, achieving better investor protection and making the market investor friendly.

In regard to capital flows, India has adopted a policy of active management of the capital account. The compositional shifts in the capital account towards non-debt flows since the early 1990s have been consistent with the policy framework, imparting stability to the balance of payments. The substitution of debt by non-debt flows also gives room for manoeuvre since debt levels, particularly external commercial borrowings, have been moderate. There is also the cushion available from the foreign exchange reserves. Since non-debt creating flows are dominating, the emphasis is on encouraging inflows through foreign direct investment and enhancing the quality of portfolio flows by strict adherence to what may be described as 'Know Your Investor' principle. Prudential regulations over financial intermediaries, especially over banks, in respect of their foreign exchange exposures and transactions are a dynamic component of management of the capital account as well as financial supervision.

India has made significant progress in financial liberalization since the institution of financial sector reforms in 1992 and this has been recognized internationally. India has chosen to proceed cautiously and in a gradual manner, calibrating the pace of capital account liberalization with underlying macroeconomic developments, the state of readiness of the domestic financial system and the dynamics of international financial markets. Unlike in the case of trade integration, where benefits to all countries are demonstrable, in the case of financial integration, a "threshold" in terms of preparedness and resilience of the economy is important for a country to get full benefits. A judgmental view needs to be taken whether and when a country has reached the threshold and financial integration should be approached cautiously,

preferably within the framework of a plausible roadmap that is drawn up by embodying the country-specific context and institutional features. The experience so far has shown that the Indian approach to financial integration has stood the test of time.

The optimism generated by the recent gains in microeconomic performance warrants a balanced consideration of further financial liberalisation. At this stage, the optimism generated by impressive microeconomic performance accompanied with stability has given rise to pressures for significantly accelerating the pace of external financial liberalization. It is essential to take into account the risks associated with it while resetting an accelerated pace of a gradualist approach. The recent experience in many countries shows that periods of impressive macroeconomics performance generate pressures for speedier financial liberalization since everyone appears to be a gainer from further liberalization, but the costs of instability that may be generated in the process are borne by the country, the government and the poorer sections. Avoiding crisis is ultimately a national responsibility. The approach to managing the external sector, the choice of instruments and the timing and sequencing of policies are matters of informed judgment, given the imponderables.

The overall approach to the management of India's foreign exchange reserves in recent years reflects the changing composition of the balance of payments and the 'liquidity risks' associated with different types of flows and other requirements. The policy for reserve management is thus judiciously built upon a host of identifiable factors and other contingencies. Taking these factors into account, India's foreign exchange reserves continue to be at a comfortable level and consistent with the rate of growth, the share of external sector in the economy and the size of risk-adjusted capital flows.

The financial system in India, through a measured, gradual, cautious, and steady process, has undergone substantial transformation. It has been transformed into a reasonably sophisticated, diverse and resilient system through well-sequenced and coordinated policy measures aimed at making the Indian financial sector more competitive, efficient, and stable. Concomitantly, effective monetary management has enabled price stability while ensuring availability of credit to support investment demand and growth in the economy. Finally, the multi-pronged approach towards managing capital account in conjunction with prudential and cautious approach to financial liberalization has ensured financial stability in contrast to the experience of many developing and emerging economies. This is despite the fact that we faced a large number of shocks, both global and domestic. Monetary policy and financial sector reforms in India had to be fine tuned to meet the challenges emanating from all these shocks. Viewed in this light, the success in maintaining price and financial stability is all the more creditworthy.

As the economy ascends a higher growth path, and as it is subjected to greater opening and financial integration with the rest of the world, the financial sector in all its aspects will need further considerable development, along with corresponding measures to continue regulatory modernization and strengthening. The overall objective of maintaining price stability in the context of economic growth and financial stability will remain.

India's financial system holds one of the keys, if not the key, to the country's future growth trajectory. A growing and increasingly complex market-oriented

economy, and its rising integration with global trade and finance, require deeper, more efficient and well-regulated financial markets.

The Government of India Constituted a High Level Committee on Financial Sector Reforms on 17th August 2007, under the Chairmanship of Shri Raghuram Rajan, Professor, Graduate School of Business, University of Chicago, with a view to outlining a comprehensive agenda for the evolution of financial sector indicating especially the priorities and sequencing decisions. The terms of Reference of the Committee were as under:

(i) To identify emerging challenges in meeting the financing needs of the Indian economy in the coming decade and to identify real sector reforms that would allow those needs to be more easily met by the financial sector;

(ii) To examine the performance of various segments of the financial sector and identify changes that will allow it to meet the needs of the real sector;

(iii) To identify changes in the regulatory and supervisory infrastructure that can better allow the financial sector to play its role, while ensuring that risk are contained; and

(iv) To identify changes in the other areas of the economy-including in the conduct of monetary and fiscal policy, and the operation of legal system and the education system-that could help the financial sector function more effectively.

The Committee on Financial Sector Reforms delivered its Draft report to India's Planning Commission in April 2008. The report shows that recognizing the deep linkages among different reforms, including broader reforms to monetary and fiscal policies, is essential to achieve real progress.

The report has three main conclusions. First, the financial system is not providing adequate services to the majority of Indian retail customers, small and medium-sized enterprises, or large corporations. Government ownership of 70% of the banking system and hindrances to the development of corporate debt and derivatives markets have stunted financial development. This will inevitably become a barrier to high growth. Second, the financial sector—if properly regulated, but unleashed from government strictures that have stifled the development of certain markets and kept others from becoming competitive and efficient—has the potential to generate millions of much-needed jobs and, more important, have an enormous multiplier effect on economic growth. Third, in these uncertain times, financial stability is more important than ever to keep growth from being derailed by shocks, especially from abroad.

General-Status of Economy

India's economy has posted a stellar economic performance in recent years, with high growth, moderate inflation and the absence of major turbulence. This suggests that the overall macroeconomic policy framework has delivered good outcomes despite concerns about its durability and effectiveness. Indeed, this success has fostered an ambitious average growth target of 9 percent per annum for the five-year period from 2007 until 2012. This rapid sustained growth is expected to be supported

by a rising investment rate and greater integration with the world economy.

But past success does not necessarily mean that the existing framework is well suited for achieving this ambitious growth target. The economy now faces major challenges in maintaining high growth. Surging capital inflows, while providing capital for investment, are causing complications for domestic macro policies. There are still major infrastructural bottlenecks that could prevent the economy from attaining its full potential. Moreover, the political sustainability of this growth process depends on its being inclusive and remaining non-inflationary.

A country's financial system including its bank, stock markets, government and corporate bond markets-is a key part of engine that drives the economy's growth. For an emerging markets economy like India, a well functioning financial system could spell the difference between low and volatile growth on the one hand and high, stable and equitable growth on the other. While India's financial system has improved over the years, the demand placed on it have multiplied as the Indian economy has become richer, more complex and more integrated in to the world economy.

The draft report which was released on April 7,2008 lays out the blue prints for the next generation of financial sector reforms in India. It contains the following :

(a) Broad vision for strengthening the banking system;

(b) Building up government and debt markets;

(c) Improving regulations and supervisions of the financial systems; and

(d) Promoting financial innovations.

More importantly, it shows how these different elements are intertwined and argues that putting in place some of these reforms simultaneously, rather than in piecemeal manner, may in fact be easier and potentially more effective.

India is at a turning point in its financial sector. There are many successes—the rapidity of settlement at the NSE or the mobile phone banking being implemented around the country indicate that much of our system is at the Internet age and beyond. There is justifiable reason to take pride in this.

Yet much needs to be done. Some parts of our system have not yet reached the Electronic age, and unfortunately, this is the part that our poor typically face. There is an opportunity here. In the process of gaining the productivity and innovativeness to serve the masses, the financial sector will get the unique edge and scale to be competitive internationally—indeed, the road to making Mumbai an international financial center runs through every village and slum in India

There is no easy path for the government. The old system of attempting to mandate outcomes from the center does not work any more, even if it might have when our private sector institutions were less well developed and the Indian economy was more closed. The proper role of the government today is to improve the financial sector's infrastructure and its regulation even while removing the plethora of constraints and distortions that have built up over the years. It also requires the government to withdraw from financing and direct control of institutions so that the financial sector can get on with the job. The populism and the direct intervention, that unfortunately seems to be making a comeback, should be relegated firmly to the

past.

This report places inclusion, growth, and stability as the three objectives of any reform process, and fortunately, these objectives are not in contradiction.

With the right reforms, the financial sector can be an enormous source of job creation both directly, and indirectly through the enterprise and consumption it can support with financing. The implications for inclusion, growth, and political stability would be enormously beneficial. Without reforms, however, the financial sector could become an increasing source of risk, as the mismatches between the capacity and needs of the real economy and the capabilities of the financial sector widen.

FINANCIAL SECTOR REFORMS: SOME CRITICISMS

It is not surprising that the sweeping nature of the financial sector reforms has evoked some criticism. While the banking community and the customer in general have welcomed the changes that have been ushered in, criticisms mainly emanated from those who are enchored to certain ideological moorings. Internationally, a trenchant critic of financial sector reforms has bee Joseph Stighlita, who has argued that financial markets are vulnerable to “market failure” more than any other market and therefore, government intervention in financial market is imperative. He writes, that there exists form of government intervention that will not only make these (financial) markets function better but will also improve the performance of the economy. The need for intervention in financial markets is not denied by any one. All advocates of financial sector reforms have pleaded that de-regulation should be accompanied if not preceded by putting in place a rigorous set of prudential standards to be meet by financial institutions. As John Crow Former Governor of the Bank of Canada said, “deregulation does not mean desupervision”. Internationally accepted common standards for income recognition, provision and capital adequacy have come into force in almost all countries.

Financial Sector reforms in India is basically criticised on the grounds of slow pace of reforms and non-implementation of capital account convertibility. In this context eminent Ford Economist Paul Krugman has recently rightly pointed out, India had avoided the worst of the Asian crisis because existing restrictions discouraged inflows and out flows of short term capital. India should close down its weak banks, impose serious capital requirements on the strong one, and leave the currency convertibility programme where it is. Thus, India which has been slow to open up for right things, has fortunately also been slow to open up to the wrong things. Reforms are premised on two critical factors. Krugman emphasised, education and infrastructure – both left much to be desired in India. Having introduced liberalisation, it was incumbent on India to address these two areas of failure. The failure presents the country with greater opportunities, provided the right lessons were learnt. Recently eminent economist Prof. Amartya Sen, a noble laureate while supporting the programme of reforms in India has suggested to concentrate on two issues i.e. primary education.

FINANCIAL MANAGEMENT—A NEW LOOK

Financial management in India has also changed substantially in scope and complexity in view of recent government policy. Some of the changes include introduction of new financial instruments and transactions like options and future

contracts, foreign currency swaps, and interest rate swaps, GDR (Global Depository Receipts), Euro Issues, globalization of capital markets, finance mix, liberalisation measures taken by government etc. All these have emphasised the need for effective and efficient use of corporate financial resources.

Under the changed circumstances, financial management covers the following:

(a) *Raising the funds:* Apart from Indian Public and Financial Institutions, companies have started raising funds etc. in the international markets by way of Euro Issues and from International Financial Institutions etc. Foreign currency loans are availed from foreign banks due to globalization. Foreign Institutional Investors (FII) have also started participation in India's equity market due to liberalisation of the economy.

(b) *Investment Decisions:* Presently, investment decisions of firms are not confined to Indian territory but spread over globally. Foreign investors are encouraged. Hence the competitions in India as well as from abroad have made the financial management more complex and foreign exchange management has become highly specialised area in financial management. The time value of money coupled with exchange rate fluctuations make the decision making exercise more complex and compelled the decision makers to make the use of various sophisticated management techniques like probability theory, capital rationing, linear programming, goal programming and sensitivity analysis to overcome the problems.

(c) *Dividend Decisions:* In view of wealth maximisation of firm, the internal generation of funds are not paid out by way of dividend or issue of bonus shares. They are utilised by companies in portfolio management by floating mutual funds etc. In order to avoid scams, the Government has established new institutions like SEBI, NSE, Stock Holding Corporation of India etc. It further increases the scope of financial management and makes it more complex.

However, in true sense, as such there is no change in scope of financial management in India because it still aims at maximising value of shares. Basically, it is extension in earlier coverage.

LESSON ROUND-UP

- Financial Management deals with procurement of funds and their effective utilizations in the business and concerned with investment, financing and dividend decisions in relation to objectives of the company.
- Investment decisions are essentially made after evaluating the different proposals with reference to growth and profitability projections of the company.
- Financing decisions are concerned with the determination of how much funds to procure from amongst the various avenues available i.e. the financing mix or capital structure.
- Dividend decision is to decide whether the firm should distribute all profits or retain them or distribute a portion and retain the balance.
- Profit maximization ensures that firm utilizes its available resources most efficiently under conditions of competitive markets.
- Wealth maximization means the management of an organization maximizes the

present value not only for shareholders but for all including employees, customers, suppliers and community at large.

- Economy value added is the after cash flow generated by a business minus the cost of capital it has deployed to generate that cash flow.
- Liquidity means ability of the business to meet short-term obligations. It shows the quickness with which a business/company can convert its assets into cash to pay what it owes in the near future.
- Profitability ratio reflects on the ability of management to earn a return on resources put in by the shareholders evaluating the performance of the company in different spheres
- Financial reform in India is aimed at enhancing the productivity and efficiency of the economy as a whole and also increasing international competitiveness.

SELF-TEST QUESTIONS

1. Discuss the nature and scope of Financial Management.
2. What is justification for the goal of maximising the wealth of shareholders?
3. Critically examine the goals of maximisation of profit and maximisation of return on equity.
4. "The goal of profit maximisation does not provide us with an operationally useful criterion." Comment.
5. Financial management has changed substantially in scope and complexity in recent decades. How do you account for this trend? In what directions has emphasis in the field been shifted?
6. "Investment, financing and dividend decisions are interrelated". Comment.
7. What criteria should you adopt in making financial decisions in your company? Discuss with reference to the costing of funds decisions.
8. Write short notes on:
   (a) Liquidity;
   (b) Profitability;
   (c) Costing and risk;
   (d) Financial distress.
9. Discuss the responsibilities of a financial executive in a corporation.

Suggested Readings:

(1) The Financial Manager – Basic Aspects of Financial Administration; *Jerome B. Chohen and Sidney M. Robbins; Harper's Row,* New York;

(2) Investments; *Herbert E. Dougall and Francies J. Corrigan*;

(3) Financial Management and Policy; *J.C. Ven Horne*; Prentice Hall of India Pvt. Ltd. New Delhi;

(4) Finance Environment Decisions; *George A. Christy and Peyton Foster*

Roden;

(5) An Introduction to Financial Management; *Ezra Soloman and J.J. Pringle Santa; Maurice, Claif*, Goodyear Publishing Co.;

(6) Managerial Economics – Concepts & Analysis for Business Decisions in Indian Environment; *J.C. Verma*; Lawrence Publishing House, New Delhi;

(7) Financial Management; *I.M. Pandey*, Vikas Publishing House, Delhi.

(8) Financial Management – An Analytical and Conceptual Approach – *S.C. Kuchhal*; Chaitanya publishing House, Allahabad.

(9) Financial Decision Making; John J. Hampton; Prentice Hall of India Pvt. Ltd. New Delhi.

(10) Banking Sector Reforms – Rationale and Relevance – *C. Rangarajan* – RBI, Bulletin January 1997 Issue.

(11) Finance Management and Policy – *Bhalla, V.K.*; Amol Publications Pvt. Ltd. New Delhi – 110 002.

STUDY II

LEARNING OBJECTIVES

The object of the study lesson is to enable the students to understand:

- Need and importance of Capital Budgeting
- Factors Including Investment Decision
- Kinds of Capital Budgeting Decisions
- Planning of Capital Expenditure
- Capital Expenditure Control
- Capital Rationing
- Capital Budgeting Process
- Various methods of Capital Budgeting.
- Risk Evaluation and Sensitivity Analysis

- Simulation for Risk Evaluation
- Cost of Capital and its implications in Capital Budgeting decisions.

CAPITAL BUDGETING – A CONCEPT

In modern times, the efficient allocation of capital resources is a most crucial function of financial management. This function involves organisation's decision to invest its resources in long-term assets like land, building facilities, equipment, vehicles, etc. All these assets are extremely important to the firm because, in general, all the organisational profits are derived from the use of its capital in investment in assets which represent a very large commitment of financial resources, and these funds usually remain invested over a long period of time. The future development of a firm hinges on the capital investment projects, the replacement of existing capital assets, and/or the decision to abandon previously accepted undertakings which turns out to be less attractive to the organisation than was originally thought, and divesting the resources to the contemplation of new ideas and planning. For new projects such as investment decisions of a firm fall within the definition of capital budgeting or capital expenditure decisions.

Capital budgeting refers to long-term planning for proposed capital outlays and their financing. Thus, it includes both raising of long-term funds as well as their utilisation. It may, thus, be defined as the "firm's formal process for acquisition and investment of capital." To be more precise, capital budgeting decision may be defined as "the firms' decision to invest its current fund more efficiently in long-term activities in anticipation of an expected flow of future benefit over a series of years." The long-term activities are those activities which affect firms operation beyond the one year period. Capital budgeting is a many sided activity. It contains searching for new and more profitable investment proposals, investigating, engineering and marketing considerations to predict the consequences of accepting the investment and making economic analaysis to determine the profit potential of investment proposal. The basic feature of capital budgeting decisions are:

(1) current funds are exchanged for future benefits;

(2) there is an investment in long-term activities; and

(3) the future benefits will occur to t 35 over series of years.

NEED FOR CAPITAL INVESTMENT

This is the logical question and the answer to that is rather easy. The following factors give rise to the need for capital investments:

(a) Wear and tear of old equipments.

(b) Obsolescence.

(c) Variation in product demand necessitating change in volume of production.

(d) Product improvement requiring capital additions.

(e) Learning-curve effect.

(f) Expansion.

(g) Change of plant site.

(h) Diversification.

(i) Productivity improvement.

Some of these factors are self-explanatory. However, we add a few explanatory lines on a few of these factors. Obsolescence occurs when alternative methods of equipments for performing a function become available which are significantly better either in terms of quality of newness of the product or plant safety. In a high consumption economy like U.S.A. this problem is acute. In an economy like India, the problem of obsolescence is still rare. Only in certain investments for manufacturing export products (e.g. garments, jute goods, cotton textiles), this problem exists. Product improvements require changes in equipments and this problem is also not an important factor in influencing capital investment decisions in India, expecting changes special product qualities like radios, transistors, televisions etc. Learning curve consideration influences capital decisions in the sense that new equipments might be such as to cut down learning time and effect considerable saving on training expenses. For reasons such as expansion, new sources of raw materials, new markets, labour conditions, transportation or termination of a lease, an entire plant may have to be relocated. The cost of removing a plant is enormous and management may decide to undertake modernisation through a complete new layout and equipment purchases. Many progressive companies seek out new markets and new products. They may even like to acquire another company for purpose of diversification. All these require major capital investments. In some industries, wage escalation may force management to acquire labour-saving equipment machinery to effect saving on wages and at the same time improve productivity.

INVESTMENT DECISIONS — MANAGEMENT PERSPECTIVE

Usually, in investment problems, much attention is focussed on how to choose among alternative projects, so that one is tempted to believe that this constitutes the only problem in capital decisions. However, if we examine carefully, it is easy to realise that choice among alternatives is only one facet albeit the important facet of the problem from the top management perspective. The other facets are implementation and control as applied to all phases of capital investment, and these are important aspects because in the ultimate analysis, the top management is accountable to Board of directors and owners for the success or failure of investment plans.

Let us examine in brief how investment decisions are influenced by management perspective. Obviously, we have to start with the company objectives which provide the broad guidelines to policies, plans and operations. A possible objective might be to maximise return on investment in which case the management might seek to minimise investment by selecting only a few capital projects that yield the highest returns. On the other hand, the objective may be to maximise sales volume and in that case all capital investment that yield a net profit (may be small) would be made without undue concern. If the management is guided by a growth objective, expansionary investment involving high capital cost would be undertaken.

Within the board company objectives, top management also reviews the competitive position of the company and if the competition is sharper, the management looks out continuously to evaluate and upgrade the equipments to

achieve greater efficiency at least cost. In big companies, the management sets out policies to guide lower levels of management in the search for evaluation of and initiation of capital projects.

Top management has also to keep watch on company funds which finance investments. It cannot allow funds to lie idle just because suitable project is not at hand. The cost of idle funds is substantial and hence the need for looking out for suitable investment opportunities. If such opportunities exist then the management must spare funds and if existing funds are inadequate it should raise funds externally. It should be remembered that if there is no profitable investment opportunity with in the company, the dividend policy of the company should be liberal. Funds for capital investment must be arranged on a long-term basis otherwise borrowings short and investing long can lead to lack of liquidity and consequent troubles. The major sources of long-term funds are long-term borrowing, new equity capital (sale of stock) and retained earnings. Sometimes, a change in the inventory system also releases funds by effecting reduction in inventory to be carried. The selection of the right source of funds is again influenced by management's own belief and value judgement and such other factors like outsider control, dilution of equity, price earnings ratio, cost of funds etc.

And finally, the top management is usually concerned with implementation and control aspects of investment projects. Specific responsibilities are to be assigned to specific individuals or cells and progress reports have to be carefully studied. In big projects, improved methods like programme evaluation review technique (PERT) or critical path method (CPM) may be used.

IMPORTANCE OF CAPITAL BUDGETING

Capital budgeting decisions are of paramount importance in financial decision. So it needs special care on account of the following reasons:

(1) *Long-term Implications:* A capital budgeting decision has its effect over a long time span and inevitably affects the company's future cost structure and growth. A wrong decision can prove disastrous for the long-term survival of firm. It leads unwanted expansion of assets, which results in heavy operating cost to the firm. On the other hand, lack of investment in asset would influence the competitive position of the firm. So the capital budgeting decisions determine the future destiny of the company.

(2) *Involvement of large amount of funds:* Capital budgeting decisions need substantial amount of capital outlay. This underlines the need for thoughtful, wise and correct decisions as an incorrect decision would not only result in losses but also prevent the firm from earning profit from other investments which could not be undertaken.

(3) *Irreversible decisions:* Capital budgeting decisions in most of the cases are irreversible because it is difficult to find a market for such assets. The only way out will be to scrap the capital assets so acquired and incur heavy losses.

(4) *Risk and uncertainty:* Capital budgeting decision is surrounded by great number of uncertainties. Investment is present and investment is future. The future is uncertain and full of risks. Longer the period of project, greater may be the risk and

uncertainty. The estimates about cost, revenues and profits may not come true.

(5) *Difficult to make:* Capital budgeting decision making is a difficult and complicated exercise for the management. These decisions require an over all assessment of future events which are uncertain. It is really a marathon job to estimate the future benefits and cost correctly in quantitative terms subject to the uncertainties caused by economic-political social and technological factors.

FACTORS INFLUENCING INVESTMENT DECISION

We shall now study the factors, which have specific or general relevance to capital investment decisions. We have realised already that capital investment decisions are not governed by one or two factors, because the investment problem is not simply one of replacing an old equipment by a new one, but is concerned with replacing an existing process in a system with another process which makes the entire system more effective. We discuss below some of the relevant factors that affects investment decisions:

(i) *Management outlook:* If the management is progressive and has an aggressive marketing and growth outlook, it will encourage innovation and favour capital proposals which ensure better productivity or quality or both. In some industries where the product being manufactured is a simple standardised one, innovation is difficult and management would be extremely cost conscious. In contrast, in industries such as chemicals and electronics, a firm cannot survive, if it follows a policy of 'make-do' with its existing equipment. The management has to be progressive and innovation must be encouraged in such cases.

(ii) *Competitor's Strategy:* The competitors' strategy regarding capital investment exerts significant influence on the investment decision of a company. If competitors continue to install more equipment and succeed in turning out better products, the existence of the company not following suit would be seriously threatened. This reaction to a rival's policy regarding capital investment often forces decision on a company.

(iii) *Opportunities created by technological change:* Technological changes create new equipment which may represent a major change in process, so that there emerges the need for re-evaluation of existing capital equipment in a company. Such changes may justify new investments. Sometimes the old equipment which has to be replaced by new equipment as a result of technical innovation may be downgraded to some other applications. A proper evaluation of this aspect is necessary, but is often not given due consideration. In this connection, we may note that the cost of new equipment is a major factor in investment decisions. However, the management should think in terms of incremental cost, not the full accounting cost of the new equipment because cost of new equipment is partly offset by the salvage value of the replaced equipment. In such analysis an index called the disposal ratio becomes relevant.

$$\text{Disposal ratio} = \frac{\text{Salvage value / Alternative use value}}{\text{Installed cost}}$$

(iv) *Market forecast:* Both short and long run market forecasts are influential

factors in capital investment decisions. In order to participate in long-run forecast for market potential critical decisions on capital investment have to be taken.

(v) *Fiscal incentives:* Tax concessions either on new investment incomes or investment allowance allowed on new investment decisions, the method for allowing depreciation deduction allowance also influence new investment decisions.

(vi) *Cash flow Budget:* The analysis of cash-flow budget which shows the flow of funds into and out of the company, may affect capital investment decision in two ways. First, the analysis may indicate that a company may acquire necessary cash to purchase the equipment not immediately but after say, one year, or it may show that the purchase of capital assets now may generate the demand for major capital additions after two years and such expenditure might clash with anticipated other expenditures which cannot be postponed. Secondly, the cash flow budget shows the timing of cash flows for alternative investments and thus help management in selecting the desired investment project.

(vii) *Non-economic factors:* A new equipment may make the workshop a pleasant place and permit more socialising on the job. The effect would be reduced absenteeism and increased productivity. It may be difficult to evaluate the benefits in monetary terms and as such we call this as non-economic factor. Let us take one more example. Suppose the installation of a new machine ensures greater safety in operation. It is difficult to measure the resulting monetary saving through avoidance of an unknown number of injuries. Even then, these factors give tangible results and do influence investment decisions.

RATIONALE OF CAPITAL BUDGETING DECISIONS

The rationale behind the capital budgeting decisions is efficiency. A firm has to continuously invest in new plant or machinery for expansion of its operations or replace worn out machinery for maintaining and improving efficiency. The main objective of the firm is to maximise profit either by way of increased revenue or by cost reduction. Broadly, there are two types of capital budgeting decisions which expand revenue or reduce cost.

1. *Investment decisions affecting revenue:* It includes all those investment decisions which are expected to bring an additional revenue by raising the size of firm's total revenue. It is possible either by expansion of present operations or the development of new product in line. In both the cases fixed assets are required.

2. *Investment decisions reducing costs:* It includes all those decisions of the firms which reduces the total costs and leads to increase in its total earnings i.e. when an asset is worn out or becomes outdated, the firm has to decide whether to continue with it or replace it by new machine. For this, the firm evaluates the benefit in the form of reduction in operating costs and outlays that would be needed to replace old machine by new one. A firm will replace an asset only when it finds it beneficial to do so. The above decision could be followed decisions following alternative courses: i.e. Tactical investment decisions to strategic investment decisions, as briefly defined below.

3. *Tactical investment decisions:* It includes those investment decisions which generally involves a relatively small amount of funds and does not constitute a major departure from what the firm has been doing in the past.

4. *Strategic investment decisions:* Such decisions involve large sum of money and envisage major departure from what the company has been doing in the past. Acceptance of strategic investment will involve significant change in the company's expected profits and the risk to which these profits will be subject. These changes are likely to lead stock-holders and creditors to revise their evaluation of the company.

KINDS OF CAPITAL BUDGETING DECISIONS

Generally the business firms are confronted with three types of capital budgeting decisions (i) the accept-reject decisions; (ii) mutually exclusive decisions; and (iii) capital rationing decisions.

Accept-reject decisions: Business firm is confronted with alternative investment proposals. If the proposal is accepted, the firm incur the investment and not otherwise. Broadly, all those investment proposals which yield a rate of return greater than cost of capital are accepted and the others are rejected. Under this criterion, all the independent prospects are accepted.

Mutually exclusive decisions: It includes all those projects which compete with each other in a way that acceptance of one precludes the acceptance of other or others. Thus, some technique has to be used for selecting the best among all and eliminates other alternatives.

Capital rationing decisions: Capital budgeting decision is a simple process in those firms where fund is not the constraint, but in majority of the cases, firms have fixed capital budget. So large number of projects compete for these limited budget. So the firm ration them in a manner so as to maximise the long run returns. Thus, capital rationing refers to the situations where the firm have more acceptable investments requiring greater amount of finance than is available with the firm. It is concerned with the selection of a group of investment out of many investment proposals ranked in the descending order of the rate of return.

PLANNING OF CAPITAL EXPENDITURE

From the above discussion, it is evident that capital budgeting is concerned with activities ranging from planning the availability, allocation and control of expenditure of long-term as well as short-term investment funds.

Planning of capital expenditure could be done to finance the capital expenditure plans of the company for short-term or long-term periods and hence the long-term plan budget and short-term plan budget.

As regards long-term plan budget, the period covered under the planning is three to five or more years. The planning for such expenditure assumes a composite form involving all aspects of economic forecasts for the outlook of entire industry in which the company performs with its unit and forecast for the company with probable or expected coverage of market share. On the basis of this forecast plant managers estimate their prospective capital expenditure, the marketing managers plan their market shares, the personnel managers assess the requirements for manpower and

technical hands to achieve targeted production results, and the finance mangers plans, for the funds to be made available for investment taking into consideration the above requirements. The long-range capital budget is continually revised with changing economic conditions, the marketing environment, structure of wages and the inflationary pressures in the economy. It is flexible in nature and oriented towards a long-range growth planning for the company.

As regards short-period Capital budgeting, involving short-range planning for funds, it covers expenditure for a short duration involving the period covered within one or two years. It does not involve large capital expenditure but covers temporary need for funds for different departments within the company depending upon the degree of urgency, profitability and savings to be achieved with reference to the capital costs to be incurred. Short run capital expenditure plans get converted into long-term plans of capital expenditure. Short-term capital expenditure plan is known as operating budget and is concerned with revenues and expenses related to firms daily operations.

Significance of planning for capital expenditure is derived only with major investment proposals and the use of funds over a long period. The most important factor affecting the planning horizon is the rate of change in technology in the industry. The advancement in technology may warrant capital investment for short as well as long period depending upon the changing pace of technology and technological obsolescence: long-term plan, however, helps the company to analyse its need and directions into the distant future involving a technological change.

CAPITAL EXPENDITURE CONTROL

Planning and control are inter-linked and consecutive steps for the successful implementation of any programme. Planning done for incurring capital expenditure is followed by control devices to assess the divergencies between the expected and achieved results. Control for capital expenditure is expressed keeping in view the above objective.

It may be recalled that capital expenditure is classified into three main forms viz.:

(1) expenditure made to reduce costs;

(2) expenditure made to increase revenue;

(3) expenditure which is justified on non-economic grounds.

Which exercise control over capital expenditure in any of the above categories, the capital expenditure analysis should concentrate on three types of outlays viz.: (1) Major projects, (2) Routine expenditure, and (3) Replacement.

As regards major projects, strategic investment may be made for expansion of productive capacity or achieving product innovation or preparing barriers against capital fluctuations. In the second type of outlay, routine expenditure may be working condition improvement, maintenance expenditure, competition oriented expenditure etc. Thirdly, replacement need may arise to avoid capital wastage for existing equipment to check its disposal value or it may be obsolescence replacement. In all circumstances, proper attention is to be devoted in analysing the need for the capital expenditure so that it would be curtailed to the minimum required.

One important aspect of control device is to match the demand schedule for the capital for the company and the supply of capital from different sources. Demand comes for capital from all departments and it is at this level control could be exercised to keep the demand at the bare minimum required for the objective inherent in capital investment decisions. Supply of capital, on the other hand, is a scarce commodity and the company has to incur expenditure for availing it. This necessitates for the finance manager to exercise economy in capital expenditure so that optimum benefit could be obtained with the use of scarce capital sources. This establishes the need for capital rationing to impose constraints on capital expenditure under prevailing market conditions and place self-imposed constraints to check the funds being raised from outside agencies like borrowings. Thus, the device of capital rationing is adopted to control capital expenditure.

CAPITAL RATIONING

The firm may put a limit to the maximum amount that can be invested during a given period of time, such as a year. Such a firm is then said to be resorting to capital rationing. A firm with capital rationing constraint attempts to select the combination of investment projects that will be within the specified limits of investments to be made during a given period of time and at the same time provide greatest profitability.

Capital rationing may be effected through budget ceiling. A firm may resort to capital rationing when it follows the policy of financing investment proposals only by ploughing back its retained earnings. In that case, capital expenditure in a given period cannot exceed the amount of retained earnings available for reinvestment. Management may also introduce capital rationing when a department is authorised to make investments upto a limit beyond which investment decisions will be made by higher level management.

Capital rationing may result in accepting several small investment proposals then accepting a few large investment proposals so that there may be full utilisation of budget ceiling. This may result in accepting relatively less profitable investment proposals if full utilization of budget is a primary consideration. Similarly, capital rationing also means that the firm foregoes the next most profitable investment falling after the budget ceiling even though it is estimated to yield a rate of return much higher than the required rate of return. Thus, capital rationing does not lead optimum results.

CAPITAL BUDGETING PROCESS

It is a complex process which may be divided in the following phases:

I. *Identification of Potential Opportunities:* Mere identification or possible alternatives is not all that is required in any search for investment proposals. The best proposal needs to be discovered and considered. Capital expenditure proposals should come from different segments of the enterprise. Personnel working at different levels in the organisation should be encouraged to participate in the discovery of best available proposals for capital outlays within the limits of their authority, knowledge and experience. It is better if management establishes well-defined guidelines for searching investment proposals so that no useful idea remains uncommunicated and no redundant proposal pass through the processing stage.

Proposals regarding capital expenditure do not originate at the level of the controller or the budget committee. The requirements for fixed-assets expenditure are forwarded by the managers of different operating units or departments. It is, however, better if such proposals are accompanied by commercial and technical assumptions on which these are based and duly supported with details relating to the following matters;

(a) Market potential for the product and yearly sales forecasts for different years.

(b) Raw material requirements and their supply position.

(c) Technical details relating to physical facilities and flow diagrams.

(d) Financial implications.

Capital expenditure proposals may also originate at the top management level of the company. The Chief Executive may carry out survey relating to physical facilities, new market, development of new products, stage of technology and the like. Such efforts may lead to discovery of certain useful alternatives which should be screened and evaluated in the same way as originating at lower levels.

II. *Establishing the Criteria:* Economic performance like return on investment as calculated in a number of ways under different methods furnishes the most important criterion used for evaluating fixed assets investment proposals. But here also the technique to be used for evaluating economic performance should be clearly defined and communicated. There are also occasions when non-economic criteria like competition, risk, legal requirements, and social responsibilities become the over-riding considerations in evaluating different investment proposals. But it does not mean that criteria once established holds good under all circumstances and for all times to come. Relevance and reliability of criteria should be continuously reviewed.

III. *Screening and co-ordination:* At this stage, all those proposals which are conflicting and do not deserve further consideration are rejected so that only useful alternatives are analysed in detail. Economic evaluation generally plays an important role in the screening process. Along with screening, there is also the need for blending together and unifying different capital projects under the total capital expenditure programme. In this way, conflicting and duplicate proposals would be eliminated and taken together all of them contribute to the accomplishment of some higher objectives. Co-ordination will be greatly facilitated in different proposals for capital outlays are related to each other.

IV. *Evaluating Investment Proposals:* It would be useful if different proposals are properly classified and diagnosed before their evaluation. Investment proposals may be classified on the basis of the degree of risk involved or the extent to which they are postponable. In terms of reasons for the expenditure, the proposals may be classified whether they result in replacements, betterments or additions to assets. In the process, certain mutually exclusive and conflicting proposals will be eliminated. If the firm enjoys sufficient resources to finance all the remaining projects which are profitable, ranking them in order of preference is not a serious problem. But in reality, the number of proposals are generally larger than the amount of funds available with the firm, and the controller wants to recommend only the most desirable of them. As a matter of fact, some of the good proposals are also rejected even when they are profitable.

Return on investment in the underlying consideration for economic evaluation and techniques dealing with this kind of appraisal have received wide publicity in the literature covering planning and control of fixed assets expenditures. However, a number of non-economic criteria like social responsibilities and emergencies should be accorded with due consideration while appraising different investment projects. At the same time, certain appraisal technique should not be accepted blindly, simply because they are more sophisticated and are expressed numerically. The underlying assumption of different techniques should be adequately looked into and their reliability and suitability under a given situation thoroughly tested.

V. *Budgeting Capital Expenditure:* Capital budgeting refers to the process of planning the investment of funds in long-term assets of the enterprise. Its purpose is to help management control capital expenditure. With the help of capital budgeting, management is able not only to reject poor investment decisions but also to select, in order of priority the projects which are most profitable and consistent with the objectives and targets set.

Additions, replacement and betterments require additional funds to be committed to long-term assets, and are thus included in the capital budget which is typically prepared for a year. Capital budget is a snapshot of the plan and projects for the coming year for which approval is sought. Capital budget should be flexible so as to eliminate some of the projects already included but allow addition of new projects that deserve consideration. Inclusion of certain projects in the capital budget and its approval by the management does not mean that actual expenditure has been authorised. Rather, it offers an opportunity to look at each project even from the view point of the total organisation. There is also the need of reconcile capital budget with other budgeting activities of the enterprise for example, cash revenue and expense budgets.

VI. *Controlling Projects in Process:* Another important aspect of planning and control of capital outlays is to devise a procedure to exercise control over projects while in process. Controlling of projects in process generally falls within the purview of the financial manager. He is concerned with laying down the procedure to ensure that completion satisfies the norms with respect to cost, time and purpose of expenditure. Variations from approved plans together with reasons should promptly be reported to responsible authorities for deviations. The observations and up-to-date progress report provide sufficient information to the management about the exact stage and status of all major projects. “Programme Evaluation and Review Technique” (PERT) and “Critical Path Scheduling” (CPS) are the newly developed and sophisticated techniques often used by large undertakings to plan and control the firm and cost of construction.

VII. *Follow-up and Performance Report:* The project manager or the manager originating the investment proposal, is responsible for submitting its completion report on the basis of which management normally proceeds to carry out the post completion audit. Follow up implies comparing and reporting actual results with the projected result of investment proposal so as to evaluate the performance and outcome in proper perspective. It is required, however, that procedures and format of follow-up should be clearly defined and communicated. Frequency and duration of audit should also be clearly indicated. Audit personnel should also be provided with broad guidelines as to the extent of economic and non-economic evaluation they are

expected to carry out.

A project below a certain size may be audited locally by the staff of the departmental manager. But projects involving a number of departments or above a certain size should be audited by a certain group. The latter approach claims uniformity, efficiency and detailed review of the project as its main advantages. The post-completion audit helps managemnt in a number of ways:

(a) to validate the existing capital expenditure, planning and control procedures and methods;

(b) to evaluate results;

(c) to highlight reasons for projects failure; and

(d) to judge soundness of proposals originating at different levels in the organisaiton.

INVESTMENT CRITERIA

A sound and systematic investment criteria is absolutely necessary to appraise the economic worth of an investment proposal. It is because of the fact that huge sums of scarce financial and other resources are to be sunk almost irrevocably within a limited span of time for which returns and rewards are uncertain and expected to accrue over a long period of time in the future. A sound investment criteria at least should provide the following:

1. a means of distinguishing between acceptable and non-acceptable projects;
2. ranking of projects in order of their desirability;
3. choice among several alternatives;
4. a criteria which is applicable to any conceivable investment project independent of others;
5. recognising the fact that the bigger benefits are preferable to smaller one and early benefits are preferable to later benefits;
6. helping to choose among mutually exclusive projects, one which maximises the shareholders wealth.

A wide variety of techniques are used for evaluating investment proposals. The most commonly used techniques are as follows:

— The Payback Method

— The Average Rate of Return Method

— Discount Cash Flow Method

(A) Net Present Value Method (NPV)

(B) Internal Rate of Return Method (IRR)

(C) Profitability Index (PI) or Benefit Cost Ratio (BC).

Every method is designated with some purpose in view and as such different methods are not equally useful to every firm and under all circumstances. However, proper understanding of these techniques will help the management to determine the most suitable technique to be used and thus make better investment decisions

keeping in view the business situation, particular requirements of the firm and nature of investment proposals.

The Payback Method

This technique estimates the time required by the project to recover, through cash inflows, the firms initial outlay. Beginning with the project with the shortest payout period, different projects are arranged in order of time required to recapture their respective estimated initial outlays. The payback period for each investment proposal is compared with the maximum period acceptable to management and proposals are then ranked and selected in order of those having minimum payout period.

While estimating net cash inflows for each investment proposal, the following considerations should be borne in mind:

(i) Cash inflows should be estimated on incremental basis so that only the difference between cash inflows of the firm with and without the proposed investment project is considered.

(ii) Cash inflows for a project should be estimated on an after-tax basis.

(iii) Since non-cash expenses like depreciation do not involve any cash outflows, estimated cash inflows form a project should be adjusted for such items.

Let us consider an example. Say, a project requires Rs. 25,000 as initial investment, and it will generate an annual cash inflow of Rs. 5,000 for ten years then pay back period will be five years, calculated as follows:

$$\text{Pay back period} = \frac{\text{Initial Investment}}{\text{Annual cash inflows}}$$

$$= \frac{\text{Rs. } 25{,}000}{\text{Rs. } 5{,}000} = 5 \text{ years}$$

The annual cash inflow is calculated by taking into account the amount of net income on account of the asset (or project) before depreciation but after taxation.

Sometimes there are projects where the cash inflows are not uniform. In such a case cumulative cash inflows will be calculated and by interpolation exact payback period can be calculated. For example if the project need an initial investment of Rs. 25,000 and the annual cash inflow for five years are Rs. 6,000, Rs. 9,000, Rs. 7,000, Rs. 6,000 and Rs. 4,000 respectively. The pay back period will be calculated as follows:

Year	*Cash inflow Rs.*	*Cumulative cash-inflow Rs.*
1.	6,000	6,000
2.	9,000	15,000
3.	7,000	22,000
4.	6,000	28,000
5.	4,000	32,000

It is evident form the above table that in 3 years Rs. 22,000 has been recovered and Rs. 3,000 is left of initial investment of Rs. 25,000. It indicates that payback period is between 3 to 4 years calculated as follows:

$$\text{Pay back period} = 3 \text{ years} + \frac{3{,}000}{6{,}000}$$

$$= 3.5 \text{ years.}$$

Decision Rule:

Accept the project if the payback period calculated for it is less than the maximum set by the management. Reject the project if it is otherwise. In case of multiple projects, the project with shorter payback period will be selected. In essence, payback period shows break-even point where cash inflows are equal to cash out flows. Any inflows beyond this period are surplus inflows.

Advantages:

1. It is easy to calculate and investment proposals can be ranked quickly.
2. For a firm experiencing shortage of cash, the payback technique may be used with advantage to select investments involving minimum time to recapture the original investment.
3. The payout method permits the firm to determine the length of time required to recapture through cash flows, the capital expenditure incurred on a given project and thus helps it to determine the degree of risk involved in each investment proposal.
4. This is ideal in deciding cash investment in a foreign country with volatile political position and a long-term projection of political stability is difficult.
5. This is, likewise, more preferred in case of industries where technological obsolescence comes within short period; say electronic industries.

Disadvantages:

1. The payback method ignores the time value of money and treats all cash flows at par. Thus, projects A and B with the following cash flows are treated equally:

Years	*Cash Flows*	
	Project A *Rs.*	*Project B* *Rs.*
1.	5,000	2,000
2.	4,000	3,000
3.	3,000	4,000
4.	2,000	5,000
Investment	14,000	14,000

Although Pay Back period is 4 years for both the projects, project A is preferable since it recovers larger amount of money during the initial years.

The pay back method, therefore, ignores the fact that amount of cash received today is more important than the same amount received after say, 2 years.

2. The payback method does not consider cash flows and income that may be earned beyond the payout period.
3. Moreover, it does not take into account the salvage or residual value, if any, of the long-term asset.
4. The payback technique ignores the cost of capital as the cut-off factor affecting selection of investment proposals.

Suitability:

Payback period method may be successfully applied in the following circumstances:

(i) where the firms suffers from liquidity problem and is interested in quick recovery of fund than profitability;

(ii) high external financing cost of the project;

(iii) for projects involving very uncertain return; and

(iv) political and economic pressures.

It may, therefore, be said that payback period is defined as the measure of projects liquidity and capital recovery rather than its profitability.

The Average Accounting Rate of Return Method

This method is designated to consider the relative profitability of different capital investment proposals as the basis for ranking them – the fact neglected by the payout period technique. Since this method uses accounting rate of return, it is sometimes described as the financial statement method. Rate of return is calculated by dividing earnings by capital invested. The numerator, i.e., earnings can be interpreted in a number of ways. It might mean income after taxes and depreciation, income before taxes and depreciation, or income after taxes but before depreciation. Since both numerator and denominator carry different meanings. It is not surprising if one comes across a number of variations of the average rate of return method. However, the two common variations are:

(a) Average Rate of Return in Original Investment:

$$= \frac{\text{Net earnings after Depreciation and Taxes}}{\text{No. of years project will last}} \div \text{Original Investment}$$

(b) Average Rate of Return on Average Investment:

$$= \frac{\text{Net earnings after Depreciation and Taxes}}{\text{No. of years project will last}} \div \text{Average Investment}$$

Average investment is estimated by dividing the total of original investment and investment in the project at the end of its economic life by 2. The approach of dividing average annual after-tax earnings of the project by its original investment makes no

attempt to incorporate the fact of gradual recovery of investment over time, hence tends to undertake the average rate of return. The average investment approach on the other hand, gives best result when original investment is evenly recovered over the economic life of the project which may not always be the case.

Decision Rule:

Normally business firm determine rate of return. So accept the proposal if

ARR > Minimum rate of return (cut off rate)

and Reject the project if

ARR < Minimum rate of return (cut off rate)

In case of more than one project, where a choice has to be made, the different projects may be ranked in descending or ascending order of their rate of return. Project below the minimum rate will be dropped. In case of project yielding rate of return higher than minimum rate, it is obvious that project yielding a higher rate of return will be preferred to all.

Advantages:

(i) Earnings over the entire life of the project are considered.

(ii) This method is easy to understand, simple to follow. Accounting concept of income after taxes is known to every student of accountancy.

Disadvantages:

(i) Like the payback technique, the average return on investment method also ignore the time value of funds. Consideration to distribution of earnings over time is important. It is to be accepted that current income is more valuable than income received at a later date.

(ii) The method ignores the shrinkage of original investment through the process of charging depreciation allowances against earnings. Even the assumption of regular recovery of capital over time as implied in average investment approach is not well founded.

(iii) The average rate of return on original investment approach cannot be applied to a situation where part of the investment is to be made after the beginning of the project.

Suitability:

If the project life is not long, then the method can be used to have a rough assessment of the internal rate of return. The present method is generally used as supplementary tool only.

Comparison between Average Rate of Return and Payback Method:

The average rate of return method and its comparison with payback method may be illustrated as follows:

Suppose there are two investment proposals A and B each with capital investment of Rs. 20,000 and depreciable life of 4 years. Assume that following are the estimated profit and cash inflows when annual straight line depreciation charged

is Rs. 5,000.

Period	*Project A*		*Project B*	
	Book Profits *Rs.*	*Net Cash Inflows* *Rs.*	*Book Profits* *Rs.*	*Net Cash Inflows* *Rs.*
1.	4,000	9,000	1,000	6,000
2.	3,000	8,000	2,000	7,000
3.	2,000	7,000	3,000	8,000
4.	1,000	6,000	4,000	9,000
Total	10,000	30,000	10,000	30,000
Average rate of return on original investment	12.5%		12.5%	

If evaluated in terms of average rate of return method, the two projects are equally favourable. However, project A is more favourable than project B since it provides larger cash inflows in the initial period (i.e. Quicker Payback).

Discounted Cash Flow Method

The traditional techniques like the Payback period or Accounting rate of return takes no account of the time value of the money. But money received today is much more valuable than the some money received later. Present inflationary conditions magnify the difference. This is the principal fact that modern analysis technique like Discounted Cash flow have incorporated to improve on the past procedures. Under this method, the cash flow discounted at the projects discount rate to the present time, is a present value. Analysis concentrate on the incremental cash flow of a project. Discounted cash flow method involves following steps:

1. Computation of cash flows i.e. both inflows and out flows (preferably after tax) over the life of the project.
2. Applying the discount factor to the cash flows.
3. Totalling discounted cash-inflows and comparing it with discounted cash outflows.

Broadly, there are three discounted cash flow methods for evaluating capital investment proposals i.e.

A. Net Present Value Method

B. Internal Rate of Return Method

C. Profitability Index or Benefit Cost (B/C) Ratio Method.

A. Net Present Value Method

The net present value method is understood to be the best available method for evaluating the capital investment proposals. Under this method, the cash outflows and inflows associated with each project are ascertained first. Cash inflows are

worked out by adding depreciation to profit after tax arising to each project*. Since the cash outflows and inflows arise at different point of time and cannot be compared, so both are reduced to the present values at the rate of return acceptable to the management. The rate of return is either cost of capital of the firm or the opportunity cost of capital to be invested in the project. The assumption under this method remain that cash inflows are reinvested at the same discount rate.

In essence, Net Present Value is the difference between the sum total of present values of all the future cash inflows and outflows:

Algebrically:

$$NPV = \frac{R_1}{(1+K)^1} + \frac{R_2}{(1+K)^2} + \ldots + \frac{R_n}{(1+k)^n} + \frac{W_n}{(1+k)^n} + \frac{S_n}{(1+k)^n} - C$$

$$NPV = \sum_{t=1}^{N} \frac{R_t}{(1+k)^t} + \frac{S_n + W_n}{(1+k)^n} - C$$

If cash outflow is also expected to occur at some time other than initial investment (non-conventional cash flows) then formula would be

$$NPV = \left[\frac{R_1}{(1+k)^1} + \ldots + \frac{R_n}{(1+k)^n} + \frac{S_n}{(1+k)^n} + \frac{W_n}{(1+k)^n} \right] - \left[C_0 + \frac{C_1}{(1+k)^t} + \ldots + \frac{C_n}{(1+k)^n} \right]$$

$$NPV = \sum_{t=1}^{N} \frac{R_t}{(1+k)^t} + \frac{S_n + W_n}{(1+k)^n} - \sum_{t=1}^{N} \frac{C_t}{(1+k)^t} - C_0$$

NPV = Net Present Value

R = Cash inflow at different time period

K = Rate of discount or cost capital

t = 1 = first period in the sum

N = The last period in the sum

S_n = Salvage value

W_n = Working capital

C = Cost of investment plus Working Capital

Decision Rule:

If NPV > Zero : Accept the project

NPV < Zero : Reject the project

NPV = Zero : Firm is indifferent to accept or reject the project.

Advantages:

* Cash outflows represent the investment and commitments of cash in the project at various point of time.

(i) Income over the entire life of the project is considered.

(ii) The method takes into account time value of money.

(iii) The method provides clear acceptance so interpretation is easy.

(iv) When projects involves different amount of investment, the method may not provide satisfactory answers.

Disadvantages:

(i) As compared with the first two methods, the present value approach is certainly more difficult to understand and apply.

(ii) An additional difficulty in this approach is encountered when projects with unequal lives are to be evaluated.

(iii) It is difficult to determine the firm cost of capital or appropriate rate of discount.

Suitability:

Net present value is the most suitable method in those circumstances where availability of resources is not a constraint. The management authority can accept all those projects having Net Present Value either Zero or positive. This method shall maximise shareholders wealth and market value of share which is the sole aim of any business enterprise.

B. Internal Rate of Return (IRR)

The internal rate of return refers to the rate which equates the present value of cash inflows and present value of cash outflows. In other words, it is the rate at which net present value of the investment is zero. If the Net Present Value is positive, a higher discount rate may be used to bring it down to equalise the discount cash inflows and vice versa. That is why Internal Rate of Return is defined as the break even financing rate for the project.

The necessary steps to be followed in applying this method are:

(i) Project the net cash benefit of an investment during the whole of its economic life. Future cash flows should be estimated after taxes, but before depreciation and interest.

(ii) Determine the rate of discount that equates the present value of its future cash benefits to its present investment. The rate of discount is determined by the method of trial and error.

(iii) Compare the rate of discount as determined above with the cost of capital or any other cut-off rate, and select proposals with the highest rate of return as long as the rate is higher than the cost of capital or cut off rate.

Assuming conventional cash flows, mathematically the Internal Rate of Return is represented by that rate of, such that

$$C = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \ldots + \frac{CF_n}{(1+r)^n} + \frac{S_n}{(1+r)^n} + \frac{W_n}{(1+r)^n}$$

$$C = \sum_{t=1}^{n} \frac{CF_t}{(1+r)^t} + \frac{S_n}{(1+r)^n} + \frac{W_n}{(1+r)^n}$$

$$C = \sum_{t=1}^{n} \frac{CF_t}{(1+r)^t} + \frac{S_n + W_n}{(1+r)^n}$$

$$O = \sum_{t=1}^{n} \frac{CF_t}{(1+r)^t} + \frac{S_n + W_n}{(1+r)^n} - C$$

For non-conventional cash flows the equation would be

$$C = \sum_{t=1}^{n} \frac{CF_t}{(1+r)^t} + \frac{S_n + W_n}{(1+r)^n} - \sum_{t=1}^{n} \frac{C_1}{(1+k)^t}$$

r	=	the internal rate of return
CF_t	=	cash inflows at different time periods
S_n	=	salvage value
W_n	=	working capital adjustment
C	=	cash outlays at different time periods
k	=	cut off rate, the rate below which a project will not be accepted, which is normally the cost of capital

Decision Rule:

If Internal Rate of Return i.e.

r > k (cut off rate) Accept the investment proposal

r < k Reject the investment proposal

r = k Indifferent

In case of several investment proposals the projects may be ranked according to their Internal Rate of Return, the project with highest Internal Rate of Return, is ranked first and so on. Acceptance of more than one project may follow in order of priority.

Computation of Internal Rate of Return:

The computation of Internal Rate of Return is relatively complicated and difficult compared to Net Present Value. One has to follow trial and error exercise to ascertain Internal Rate of Return (r) which equates the cash inflows and outflows of the investment proposals. Under net present value, k is known, but under this method it is worked out.

Initially the Internal rate of return (r) may give

NPV > 0 r > k (higher rate will be tried)

NPV = 0 r = k

NPV < 0 r < k (lower rate will be tried)

To calculate the exact figure, we use the method of interpolation i.e.

$$IRR(r) = r_L + \left[\frac{PV_{CFAT} - PV_C}{DPV}\right] \times Dr$$

or

$$= r_H - \left[\frac{PV_C - PV_{CFAT}}{DPV}\right] \times Dr$$

r_L = The lower rate of discount.

PV_{CFAT} = Calculated present value of cash inflow.

PV_C = Present value of cash outlay.

ΔPV = Difference in calculated present value.

Δr = Difference in rate of interest.

r_H = The higher rate of discount.

Let us illustrate the method in two different situations:

(i) Uniform cash inflows

(ii) Non-uniform cash inflows.

Let us consider a project where initial investment is Rs. 18,000. The annual cash flow will be Rs. 5,600 for a period of 5 years. The internal rate of return can be computed by computing the factor as under

$$F = I/C$$

where,

F = Factor to be located

I = Initial investment

C = Average cash inflow

$$= \frac{18,000}{5600} = 3.214$$

After the factor is calculated as above, it is located in the different Annuity table on the line representing the number of years corresponding to the economic life of the project.

In above example, according to annuity table, factor closest to 3.21 for five years are 3.2 (16% discount rate) and 3.199 (17% discount rate). Net Present Value for both the rates are as follows:

	Total PV at 16%	*Total PV at 17%*

	rate of Discount	*rate of Discount*
	Rs. 5600 × 3.274 = Rs. 18334.40	Rs. 5600 × 3.199 = Rs. 17914.40
Less initial outlay	= Rs. 18000.00	= Rs. 18000.00
NPV	Rs. +334.40	Rs. – 85.60

Since Net Present Value is greater than zero i.e. Rs. 334.40 at 16% rate of discount, we need a higher rate of discount to equalise Net Present Value with total outlay. On other hand, Net Present Value is less than zero i.e. Rs. –85.60 at 17% rate of discount we need lower rate. So the above exercise shows that internal Rate of Return lies between 16% and 17%. To find out the exact figure, the interpolation can be used i.e.

$$IRR = r_L + \frac{PV_{CFAT} - PV_c}{\Delta PV} \times Dr$$

r_L = 16

PV_{CFAT} = +18334.40

PV_C = 18000

ΔPV = 420

Δr = 1

$$IRR = 16 + \frac{334}{420} \times 1 = 16 + .8$$

= 16.8

Alternatively it can be worked out by using higher rate of return.

Under uneven cash inflow, the calculation of internal rate of return is a tedious job. The process of Internal Rate of Return can be understood with the help of following illustration i.e. Company A is proposed to instal a new machine costing Rs. 16,200 having an economic life of 3 years. The annual Cash inflow shall be Rs. 8,000, 7,000 and 6,000 in the respective 3 years. Calculate Internal Rate of Return.

To compute internal rate of return, the trial and error method has been followed.

$$\text{Average cash inflow} = \frac{\text{Rs. } 8{,}000 + 7{,}000 + 6{,}000}{3}$$

= Rs. 7,000

$$F = \frac{I}{C} = \frac{16{,}200}{7{,}000} = 2.314$$

According to annuity table factor closest to 2.314 for 3 years are 2.322 (14%) and 2.246 (16%). Broad results are given in the following table:

Year	*Cash in flow Rs.*	*Rate of Discount (14%)*	*PV Rs.*	*Rate of Discount (16%)*	*PV Rs.*	*Rate of Discount (15%)*	*PV Rs.*
1.	8,000	0.877	7,016	.862	6.896.08	.870	6,960
2.	7,000	0.769	5,383	.743	5,201.00	.756	5,292
3.	6,000	0.675	4,050	.641	3,846.00	.658	3,948
			16,449		15,943		16,200
Less cash outlay			16,200		16,200		16,200
NPV			+249		–257		0

From the above table, it is quite clear that net present value is zero with 15% rate of discount, so it is the true internal rate of return.

Advantages:

(i) The discounted cash flow (IRR) takes into account the time value of money.

(ii) It considers cash benefits, i.e. profitability of the project for the whole of its economic life.

(iii) The rate of discount at which the present value of cash flows is equated to capital outlay on a project is shown as a percentage figure. Evidently, this method provides for uniform ranking and quick comparison of relative efficiency of different projects.

(iv) This method is considered to be a sophisticated and more reliable technique of evaluating capital investment proposals.

(v) The objective of maximising of owner's welfare is met.

Disadvantages:

(i) The discounted cash flow is the most difficult of all the methods of project evaluation discussed above.

(ii) An important assumption implied in this method is that incomes are reinvested (compounding) over the project's economic life at the rate earned by the investment. This assumption is correct and justified only when the internal rate of return is very close to the average rate of return earned by the company on its total investments. To the extent internal rate of return departs from the typical rate of earnings of the company, results of this method, will be misleading. Thus, when the internal rate of return on a project is computed to be 30% while company's average rate of return is 15%, the assumption of earning income on income at the rate of 30% is highly unrealistic. From this point of view the assumption of the net present value method that incomes are reinvested at the rate of discount (cost of capital) seems to be more reasonable.

(iii) The rate may be negative or one or may be multiple rate as per calculations. When a project has a sequence of changes in sign of cash flow, there may be more than one internal rate of return.

C. Profitability Index (PI)

Profitability Index is defined as the rate of present value of the future cash benefits at the required rate of return to the initial cash outflow of the investment. Symbolically, Profitability Index is expressed as

$$PI = \frac{\sum_{t=1}^{n} \frac{A_t}{(1+k)^t}}{C}$$

A_t = Present value of cash inflows.
K = rate of return
C = initial cash outlay
t = time period.

The above ratio is an indicator of the profitability of the project. If the ratio is equal to or greater than one, it shows that project has an expected yield equal to or greater than the discount rate. If the index is less than one, it indicates that project has an expected yield less than the discount rate.

Decision Rule:

If PI > 1 Accept the Project, PI = 1 indifferent, PI < 1 Reject the project.

In the event of more than one alternatives, projects may be ranked according to their ratio – the project with the highest ratio should be ranked first and *vice versa*.

Advantages:

(1) Profitability Index method gives due consideration to the time value of money.

(2) Profitability Index method satisfies almost all the requirements of a sound investment criterion.

(3) This method can be successfully employed to rank projects of varying cash and benefits in order of their profitability.

Disadvantages:

(1) This method is more difficult to understand and compute.

(2) This method does not take into account the size of investment.

(3) When cash outflows occur beyond the cement period Profitability Index Ratio criterion is unsuitable as a selection criterion.

COMPARISON OF NET PRESENT VALUE AND INTERNAL RATE OF RETURN APPROACH

The net present value and internal rate of return, two widely used methods are the species of the same genus i.e. Discount cash flow method, yet they are different from each other on various points.

The broad points of difference between the two are as follows:

Points of Differences

1. *Interest Rate:* Under the net present value method rate of interest is assumed as the known factor whereas it is unknown in case of internal rate of return method.

2. *Reinvestment Axiom:* Under both the methods, it is assumed that cash inflows can be re-invested at the discount rate in the new projects. However, reinvestment of funds, at cut-off rate is more possible than internal rate of return. So net present value method is more reliable than internal rate of return method for ranking two or more projects.

3. *Objective:* The net present value method took to ascertain the amount which can be invested in a project so that its expected yields will exactly match to repay this amount with interest at the market rate. On the other hand, internal rate of return method attempts to find out the rate of interest which is maximum to repay the invested fund out of the cash inflows.

Points of Similarities

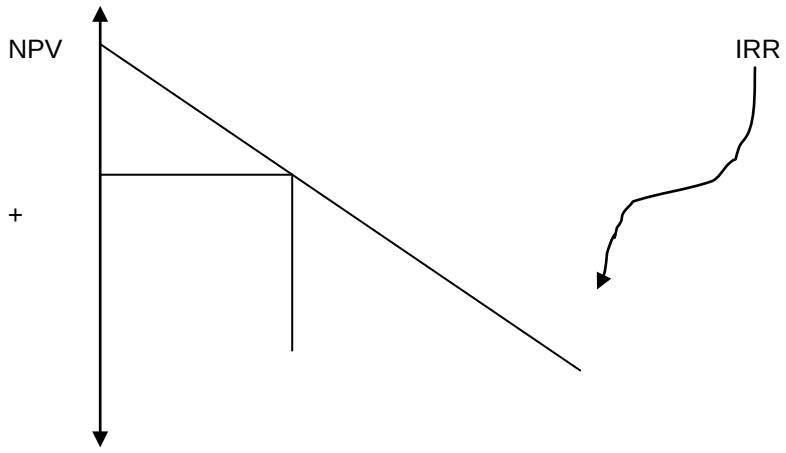
IRR will give the same results as NPV in terms of acceptance or rejection of investment proposals in the following circumstances:

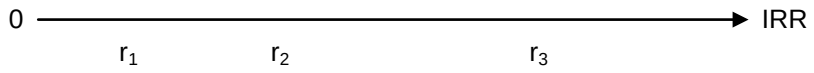
1. Projects having conventional cash flows i.e. a situation where initial investment (outlay or cash outflow) is followed by series of cash inflows.

2. Independent Investment Proposals: Such proposal, the acceptance of which does not exclude the acceptance of others.

The reasons for the consistent results under net present value and internal rate of return method in above two cases are simple and logical. According to the net present value method the rule is that an investment proposal will be accepted if it has positive net present value (NPV > 0) which is possible only when actual rate of ret urn is more than cut off rate. It is supported by internal rate of return method. In those case internal rate of return is more than required rate of return (r > k). When the net present value is = 0 or internal rate of return r = k the project may be accepted or rejected. So the proposal which have positive net present value will also have a higher than required rate of return.

The following diagram depict NPV as $\gtrless 0$ corresponding to IRR (r) $\gtrless k$





If NPV is positive, it indicates r > k (cost of capital) and *vice versa*.

Points of conflict between net present value and internal rate of return cannot avoid certain situations where the results given by both the methods are in conflict to each other. This is so in the case of mutually exclusive investment proposals which result in non-acceptance of others. There are two types of mutually exclusive proposals:

1. *Technical:* It refers to proposals having different profitabilities and selection of that which is most profitable.

2. *Financial:* It is the exclusiveness due to limited fund. A firm will select only those proposal which is most profitable rather than accepting all proposals yielding more than minimum acceptable level. The conflict of results under two methods may be due to following reasons:

1. Size-disparity problem
2. Time-disparity problem
3. Unequal expected lives.

Comparative Study of results under alternative Discounted Cash Flow Method

We can summarise the relationship among net present value, internal rate of return and profitability index methods regarding decision rules as follows:

Proposal	*Net Present Value*	*Internal rate of return (r)*	*Profitable Index (PI)*
Accept	(1) Positive	> k	> 1
Indifferent	(2) Zero	= k	= 1
Reject	(3) Negative	< k	< 1

Given the above relationship, any discounted cash flow criterion may be employed where investment proposals are independent and there is no capital budget constraints. In such a situation, the set of projects selected by all the criterion would be the same though there may be differences in internal ranking. In the real world, however, firms are faced with mutually exclusive proposals and limited availability of funds. On account of the imperfections, all the projects with (NPV) > 0, (IRR) > k, and (PI > 1) can be accepted.

CHOICE OF METHODS

The business enterprise is confronted with large number of investment criteria for selection of investment proposals. It should like to choose the best among all. Specially, it is the choice between Net Present Value and Internal Rate of Return Method because these are the two methods which are widely used by the firms. If a choice must be made, the Net Present Value Method generally is considered to be superior theoretically because:

(i) It is simple to operate as compared to internal rate of return method;

(ii) It does not suffer from the limitations of multiple rates;

(iii) The reinvestment assumption of the Net Present Value Method is more realistic than internal rate of return method.

On the other hand, some scholars have advocated for internal rate of return method on the following grounds:

1. It is easier to visualise and to interpret as compared to Net Present Value Method.

2. It suggests the maximum rate of return and even in the absence of cost of capital, it gives fairly good idea of the projects profitability. On the other hand, Net Present Value Method may yield incorrect results if the firm's cost of capital is not calculated with accuracy.

3. The internal rate of return method is preferable over Net Present Value Method in the evaluation of risky projects.

Limits on Investment:

The evaluation techniques discussed above help management to appraise and rank different capital investment proposals in terms of their economic benefits. But does it mean that management will accept all projects promising some economic benefit? The most probable answer seems to be in negative. For one thing, no firm enjoys infinite capital supply at a point of time when investment decisions have to be made. Ability to generate funds internally and to raise them externally is not without limits. Next, there are also occasions when quantitative factors of economic evaluation need to be supplemented with a number of qualitative considerations like employee relations, competitive position, environmental and social responsibility and public relations. Moreover, there are some valid reasons for establishing some minimum acceptable rate of return below which management will not accept any investment proposal even if resources would remain unutilised for sometime. The rate of return below which no investment should ordinarily be accepted is known as the cut off rate or the hurdle rate. Establishing the levels of hurdle rate enables the organisation to make investment decisions and maintain consistency in the actions of different people in the organisation. Further, by indicating the hurdle rate management communicates throughout the organisation its expectation as to the minimum rate of return.

The cut off rate may be established by any of the following methods:

1. By the method of intuition;
2. By the historical rate of return;
3. By the weighted average cost of capital;
4. By the cost of funds to be used to finance a given project.

The method used to establish a hurdle rate should be carefully selected keeping in view the overall objectives of the enterprise, its environment and opportunity cost of funds required to be invested in a given project.

RISK EVALUATION AND SENSITIVITY ANALYSIS

Risk Evaluation

Risk analysis gives management better information about the possible outcomes that may occur so that management can use their judgement and experience to accept an investment or reject it. Since risk analysis is costly, it should be used relatively in costly and important projects.

Risk and uncertainty are quite inherent in capital budgeting decisions. This is so because investment decisions and capital budgeting are actions of today which bear fruits in future which is unforeseen. Future is uncertain and involve risk. The projection of probability of cash inflows made today are not certain to be achieved in the course of future. Seasonal fluctuations and business cycles both deliver heavy impact upon the cash inflows and outflows projected for different project proposals. The cost of capital which offers cut-off rates may also be inflated or deflated under business cycle conditions. Inflation and deflation are bound to effect the investment decision in future period rendering the degree of uncertainty more severe and enhancing the scope of risk. Technological developments are other factors that enhance the degree of risk and uncertainty by rendering the plants or equipments obsolete and the product out of date. Tie up in the procurement in quantity and/or the marketing of products may at times fail and frustrate a business unless possible alternative strategies are kept in view. The case of Kudermukh Iron Ores Ltd. which had a firm tie-up with the Govt. of Iran is an example. All these circumstances combined together affect capital budgeting decisions.

It is therefore necessary to allow discounting factor to cover risk. One way to compare risk in alternative proposals is the use of Standard Deviation. Lower standard deviation indicates lower risk. However, wherever returns are expressed in revenue terms the co-efficient of variation gives better measurement for risk evaluation. Both Standard Deviation and co-efficient of variation can be arrived at by using following formula:

$$\text{Standard Deviation} = \sqrt{\frac{\Sigma f(x - \bar{x})^2}{\Sigma f}}$$

$$\text{Co-efficient of Variation} = \frac{\text{Standard Deviation}}{\text{Mean}} \times 100$$

Both standard deviation and co-efficient of variation require to be adjusted with

the discount rate with which the project investments are evaluated. According to the degree of standard deviation or co-efficient of variation, the investment proposals shall be termed as highly risky or less risky investments. Less risky projects shall be afforded highest priority in investment or capital budgeting decisions.

Risk adjusted discount rates are used in investment and budgeting decisions to cover time value of money and the risk. According to new thinking, discounting and risk considerations are treated separately. The method which is used for this purpose is known as Certainty Equivalent Method (CE). The riskness of the project is handled by adjusting the expected cash flow and not the discount rate. The certainty equivalent in a year represent the cash-flows that investors would be satisfied to receive for certain period i.e. certainty equivalent converts the projects expected cash flow for this year into a certain amount investors consider equivalent to the project calculated cash flow for the year. Net Present Value of these cash flows is calculated with risk free interest rate as the discounting factor. Both the methods i.e. Risk adjusted discount rate and certainty equivalent methods are good for Risk Evaluation. The essential difference in the two methods is that the risk adjusted discount rate method account for risk by adjusting the discount rate in the denominator of the expected net present value formula, while the certainty equivalent method accounts for risk by adjusting the expected cash flow in the numerator of the expected net present value formula.

For evaluating risk, *payback method* provide crude account for risk differences by altering payback requirements i.e. instead of four year payback requirements, the firm may require three year payback for a proposed new product line that the firm feels is riskier investment. Shortening payback is similar to raising the discount rate.

Decision tree technique is another method which many corporate units use to evaluate risky proposals. A decision tree shows the sequential outcome of a risky decision. A capital budgeting decision tree shows the cash flows and net present value of the project under differing possible circumstances.

For example, a company 'X' has an opportunity to invest in equivalent schemes that will last for two years and will cost Rs. 1,00,000 initially and has the following estimated possible cash flow after tax (CFAT)

Year

One: 30% chance that (CFAT) will be Rs. 40,000/-
40% chance that (CFAT) will be Rs. 60,000/-
30% chance that (CFAT) will be Rs. 80,000

Two: CFAT are conditional to those of year one.

The estimated conditional CFAT's and probabilities are as under:

If CFAT = 40,000		If CFAT = 60,000		If CFAT = 80,000	
CFAT	*Probability*	*CFAT*	*Probability*	*CFAT*	*Probability*
20,000	0.2	70,000	0.3	80,000	0.1
50,000	0.6	80,000	0.4	1,00,000	0.8

80,000	0.2	90,000	0.3	1,20,000	0.1

From the above data we may plan the decision as under:

TIME:		*YEAR*			*Decision Tree*			*Expected NPV a × b*
	Prob-ability	*0 Year 1*	*1 Prob-ability*	*2 Year 2*	*CFAT*	*(a) NPV at 15% Rs.*	*(b) Joint Prob-ability*	*Rs.*
			0.2	20,000	49,920	– 50,080	0.06	– 3,005
	.3	40,000	0.6	50,000	72,600	– 27,400	0.18	– 4,932
			0.2	80,000	95,280	– 4,720	0.06	– 283
Cash outlay			0.3	70,000	1,05,120	5,120	0.12	614
1,00,000	.4	60,000	0.4	80,000	1,12,680	12,680	0.16	2,029
			0.3	90,000	1,20,240	20,240	0.12	2,428
			0.1	80,000	1,30,080	30,080	0.03	902
	.3	80,000	0.8	1,00,000	1,45,200	45,200	0.24	10,848
			0.1	1,20,000	1,60,320	60,320	0.03	1,810
							1.00	10,411

Note: Present value of cash inflows are worked out on the basis of three decimal points.

The above decision tree shows possible CFAT outcomes in each year and the probabilities associated with these outcomes. The decision tree shows nine distinct paths, or combinations of outcomes that the project would take if accepted. One possibility is that one year's CFAT is Rs. 40,000 and the second year's CFAT is Rs. 20,000. This is worst combination of outcomes that could occur. The company X would have paid Rs. 1,00,000 for a CFAT stream of Rs. 40,000 and Rs. 20,000 in years one and two respectively. If the company X determined that an appropriate discount rate for this project is 15%, the NPV of the worst path is –Rs. 50,080. By looking at the decision tree figure, the best path for the firm is $CFAT_1$ = Rs. 80,000 and $CFAT_2$ = Rs. 1,20,000. The NPV at 15% of that path is Rs. 60,320. The decision tree shows NPV of each of the nine possible CFAT paths in the tree at discount rate of 15%. The expected net present value $\overline{NAP}$ of the problem depicted by the decision tree is the weighted average of net present values of all the paths:

$$\overline{NPV} = \sum_{J=0}^{N} (Prob_j)\,(NPV_j)$$

Where NPV_j = net present value of the jth path

$Prob_j$ = the probability of the jth path occurring

N = number of possible paths

The probability of a path occurring is called its joint probability. It is equal to the product of the probabilities along with the path.

In the decision tree calculations the last column shows the calculation of expected $\overline{NPV}$ which is the weighted average of individual path NPVs where the weights are the path probabilities. $\overline{NPV}$ for example is Rs. 10,411 and project should be accepted.

For short period projects the above technique is good but for long period projects it becomes more complicated with the multiplication of paths, for the number of possibilities. In the above case, there had been 9 paths for 2 years, but for the 3 years these could be $(3 \times 3 \times 3) = 27$ paths and like wise the increase of path complicates the diagram and calculations.

Sensitivity Analysis

Capital budgeting remain unrealistic in the circumstances when despite a set of reliable estimates of return, outlays, discount rate and project life time uncertainty surrounds some of all of these figures. Sensitivity analysis is helpful in such circumstances.

It is a computer based device. Sensitivity analysis has been evolved to treat risk and uncertainty in capital budgeting decisions. The analysis is comprised of the following steps: (1) Identification of variables; (2) Evaluation of possibilities for these variables; (3) Selection and combination of variables to calculate NPV or rate of return of the project; (4) substituting different values for each variables in turn while holding all other constant to discover the effect on the rate of return; (5) Comparison of original rate of return with this adjusted rate to indicate the degree of sensitivity of the rate to change in variables; (6) subjective evaluation of the risk involved in the project.

The purpose of sensitivity analysis is to determine how varying assumptions will effect the measures of investment worth. Ordinarily, the assumptions are varied one at a time i.e. cash flows may be held constant with rate of discount used to vary; or discount rate is assumed constant and cash flow may vary with assumed outlay; or the level of initial outlay may change with discount rate and annual proceeds remaining the same.

In the context of NPV, sensitivity analysis provides information regarding the sensitivity of the calculated NPV to possible estimation errors in expected cash flows, the required rate of return and project life. Suppose, a proposed project has an initial estimated cost (after tax) of Rs. 75,000 and an estimated expected cash flow (after tax) stream of Rs. 20,000 per year for seven years. The estimated 'k' is 15%.

$\overline{NPV}$ = – Rs. 75,000 + (Rs. 20,000) (Annuity at 15% for 7 years)
= – 75,000 + (20,000) (4.160)
= Rs. 8,200

The project should be accepted.

The project would show different results with expected annual cash flow (after tax) being Rs. 17,000 per year instead of Rs. 20,000 as stated above, then:

$\overline{NPV}$ = – 75,000 + (17,000) (4.160)

= – Rs. 4,280 (negative value)

This giving an indication to give a second thought to the project acceptance.

Samuel and Wilkies in "Management of Company Finance" opine that sensitivity analysis does not make any decisions of itself. It is a practicable procedure that presents derived information in particularly revealing way. The method is usually applied to each possible project as it arises. It could be used for the total company activities – existing investments plus new proposals, but such a grand exercise would detract from the essential simplicity of the method and not be warranted for all the largest projects. When all the sensitivity data have been assembled a judgement has then to be made as to whether the picture presented is acceptable or not. In this decision the management may subjectively estimate the likelihood of each scenario, or they may play safe and consider only the worst possibilities. It is unlikely that the market as a whole would have access to the same volume and quality of information as that given by the sensitivity analysis – and this would have to be done by intelligent guess too.

A sensitivity analysis is particularly helpful in large projects that would have a substantial impact on the company's operations.

SIMULATION FOR RISK EVALUATION

Simulation is known as simulated sampling or more fully Monte-Carlo simulation is as much an art as a technique. It has been described as "what to do when all else fails". Some investment projects may depend on so many stochastic variables that analytical results are unobtainable. In simulation a mathematical model is constructed and artificial data is fed. The desired parameters of the system are then determined from the output of the mode. Simulation like sensitivity analysis is not an optimising technique. It merely provides a convenient representation of reality in some more advanced work than can be used to improve NPV by adjusting certain variables under the decision makers control (like advertising expenditure). There are two important things in simulation viz. the construction of the model and the judgement of changes to be made to controllable variables. This method involves use of computers to determine the distribution of the internal rate of return or net present value. Suppose the company has estimated project probability distribution for initial investment, annual sales and operating costs, life and salvage value, the simulation proceeds as follows:

1. Randomly select a value of each variable from its distribution;
2. Take these values and other given information (tax rates, type of depreciation used and so on) and calculate the projects IRR or NPV;
3. Repeat steps one and two many times; and
4. Prepare the IRR or NPV distribution.

This is the result of the simulation. From the information used to prepare the distribution the analyst can determine the standard deviation of the projects IRR which is used in determining the project risk.

Simulation is an expensive device and suits only to those projects involving heavy capital expenditure. Simulation is advantageous to corporate project proposal

selections for the reason that it shows all possible outcomes associated with the project including identification of possible extremely bad outcomes which might happen if the project is accepted.

LINEAR PROGRAMMING AND CAPITAL BUDGETING DECISIONS

Linear programming is a mathematical technique concerned with optimal solution to problems of business world. The areas of frequent use of this technique are product lines and production processes, transportation, routing, and meeting product specifications. Most profitable use of scarce resources could be planned through the technique in production lines and processes. Similarly, substantial savings can be affected by using the technique in movement of goods and planning the routes which entail minimum payments towards cost. In meeting product specifications least cost combinations could easily be sorted out through this technique. Business firms have been constantly using the technique for solving such like problems. The application of the programming technique is now being frequently tried in capital budgeting problems and investment allocation processes. The technique is useful in sorting out allocation problems as the resources are limited and cannot be used beyond a fixed quantity. Choice is to be made for allocation for best use to maximise contribution or to minimise cost.

The area of application of programming techniques in investment decision making is that of capital rationing where the approach has been fixed for seeking solution to the problem when there are more desirable investments than there are funds available for such investment and a solution of the best choice is involved. Efforts are made to find the set of investments through time that maximises the present value of future dividends. Feasible solution could be reached at for making joint investment in certain projects for yielding higher returns by taking into consideration the opportunity cost of funds.

APPLICATION OF LINEAR PROGRAMMING MODEL

Primal

Presuming that the company is to maximise the present value of the dividends of the company and that there is no adjustment of risk, the capital budgeting problem can be solved by maximising the present value of the dividends generated by the investments. Assuming further that there are no limitations set on dividend policy other than that dividends should be non-negative and the rate of interest is to be used for discounting the dividends to be default-free market rate. Subsequently, a risk adjustment would be added to or subtracted from the resulting present value of the investment and the condition for investing the funds in short-term securities will be relaxed. It is assumed that all investments are continuous and the IRRs of all investments considered are larger than the cost of new funds. To maximise the present value of the dividend we present the notation in matrix as under:

Maximise $Z = a'D$

Subject to

$$Cx + D \leq M$$
$$X, D \geq 0$$

where:

a = time-value-factors vectors (a' is a row vector)

D = dividend vector

C = matrix of cash flows (outlays are positive and inflow are negative), the rows are the cash flows of each period and the columns are the cash flows of each investment.

M = column vector of cash available from outside sources.

X = column vector indicating the number of units invested in each investment.

The above is the primal model and can be presented in summation notation as under assuming different investments and a planning horizon of T periods:

$$\text{Maximise } Z = \sum_{t=0}^{T} a_t D_t$$

Subject to

$$\sum_{J=1}^{j} C_{jt} x_j + D_t \le M_t$$

$$t = 0,\ 1\ldots\ldots\ldots T$$

$$X_j, D_t \ge 0$$

The above formula can be tested in a problem where a company has a capital budget limited to Rs. 10,000 and has following investment opportunities X_1 and X_2 in period 1 and 2 with time value of money as 0.5 and internal rate of return for opportunity X_1, as 10% and for opportunity X_2 as 14% generating cash flow as under:

	X_1	X_2
Period 1	0	11,400
Period 2	12,100	—

There is possibility that the cash flow generated in period 1 are re-employed in period 2 in another opportunity X_3. The above facts can be presented as under:

Period	*Cash flows*	*Investments*	*In Rupee*
	x_1	x_2	X_3
0	−10,000	−10,000	0
1	0	11,400	−11,400
2	12,100	0	12,540

Assuming risk free rate of interest being 5% then

$a' = (a_0,\ a_1,\ a_2)$

$= (1.05^0\ \ 1.05^{-1}\ \ 1.05^{-2})$

$D' = (D_0\ \ D_1\ \ D_2)$

$$C = \begin{bmatrix} 10{,}000 & 10{,}000 & 0 \\ 0 & -11{,}400 & +11{,}400 \\ -12{,}000 & 0 & -12{,}540 \end{bmatrix}$$

Since x_1 is equal to 1 then one unit or Rs. 10,000 is invested J = 1; and financing of Rs. 10,000 is available only at time 0, so $M' = (10{,}000 \quad 0 \quad 0)$

This leads to the primal model as under:

$$\text{Maximize } Z = a'D = (1.05^0 \quad 1.05^{-1} \quad 1.05^{-2}) \begin{vmatrix} D_0 \\ D_1 \\ D_2 \end{vmatrix}$$

Subject to

$$\begin{bmatrix} 10{,}000 & 10{,}000 & 0 \\ 0 & -11{,}400 & +11{,}400 \\ -12{,}000 & 0 & -12{,}540 \end{bmatrix} \begin{bmatrix} X_1 \\ X_2 \\ X_3 \end{bmatrix} + \begin{bmatrix} D_0 \\ D_1 \\ D_2 \end{bmatrix} \le \begin{bmatrix} 10{,}000 \\ 0 \\ 0 \end{bmatrix}$$

$$X_j, \quad D_t \ge 0$$

Completing the matrix multiplication,

$$\text{Maximize } Z = \sum_{t=0}^{2} a_t D_t = \sum_{t=0}^{2} (1.05)^{-t} D_t$$

Subject to

$$10{,}000x_1 + 10{,}000x_2 + 0x_3 + D_0 \le 10{,}000$$
$$0x_1 - 11{,}400x_2 + 11{,}400x_3 + D_1 \le 0$$
$$-12{,}100x_1 + 0x_2 - 12{,}540x_3 + D_2 \le 0$$

If—

$$x_1 = D_0 = D_1 = 0$$
$$x_2 = 1$$
$$x_3 = 1$$
$$D_2 = 12{,}540$$

the value of objective function is $Z = 1.05^{-2} \times 12{,}540$ = Rs. 11,347, with the above, the constraints are satisfied. No other solution is better.

Dual Problems

The above explanation is devoted to primal linear programming problem, a maximization case but it could be the minimization case also. Such pairs of problems with maximization and minimization problems are called dual linear programming problems.

Dual linear programming has become important because of certain reasons, according to Baumol, these reasons are viz. (1) Duality yield a number of powerful theorems which add substantially to our understanding of linear programming. (2) Duality

analysis has been very helpful in the solution of programming problems. Indeed as we shall see, it is frequently easier to find the solution of a programming problem by first solving its associated dual problem. (3) The dual problem turns out to have an extremely illuminating economic interpretations which incidentally shows that old fashioned marginal analysis is always implicitly involved in the search for an optimal solutions of a linear programming problems.

With the given problem to maximise the results as under, we can go to solve a minimisation problem covering opposite aspects of the problems. Suppose maximisation problems with given constraints is as under:

$$\text{Maximize } Z = P_1Q_1 + P_2Q_2 + \ldots\ldots\ldots + P_nQ_n$$

$$\text{Subject to } = a_{11}Q_1 + a_{12}Q_2 + \ldots\ldots\ldots + a_{1n}Q_n \leq C_1$$

$$\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$$

$$a_{m1}Q_1 + a_{m2}Q_2 + \ldots\ldots\ldots + a_{mn}Q_n \leq C_m$$

$$Q_1 \geq 0, \ldots\ldots\ldots Q_n \geq 0$$

The above is the primal problem and it has its dual as under:

$$\text{Minimize a} = C_1V_1 + C_2V_2 + \ldots\ldots\ldots + C_mV_m$$

$$\text{Subject to } = a_{11}V_1 + a_{21}V_2 + \ldots\ldots\ldots + a_{m1}v_m \; {}^{3} \; p_1$$

$$\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$$

$$a_{1n}v_1 + a_{2n}v_2 + \ldots\ldots\ldots + a_{mn}v_m \geq p_n$$

$$V_1 \geq 0, V_2 \geq 0 \ldots\ldots\ldots V_m \geq 0$$

From the above, one thing is obviously clear that we have changed the word 'maximize' to 'minimize' and substituted symbol $\geq$ to $\leq$. For unit profits P_1, $P_2 \ldots P_n$ we took the capacity figure C_1, $C_2 \ldots C_n$. Original variables Q_1, $Q_2, \ldots Q_n$ has been substituted by a new set of variables V_1, $V_2 \ldots V_m$. The order in which the constant appears in inequalities has been reversed and instead of reading them across we would read now down. Where a_{12} was formerly the second constant in the first inequality, would now make it first constant in the second inequality and so on. These steps of converting a primal into dual are summarized below by Baumol:

"(1) If the primal problem involves maximization, the dual involves minimization, and *vice versa*;

(2) If the primal involves > signs, the dual involves < signs and *vice versa*;

(3) The profit constraints P_j in the primal model replace the capacity constraints C_j, and *vice versa*;

(4) In the constraint inequalities the co-efficients which were found by going left to right are positioned in the dual from top to bottom, and *vice versa*;

(5) A new set of variables appears in dual;

(6) Neglecting the number of non-negativity conditions, if there are n variables and m inequalities in the primal model, in the dual there will be m variables and n inequalities."

The dual of the problem is the original linear programming problem itself. So, the problem which was primal could be dual and *vice versa*.

To illustrate the above discussion, we take a simplified illustration in an advertising budgeting problem which aims to minimize the cost of reaching 30 million potential customers of whom 23 million are required to have an income of over Rs. 5,000 per year. Suppose the relevant data are those shown in the following table:

	Cost per Ad. (Rs. '000')	*Audience ('000 000')*	*Audience with income over Rs.5,000 ('000 000')*
Newspaper	28	1	0.6
T.V.	400	9	2
Radio	20	0.8	0.7

Newspaper advertisement reaches 1 million readers where as T.V. programme covers 9 million viewers. Let the N, T and R respectively represent the newspaper, television, and radio advertisements budgeted, our programme is then:

Minimize Ad. Cost = 28N + 400T + 20R

Subject to :

$N + 9T + 0.8R \geq 30$ Required Audience size

$0.6N + 2T + 0.7R \geq 23$ (required income)

$N \geq 0, T \geq 0, R \geq 0$

The above primal is converted into dual problem as under:

Minimize

$30v_1 + 23v_2$

Subject to

$v_1 + 0.6v_2 \leq 28$

$9v_1 + 2v_2 \leq 400$

$0.8v_1 + 0.7v_2 \leq 20$

$v_1 \geq 0, v_2 \geq 0$

From the above, it is evident that primal involved 3 variables and 2 ordinary constraints whereas the dual involved 2 variables and 3 constraints. No change has occurred in inequalities on non-negativity conditions i.e. both in the primal and in the dual problems each variable is required to be greater than or equal to zero.

If we turn the above ordinary constraints into equations, we have to rewrite the problem with slack variables in the same shape as discussed in the beginning of this section.

From the literature available on financial management evidence can be gathered

whether the linear programming technique are being widely used for capital budgeting decisions. However, for academicians interest remain widely recognised for a keen desire to use the techniques of linear programming in budgeting decisions. With the use of computers, the multinational companies and American giant business enterprises are making use of these techniques.

COST OF CAPITAL AND ITS IMPLICATIONS IN BUDGETING DECISIONS

Investment decisions are directly related to financial decisions influenced by cost of capital. Management of a company is always anxious to maximise return on investments with a view to ensure that cost of capital is covered although management may alternatively decide to minimise investment which may yield highest returns for reasons of high risk involved or it may decide to maximise investments for obtaining highest growth through expansion of the productive processes. Management is guided by such considerations as:

(1) Opportunities created by technological change requiring replacements, necessitating expansion or taking up new activities.

(2) Competition strategies to avail of economic opportunities, investment being planned by them and the threat which may arise to the existing or proposed market shares of the firm;

(3) Short-term and long-term market forecasts with reference to sales, revenue proceeds, net profits etc.;

(4) Incentives offered by the state to promote investment in particular areas of production required for meeting urgent local needs of the nation or for exporting to earn foreign exchange etc. Nevertheless, the management of a corporate enterprise while preparing capital outlays prepares the particulars of the expected receipts (cash inflows) generated from the activity through such investment. Both are compared over-time and for optimum decision receipts should cover cost of financing the capital outlays. As such investment or capital budgeting decisions are directly linked with the cost of capital.

Before dealing with the application of cost of capital budgeting decisions, it is considered necessary to apprise the readers of the sources of capital and the cost of capital and its significance in investment decisions in the following paragraphs:

CAPITAL AND COST OF CAPITAL

The main sources of Capital available for a company are as under:

(1) *Owners money:* The shareholders investment in the shape of equity or preference shares;

(2) *Creditors money:* The borrowings raised by the company from institutions as long-term loans, from banks as short-term duration credit, and the public deposits. Debentures are also an important source of long-term loan capital;

(3) Retained Earnings in the shape of revenue which may be reinvested in the company; and

(4) Depreciation funds.

All the above sources of capital individually involve explicit costs and a company may have to effect a balance in the adoption of these different sources of capital in its capital structure and the total cost of capital from such different sources should be covered from the funds generated by the business activity of the corporate units. This cost is that rate which must be paid to obtain funds for operations of the company. To find out this cost for all capital resources available for financing investment decisions, it is imperative to calculate explicit costs of each of the sources individually as (1) Cost of equity capital and cost of preference capital; (2) Cost of debt; (3) Cost of retained earnings; (4) Cost of depreciation funds. A weighted average cost of all the sources combined together shall give the cost of capital of financing investment decisions.

Methods of calculating Cost of Capital for each of the above source of finance are precisely discussed below:

(1) *Cost of Equity Capital*

Cost of equity capital is the minimum return that the investors would like to get on their investments in the Company's shares. The form of this return may differ as per the economic conditions, attitude towards gains and taxable capacity of the investors i.e., the return may be in the shape of dividend per share or earnings per share or dividend per share plus the growth rate of the company or it could be the realised yield rate. Any rate which maximises the present value of the equity holders money in a firm should be the cost of capital. The following formula is generally used to calculate the cost of equity capital:

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

Where:

K_e = Cost of equity capital;

D_1 = Dividend paid in equity capital in period 1;

P_0 = Market value of the equity share as quoted in stock exchange;

g = Growth rate by which the dividends are expected to grow per year at a constant compound rate.

To illustrate the above we may use following example:

Example 1

Current Price (P) of its Equity Share of 'X' Company Ltd quoted in Delhi Stock Exchange is Rs. 15/- per share; Dividend (D_1) expected in the coming year to be declared by the company is to be Re. 1 and the growth rate (g) at which dividend have been growing per year is .05 over past years which is likely to be maintained in the coming years. Using the above formula the cost of equity for 'X' Company Ltd. is calculated as under:

$$K_e = \frac{100}{15} + .05 \text{ or}$$

$= .06 + 0.5$

$= 11 \text{ or } \frac{11}{100} \text{ or}$

$= 11\%$

(2) Cost of Preference Share Capital

If the company's capital structure includes preference capital, then the cost of preference share shall be calculated by using the following formula:

$$K_p = \frac{D}{R}$$

Where:

K_p = Cost of Preference Share Capital

D = Fixed amount of dividend obligation owned by the company on preference share capital to the stock holders

R = Net proceeds received on Sale of Preference Shares by the holders.

To illustrate the above, we may suppose that 'X' Company Ltd. has 9.5% preference shares of Rs. 100 each, quoted in the Stock Exchange at Rs. 97 per share and the company incurred issue expenses at the rate of Rs. 2 per share. The cost of preference share capital using the above formula will be arrived at as under:

$$K_p = \frac{9.5}{97 - 2} = \frac{9.5}{95}$$

$= .1$ or $1/10$ or

$= 10\%$

(3) Cost of Borrowed Capital: Debt

In case, the company has been using borrowed funds as source of capital shown at its capital structure then cost of debt is required to be calculated. Cost of debt indicates the contracted rate of interest payable on the borrowed sum to the creditors after adjusting tax-liability of the company. Cost of debt is calculated by using the following formula:

$$K_d = (1 - T)R$$

where:

K_d = cost of debt capital

T = marginal tax rate

R = contracted rate of interest

To illustrate the above formula, we may suppose that 'X' Company Ltd. has debt capital at its capital structure bearing contracted rate of interest as 11% and the tax rate payable is 20% then cost of capital for the company is as under:

K_d = (1 □20) .11

= 0.88

or 8.8%

It may be borne in mind that while calculating cost of capital the costs incurred on borrowing by the company should be taken into consideration to arrive at this real cost. Economists have disputed the contracted rate of interest as not being the correct representation of real cost of borrowed funds as it ignores the opportunity cost of borrowings.

(4) Cost of Retained Earnings

Cost of retained earnings is calculated on the basis of the opportunity rate of earnings of equity-holders, which is being continuously foregone. If these earnings are paid to shareholders then they will receive them as dividend which incurs tax liability giving the formula as under:

$$K_R = (1 - T)D$$

In the case the company offers shares or right issues then value of its shares in the market rises and this factor will have to be taken into consideration while calculating rate of return on earnings. If any tax is to be paid on income of shareholders by way of selling the share in the market or on capital gains made by the shareholders, the same may also be deducted from the net amount. The K_R can be represented by the following formula:

$$K_R = \frac{D(1 - T_i)}{P(1 - T_c)}$$

Where:

K_R = Cost of Retained Earnings
D = Dividend Rate
T = Tax Rate
T_i = Marginal Tax Rate
T_c = Capital-gains Tax
P = Market Price per Share.

The above formula can be illustrated by using the following example:

X Company Ltd. for the company using the available rate in earlier example, we have dividend per equity share as Re. 1. Market Price of Equity Share being Rs. 15 per share; Marginal tax rate being at 60% and capital gains tax being at 20% we have then:

$$K_R = \frac{1(1-.6)}{15(1-.2)}$$

$$= \frac{.4}{12.0}$$

= 3.33%

The above formula presupposes tax liability of the equity holder but where no such tax liability is involved then shareholder do not fall within tax limits and their dividend income on capital receipts may be fully exempted. For such shareholder the return will be calculated as under:

$$K_R = \frac{D}{P} \times 100 \text{ or } \frac{1}{15} \times 100$$

$$= 6.66\%$$

But based on this formula it is difficult to assess the cost of retained earnings because it becomes impossible for a firm to make calculations on the assumption of different tax payers. However, two suggestions are generally advanced to face this problem i.e. firstly, where tax is deducted at maximum rate at the source, take maximum rate irrespective of the fact that many shareholders do not fall within such maximum tax limits; secondly, the cost of retained earnings be the same as market rate of capitalisation for equity holder for the retained earnings.

(5) Cost of Depreciation: (K_d)

Cost of depreciation should be assessed on the basis of cost of retained earnings because depreciation funds are also the sum capital that belongs to the equity holders. But in practice, depreciation fund is only a book entry and is not available for investment purposes as a source of capital which could be used to finance projects. In short-run it is included in financing of working capital and acquisition of current assets. So, depreciation fund is not considered as a source of capital and is not included in the assessment of cost of capital.

COMPOSITE COST OF CAPITAL

The composite cost of capital is the next step in calculation of cost of capital once the cost of capital from different individual sources of capital is known. Composite Cost of Capital is calculated as combined weighted average of the cost of all different sources of capital. The procedure involves two main consideration viz., computation of weight and assignment of costs of various sources of capital. As regards computation of weights, cost of capital is weighted either on the basis of book value or on the basis of market value of the contributing sources of capital. The choice between the two is to be made on a judicious basis keeping into consideration the degree of impact of these forces upon the capital structure of the firm because cost of capital so arrived is to serve as cut-off rate for evaluating investment projects.

Example

'X' & Co.'s capital structure is comprised of 20% debt capital and 80% equity capital. This debt equity ratio 1:4 is maintained in expansion of the capital structure. The cost of capital based on this ratio can be calculated following the cost of debt capital and cost of equity capital derived in earlier examples where K_e was 11% and K_d was 8.8%. The assignment of weight will be as under for raising Rs. 50 million equity issued of 20 million shares of Rs. 10 each.

Sources of Capital	*Current Price*	*Market Price*	*Weight*

Debt:	Rs. 50 million 15 years maturity rate of interest 10%	Equal to Redemption	Rs. 50 million	550/250 =	0.20
Equity:	20 million share of Rs. 10/- each	Rs. 10	Rs. 200 million	200/250 =	.8
			Rs. 250 million		1.00

$$\begin{aligned} \text{Cost of Capital (K)} &= .20K_d + .80K_e \\ &= .20\ (0.88) + .80\ (.11) \\ &= .0176 + .088 = .1056 \\ &= 10.56\% \end{aligned}$$

The weighted average cost of capital so obtained is the main source of information to arrive at a decision of accepting or rejecting an investment project. However, the cost of capital so arrived, has not been accepted as final non-controversial because of the problems which are due to use of different source of capital requiring different treatments and no general principle could be laid down for a uniform application in all cases. Even the concept of minimum cost of capital wherein the capital structure of the company is based only on equity capital cannot be accepted as the company may use up all the funds and may be compelled to close down if it does not avail loan capital for serving the equity holders interest with leverage but such a course carries a risk of leverage too and likewise.

IMPLICATIONS IN BUDGETING DECISIONS

Despite the above objections, cost of capital is used as the basis to evaluate investments whose cash flows are perfectly correlated with the cash flows from the company's present assets. With perfect co-relation between the two sets of cash flows risk is the same. But if the timing of the cash flows is not also the same, the same discount rate cannot be used for both investments. But weighted average cost of capital represents an averaging of all risks of the company and can be used to evaluate investments in much the same manner that the pay-back method. It gives some insight and guidance and to that extent it is good to be used. Present value of an investment can be computed using a weighted average cost of capital and this can be compared with present values calculated using the other discount rates. It may be that an investment with a positive present value should be rejected because of its risk characteristics or that an investment with a negative present value using the weighted average cost of capital should be accepted. All this will differ from situation to situation and case to case. Nevertheless, evaluation of capital investment projects require some basis which could serve as the minimum rate of return which a project should generate. In such cases, weighted cost of capital could serve as an accepted discounting rate for evaluating investment decisions as no project will be acceptable which does not generate funds equal or greater to the cut-off rate represented by weighted cost.

LESSON ROUND-UP

- Capital Budgeting refers to long-term planning for proposed capital outlays and their financing. Capital Budgeting may also be defined as "the firms' decision to invest its current fund more efficiently in long-term activities in anticipation of an

expected flow of future benefit over a series of years.

- Capital Rationing helps the firm to select the combination of investment projects that will be within the specified limits of investments to be made during a given period of time and at the same time provide greatest profitability.
- Pay Back technique estimates the time required by the project to recover, through cash inflows, the firms initial outlay.

$$\text{Pay back period} = \frac{\text{Initial Investment}}{\text{Annual cash inflows}}$$

- Average Rate of Return method is designated to consider the relative profitability of different capital investment proposals as the basis for ranking them – the fact neglected by the payout period technique.
- Average Rate of Return

$$= \frac{\text{Net earnings after Depreciation and Taxes}}{\text{No. of years project will last}} \div \text{Original Investment of Average Investment}$$

- Net Present Value: The cash outflows and inflows associated with each project are ascertained first and both are reduced to the present values at the rate of return acceptable to the management. The rate of return is either cost of capital of the firm or the opportunity cost of capital to be invested in the project.

$$NPV = \sum_{t=1}^{N} \frac{R_t}{(1+k)^t} + \frac{S_n + W_n}{(1+k)^n} - \sum_{t=1}^{N} \frac{C_t}{(1+k)^t} - C_0$$

- Internal Rate of Return: The internal rate of return refers to the rate which equates the present value of cash inflows and present value of cash outflows.

$$C = \sum_{t=1}^{n} \frac{CF_t}{(1+r)^t} + \frac{S_n + W_n}{(1+r)^n} - \sum_{t=1}^{n} \frac{C_1}{(1+k)^t}$$

- Profitability Index (PI): Profitability Index is defined as the rate of present value of the future cash benefits at the required rate of return to the initial cash outflow of the investment.

$$PI = \frac{\sum_{t=1}^{n} \frac{A_t}{(1+k)^t}}{C}$$

- Sensitivity Analysis treats risk and uncertainty in capital budgeting decisions.
- Cost of equity capital is the minimum return that the investors would like to get on their investments in Company's Shares.
- Composite cost of Capital is calculated as combined weighted average of the cost of all different sources of capital.

SELF-TEST QUESTIONS

1. Define capital budgeting and examine the need for capital budgeting.
2. Explain different methods of appraising project profitability. Which method is considered to be the best?
3. Distinguish between Internal Rate of Return and Net Present Value techniques. Which method would you recommend for evaluating investment? Explain.

4. (a) Capital Budgeting models are used to evaluate a wide variety of capital expenditure decisions. Comment on this statement and enunciate some of the important expenditure decisions to which capital budgeting technique can be applied.

(b) The Susan Co. is contemplating either of two mutually exclusive projects. The data with respect to each are given below. The initial investment for both is equal to their depreciable value. Both will be depreciated straight line over a five-year life.

	Project A (Rupees)	*Project B (Rupees)*
Initial Investment	1,00,000	1,40,000
Year	*Profits after taxes*	
1	10,000	25,000
2	15,000	25,000
3	20,000	25,000
4	25,000	25,000
5	35,000	25,000

(i) Calculate the 'net present value' and 'benefit-cost ratio' for each project.

(ii) Evaluate the acceptability of each project on the basis of above mentioned two techniques.

(iii) Select the best project, using NPV and benefit-cost ratios and comment on the resulting rankings.

(iv) Assume that the Susan Co. has an 11% cost of capital.

(v) The following data relates to discounting factor:

Year	*Discounting factor at 11%*
1	.901
2	.812
3	.731
4	.659
5	.593

and discounting factor for present value of an annuity discounted at 11% for five years is 3.696.

5. Define the concept of cost of capital. State how you would determine the weighted average cost of capital of firm.

6. Write short notes on:

(1) Profitability Index

(2) Sensitivity Analysis

(3) Linear Programming and Capital Budgeting

(4) Capital Rationing.

7. Explain the various steps of capital budgeting process.

Suggested Readings:

(1) Introduction to Financial Management; *O. Maurice Joy;*

(2) The Capital Budgeting Decisions; *Harold Bierman Jr. and Seymour Smidt;* Macmillan Publishing Company, New York;

(3) Managerial Economics-Concepts and Analysis; *J.C. Verma;* Lawrence Publishing Housing, New Delhi;

(4) Economic Theory and Operations Analysis; *W.J. Baumol;* Prentice Hall of India Pvt. Ltd., New Delhi;

(5) Linear Programming; *N. Paul Loomba;* Tata McGraw Hill, New Delhi;

(6) Mathematical Programming and the Analysis of Capital Budgeting Problems; *H.M. Weingartner*.

(7) Management of Company Finance; *Samuel & Wilkies* (Nelson-1982).

STUDY III

CAPITAL STRUCTURE

LEARNING OBJECTIVES

The object of the study is to enable the students to understand:

- Nature, scope and significance of capital structure
- Factors influencing Capital Structure
- Capital structure *vis a vis* financial structure
- Planning and designing of capital structure
- Optimal Capital Structure
- Capital Structure & Valuation
- Capital Structure theories
- Leverage – Operating leverage, financial leverage, combined leverage
- EBIT-EPS Analysis
- Cost of capital
- Methods of Calculating cost of capital

MEANING OF CAPITAL STRUCTURE

By the term capital structure we mean the structure or constitution or break-up of the capital employed by a firm. The capital employed consists of both the owners' capital and the debt capital provided by the lenders. Debt capital is understood here to mean the long term debt which has been deployed to build long term assets. Apart from the elements of equity and debt in the capital structure, a firm could have quasi equity in the form of convertible debt.

Capital Structure of a firm is a reflection of the overall investment and financing strategy of the firm. It shows how much reliance is being placed by the firm on external sources of finance and how much internal accruals are being used to finance expansions etc. Capital structure can be of various kinds as described below:

- Horizontal Capital Structure
- Vertical Capital Structure
- Pyramid shaped capital structure
- Inverted Pyramid Capital Structure

Horizontal Capital Structure

In a Horizontal capital structure, the firm has zero debt component in the structure mix. The structure is quite stable. Expansion of the firm takes in a lateral manner, i.e. through equity or retained earning only. The absence of debt results in the lack of financial leverage. Probability of disturbance of the structure is remote.

Vertical Capital Structure

In a vertical capital structure, the base of the structure is formed by a small

amount of equity share capital. This base serves as the foundation on which the super structure of preference share capital and debt is built. The incremental addition in the capital structure is almost entirely in the form of debt. Quantum of retained earnings is low and the dividend pay-out ratio is quite high. In such a structure, the cost of equity capital is usually higher than the cost of debt. The high component of debt in the capital structure increases the financial risk of the firm and renders the structure unstable. The firm, because of the relatively lesser component of equity capital, is vulnerable to hostile takeovers.

Pyramid shaped Capital structure

A pyramid shaped capital structure has a large proportion consisting of equity capital and retained earnings which have been ploughed back into the firm over a considerably large period of time. The cost of share capital and the retained earnings of the firm is usually lower than the cost of debt. This structure is indicative of risk averse conservative firms.

Inverted Pyramid shaped Capital Structure

Such a capital structure has a small component of equity capital, reasonable level of retained earnings but an ever increasing component of debt. All the increases in the capital structure in the recent past have been made through debt only. Chances are that the retained earnings of the firm are shrinking due to accumulating losses. Such a capital structure is highly vulnerable to collapse.

SIGNIFICANCE OF CAPITAL STRUCTURE

Capital structure is significant for a firm because the long term profitability and solvency of the firm is sustained by an optimal capital structure consisting of an appropriate mix of debt and equity. The capital structure also is significant for the overall ranking of the firm in the industry group. We discuss hereunder the significance of the capital structure in greater detail:

Reflects the firm's strategy

The capital structure reflects the overall strategy of the firm. The strategy includes the pace of growth of the firm. In case the firm wants to grow at a faster pace, it would be required to incorporate debt in its capital structure to a greater extent. Further, in case of growth through acquisitions or the inorganic mode of growth as it is called, the firm would find that financial leverage is an important tool in funding the acquisitions.

Indicator of the risk profile of the firm

One can get a reasonably accurate broad idea about the risk profile of the firm from its capital structure. If the debt component in the capital structure is predominant, the fixed interest cost of the firm increases thereby increasing its risk. If the firm has no long term debt in its capital structure, it means that either it is risk averse or it has cost of equity capital or cost of retained earnings less than the cost of debt.

Acts as a tax management tool

The capital structure acts as a tax management tool also. Since the interest on borrowings is tax deductible, a firm having healthy growth in operating profits would find it worthwhile to incorporate debt in the capital structure in a greater measure.

Helps to brighten the image of the firm

A firm can build on the retained earnings component of the capital structure by issuing equity capital at a premium to a spread out base of small investors. Such an act has two benefits. On the one hand, it helps the firm to improve its image in the eyes of the investors. At the same time, it reduces chances of hostile take-over of the firm.

FACTORS INFLUENCING CAPITAL STRUCTURE

A company can finance its operations both through equity and debt. These two types of financing require servicing. Interest is paid on debt and return is to be provided to stockholders in the form of equity. Interest paid being 100% tax-deductible, provides the company a tax shield. Let us take an example to compare two modes of financing:

Particulars	*Firm 'A'*	*Firm 'B'*
Equity Capital	1000	2000
Debt	1000	nil
Turnover	2000	2000
Cost of Goods Sold	1200	1200
Other expenses	100	100
Interest	150	0
Profit Before Tax	550	700
Tax @40%	220	280
Profit after tax	330	420
Dividend	100	200
Retained Earning	230	220

We have two firms A and B entailing same investment of Rs. 2000 lacs. Firm A has equal mix of debt and equity financing while firm B has only equity financing. Rate of interest is 15% p.a. Tax rate is 40% and rate of dividend is 10%. A comparison of bottomline in both the cases shows that firm B has a higher profit before tax but lower retained earning because of higher tax outgo and higher dividend payment. In case the management of the firm is keen on internal accruals, a mix of equity and debt would be better suited but if the management is considering profit after tax as the key criterion, then the firm should avoid taking on debt.

Normally a company wishes to raise capital by way of both equity and debt. In the real world, deciding on the capital structure is not so easy. In deciding the capital structure of a firm, following points need to be considered.

(a) Corporate Strategy

It is the main factor determining the financial structure of a company. The company has to determine the overall Capital Intensity Ratio (Debt/Equity) in line with

its overall strategy. The company has to look at various options of debt equity mix, the cost of each option, the consequences of increase in equity on its valuation, capability to service both debt and equity etc. Other strategic decisions like management control level, risk averseness or risk taking nature of the management have also to be considered. Ultimately, the most appropriate capital structure will be the one, which most closely supports the strategic direction of the business with the least cost and at a reasonably acceptable risk level.

(b) Nature of the Industry

The nature of the industry plays on important role in capital structure decisions. If the firm is capital intensive, it would rely more on debt than equity. Generally speaking, long term assets should be financed by a balance between term debt and equity and short term assets should be financed by long term sources and more by short term debt. The current assets (short term assets) and fixed assets (long term assets) are determined by the nature of the business itself. A trading firm might have more current assets than fixed assets. In business like construction, capital and higher consumer goods their volumes and hence requirements of funds are affected by the changes in national and global scene. Business subject to such variations need a capital structure that can buffer the risks associated with such savings. The degree of competition is also a major factor to be considered in deciding the capital structure. In highly competitive industry with low entry barriers companies need to be well capitalized.

(c) Current and past capital structure

Current capital structure of a firm is determined largely by past decisions. Investment decision of the past, acquisition, takeovers financing policy, dividends etc. go into forming the current capital structure which is difficult to change overnight. However, alterations in the structure are possible by raising capital, retiring debts, buying back shares, taking on debts, altering dividend pay-out policies, alteration in earning capacity etc. Also, as past decisions determine current capital structure, current changes in the capital structure decide the future capital structure. Hence, utmost care has to be exercised in decision and implementation of changes in the capital structure.

While deciding upon the capital structure the firm has to consider the different life cycle stages which are:

- The pioneering stage
- The expansion stage
- The stagnation/stabilization stage

The pioneering stage is one of rapid increase in demand for the products/services at the starting stage of the life cycle of the company and the efficient companies are the one to survive. The financial cost of borrowing is very high at this stage, due to risk perception about the company. To survive this stage, the capital structure should orient more towards equity and avail more soft loans.

The expansion stage is the next stage, during which the strong companies survive the competition struggle and aim to expand their market share and volumes. During this stage, huge investments are made to expand production/service capacity.

Requirement of funds is high during this stage. Subject to the corporate strategy of funding projects and market conditions, the company may raise capital at the lowest possible cost. As the earnings stabilize the company will be in a position to weather any small variations in business, then it can seek to financially leverage itself within a pre-fixed ceiling, by bank loans.

Stabilization/stagnation stage is the last and final stage. A dynamic management will always be on the lookout for expansion/diversification into new projects. It could again, depending on corporate strategy, go in for green-field projects or takeover existing units, seek mergers, acquisitions and strategic alliances etc. Usually a recession in economy opens up a vast number of such opportunities which cash rich companies can take advantage of. In case of lack of such opportunity, the company could reduce the financial leverage and save on interest.

CAPITAL STRUCTURE *VIS-A-VIS* FINANCIAL STRUCTURE

Capital structure of a firm is different from the financial structure. We shall illustrate the difference as under:

Consider a simplified, horizontal form of balance sheet of a firm :

(Amt. in Rs. Lacs)

Liabilities		*Assets*	
Share Capital		Fixed Assets	8,000
Equity Share Capital	600	Current Assets	5,000
Preference Share Capital	300		
Reserves and Surplus	6,400		
Long Term Debts	2,500		
Current Liabilities			
Short term bank borrowings	2,400		
Other Current Liabilities	600		
Total	13,000	Total	13,000

In the above illustration, the total liabilities size of Rs. 13000 lacs is the financial structure of the firm while the long term block of Rs. 10000 lacs is the capital structure. We can also say that that the total financial structure minus the current liabilities structure gives us the capital structure. We can enunciate the following differences between financial structure and capital structure:

— Capital structure relates to long term capital deployment for creation of long term assets. Financial structure involves creation of both long term and short term assets.

— Capital structure is the core element of the financial structure. Capital structure can exist without the current liabilities and in such cases, capital structure shall be equal to the financial structure. But we can not have a situation where the firm has only current liabilities and no long term capital.

— The financial structure of a firm is considered to be a balanced one if the amount of current liabilities is less than the capital structure net of outside debt because in such cases the long term capital is considered sufficient to pay current liabilities in case of sudden loss of current assets.

— Components of the capital structure may be used to build up the level of current assets but the current liabilities should not be used to finance acquisition of fixed assets. This would result in an asset liability mismatch.

PLANNING AND DESIGNING OF CAPITAL STRUCTURE

Just as planning and design of a physical structure is important, the same holds true for capital structure as well. A well thought out plan for the capital structure supplemented by a careful design ensures that prime goal of the firm, i.e. maximisation of the shareholder wealth is easily achieved.

Planning of the capital structure is a preliminary activity and it might commence as early at the time of incorporation of the firm. Once the firm is established, the next logical step is to move in the direction of implementation of the project. For meeting the cost of the project, the means of finance are to be arranged. Hence the need for timely and early planning of the capital structure.

Attributes of a well planned capital structure

A well-planned capital structure should have the following attributes:

Long Tenure

The plan should be for a fairly long tenure and should cover the working of at least five to seven years of the project. Expansion of the capacity, addition of product lines etc. should be accounted for in the plan.

Consistency

The planned capital structure should be consistent with the over all financing philosophy of the firm. If the firm has a risk averse philosophy, then the plan should have minimum component of debt.

Feasibility

The planned capital structure should have feasibility, i.e. it should not be impractical. Feasibility also means that it should be workable within the amount of share capital, debt and retained earnings expected to be available to the firm.

Designing a capital structure

After planning the capital structure, we are faced with the issue of its design. Design takes off from where the plan ends. Planning establishes the broad parameters of the structure. It is left for the design to fill in the minor details. While designing a capital structure, following points need to be kept in view:

Design should be functional

The design should create synergy with the long term strategy of the firm and should not be dysfunctional. It should facilitate the day to day working of the firm rather than create systematic bottlenecks.

Design should be flexible

The capital structure should be designed to incorporate a reasonable amount of flexibility in order to allow for temporary expansion or contraction of the share of each component.

Design should be conforming statutory guidelines

The design should conform to the statutory guidelines, if any, regarding the proportion and amount of each component. The limits imposed by lenders regarding the minimum level of owners' equity required in the firm should be complied with.

OPTIMAL CAPITAL STRUCTURE

Is there an optimal capital structure for a firm? By the term optimal capital structure we mean a particular arrangement of various components of the structure which is just in tune with the both the long term and short term objectives of the firm. A combination less or more than the optimal combination would be less than satisfying. Hence a sub-optimal combination would affect the achievement of the goal of maximisation of the shareholders' wealth.

But can we plan and design an optimal capital structure? For designing such a structure, one would need the following information:

— The requirement of capital of the firm

— Availability of different components

— Cost of these components

— Rate of return from investment

It has to be further kept in mind that the above information should be exact information. In reality it is not possible to have the exact information on all the above four parameters. Secondly whatever information is available is for a particular period. Thus we have to design the structure in a static set-up which makes the design devoid of all flexibility.

The real world of business, however, is a dynamic world with ever changing demand and supply of various components of the capital structure. Hence we can not formulate the optimal capital structure in a static framework. The process has to be carried out in a dynamic framework of interdependent investment and financing decisions that yield optimal values within the constraints at the time and place when the decisions were made. We can, therefore, say that the optimal capital structure is an ideal situation which can function as the benchmark of performance for a firm. But this benchmark is invincible and the firm can expect to achieve moderated or toned down versions of this benchmark depending upon dynamics of each project.

DETERMINANTS OF CAPITAL STRUCTURE

We have seen above that there is no optimal capital structure for a firm and with the best of efforts, the firm can hope to attain an approximation to it. Now let us discuss the factors which determine the formation of the capital structure:

Minimisation of risk

The capital structure should aim at minimisation of risk of the firm. The term risk here means financial risk. The term excludes the normal financial risk and

concentrates on the abnormal financial risk that might arise from a particular capital structure decision. The normal risk has already been factored in the projections while matching with the expected returns. It is the abnormal financial risk which should be minimised.

Maximisation of profit

The capital structure is formulated with a view to achieve the goal of maximisation of firm's profits. These profits are after tax profits which add to shareholder wealth. Thus if the debt obligations of the firm entail tax breaks, it would be advisable for the firm to enlarge the debt component of the structure.

Nature of the project

Formulation of the structure is also determined by the nature of the investment project. If the project is a capital intensive, long gestation project then it should be financed by debt of matching maturity.

Control of the firm

This aspect of the firm also plays a part in the determination of the capital structure. Since the key to control of the firm is ownership of the equity capital, the promoters would like to part with only that proportion of equity capital as is necessary for execution of the project. Spreading of equity among the public investors exposes the firm to risk of take over. Hence a capital structure which makes the firm vulnerable in this respect is discouraged.

CAPITAL STRUCTURE AND VALUATION

During our earlier discussion, the underlying theme has been that the capital structure should be conducive to increase in valuation of the firm. By valuation, we mean that the market value or the realisable value of the owners' equity should increase. This can happen in case value of both components of the shareholders' equity, i.e. share capital and retained earnings increases.

Value of the share capital is reflected in the market value of the firm in case the shares are traded on the stock exchange. This market value, under ideal conditions, is indicative of the inherent value and is different from both the face value and the book value. The capital structure should be such as maximises the inherent value of the firm.

Retained earnings also have a book value, i.e. the value at which these earnings are carried in the books of the firm. The inherent value of the retained earnings depends upon the future returns which these earnings can generate for the owners. As earnings of the firm increase, its valuation also increases. Earnings can increase either directly through increased level of operations of the firm or indirectly through decrease in cost of capital of the firm. The direct increase in earnings is dependent upon the investment decisions and the changes in capital structure have no explicit bearing upon these earnings. Capital structure plays an important part in increase in earnings brought about by change in cost of different components of the structure.

CAPITAL STRUCTURE THEORIES

There are basically three approaches to capital structure decision:

— Net Income Approach

— Net Operating Income Approach

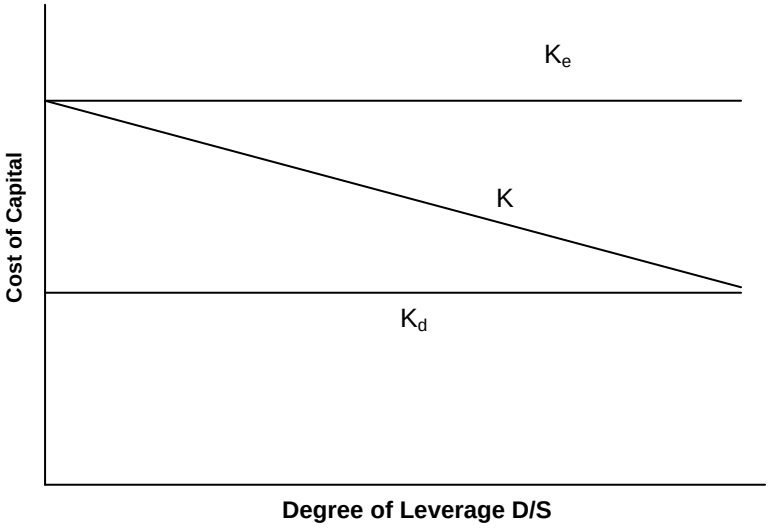
— Modigliani Miller Approach

Net Income Approach

According to this approach, the cost of debt capital, K_d and the cost of equity capital K_e remains unchanged when D/S, the degree of leverage, varies. Here S stands for total capital employed (= D + E). The constancy of K_d and K_e with respect to the degree of leverage means that K the average cost of capital, measured by the following formula declines as the degree of leverage increases.

$$K = K_d \times \frac{D}{(D+E)} + K_e \times \frac{E}{(D+E)}$$

This happens because when the degree of leverage increases, K_d which is lower than K_e receives a higher weight in the calculation of K. This can also be illustrated by a graph as shown below:



As our assumption is that the cost of debt and equity capital would not change with the change in the level of leverage, K is seen to go down with the increasing proportion of debt in the capital.

Let us take a company that has an investment of Rs. 2,00,000 and a net operating income of Rs, 50,000. It is considering two scenarios: (1) no debt and (2) equal levels of debt and equity of Rs. 100,000 each. Let us say that the company finds out that the cost of equity is 12% and the cost of debt is 8%.

Calculations show that equity earnings would be Rs. 50,000 and Rs. 42,000 respectively in the two scenarios and shown below. As the return expected on equity is 12%, we can say that this profit is 12% and therefore the market value of equity would be such that this return becomes 12% on the same. This means that the market value of equity would be Rs. 416667 and Rs. 450000 respectively in the two scenarios. Adding the market value of debt and the market value of equity gives us the total value of the firm in the market.

Equity	*Scenario 'A'*	*Scenario 'B'*
Equity	200000	100000
Debt	0	100000
Cost of Equity	12%	12%
Cost of Debt	8%	8%
Net operating income	50000	50000
Interest on Debt	0	8000
Equity earnings	50000	42000
Market value of equity	416667	350000
Market value of debt	0	100000
Total Value of firm	416667	450000

Average cost of capital
Scenario A: 8% x (0/200000) + 12% x (200000/200000) = 12%
Scenario B: 8% x (100000/450000) + 12% x (350000/450000) = 11.10%

There are two points to be noted here

1. As the cost of capital decreases the value of the firm would go up as it is dependent upon the return expected and the cost of capital. Inverse relationship exists between the value of the firm and cost of capital for any given level of return.

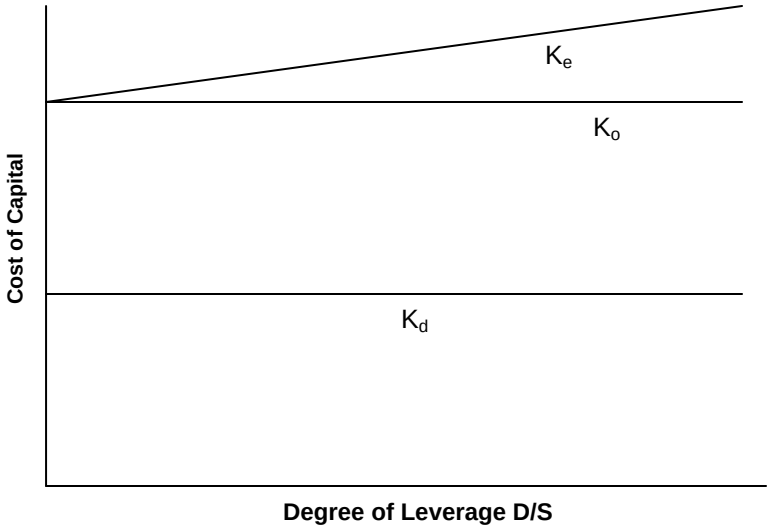
2. This means that as we increase the level of debt in the company, the value of the firm would go up even further. This would mean that the companies would like to employ as much debt as possible.

Net Operating Income Theory

Taking an opposite view from the view taken in the net income approach, this approach states that the cost of capital for the whole firm remains constant,

irrespective of the leverage employed in the firm. We can express the cost of equity as:

$$K_e = K_o \times \frac{(K_o + K_d) \times D}{(D + E)}$$



Let us repeat the example we discussed earlier in net income approach. Let us take a company that has an investment of Rs. 2,00,000 and net operating income of Rs. 50,000. It is considering two scenarios: 1) no debt and 2) equal levels of debt and equity of Rs. 100,000 each. Let us assume that the company finds out that the overall cost of capital is 10% and the cost of debt is 8%.

As the return expected on total capital is 10 per cent, therefore the market value of total capital would be such that this return becomes 10 per cent on the same. This means that the market value of capital would be Rs. 5,00,000 in both the scenarios as our assumption in this case is that the total market value remains constant. Also the value of debt would also remain constant as the cost of debt remains constant. This means that the equity capitalization can be calculated by subtracting the market value of debt from the total market value of the firm. Then the return on equity divided by the market capitalization of equity would give us the cost of equity.

Equity	*Scenario 'A'*	*Scenario 'B'*
Equity	2,00,000	1,00,000
Debt	0	1,00,000
Cost of Debt	8%	8%

Net operating income	50,000	50,000
Overall Capitalization rate	10%	10%
Total market value	5,00,000	5,00,000
Interest on debt	0	8,000
Debt capitalization rate	0.08	0.08
Market value of debt	0	1,00,000
Market value of equity	5,00,000	4,00,000

There are two points to be noted here:

— As the cost of total capital and debt is constant, the cost of equity would go up or down with increasing or decreasing leverage, i.e., the amount of debt in the capital structure.

— This means that as we increase the level of debt in the company, the value of the firm doesn't change and the company does not benefit by taking on debt. This would mean that the companies would like to employ as much equity as possible so as to reduce the risk of the company.

Modigliani - Miller Theory

In 1958, Franco Modigliani and Merton Miller (MM) published a theory of modern financial management – they concluded that the value of a firm depends solely on its future earnings stream, and hence its value is unaffected by its debt/equity mix. In short, they concluded that a firm's value stems from its assets, regardless of how those assets are financed. In other words, a variant of the net operating income approach discussed above.

In their paper, MM began with a very restrictive set of assumptions, including perfect capital markets (which implies zero taxes). And then they used an arbitrage proof to demonstrate that capital structure is irrelevant. Under their assumptions, if debt financing resulted in a higher value for the firm than equity financing, then investors who owned shares in a leveraged (debt-financed) firm could increase their income by selling those shares and using the proceeds, plus borrowed funds, to buy shares in an unleveraged (all equity-financed) firm. The simultaneous selling of shares in the leveraged firm and buying of shares in the unleveraged firm would drive the prices of the stocks to the point where the values of the two firms would be identical. Thus, according to MM Hypothesis, a firm's stock price is not related to its mix of debt and equity financing.

Modigliani and Miller have restated and amplified the net operating income position in terms of three basic propositions. These are as follows:

Proposition – I

The total value of a firm is equal to its expected operating income (PBIT when tax = 0) divided by the discount rate appropriate to its risk class. It is independent of the degree of leverage.

$$V_l = V_u = \frac{EBIT}{K_{ol}} = \frac{EBIT}{K_{ou}}$$

Here the subscript l is used to denote leveraged firm and subscript u is used to denote unleveraged firm.

Since the V (Value of the firm) as established by the above equation is a constant, then under the MM model, when there are no taxes, the value of the firm is independent of its leverage. This implies that the weighted average cost of capital to any firm is completely independent of its capital structure and the WACC for any firm, regardless of the amount of debt it uses, is equal to the cost of equity of unleveraged firm employing no debt.

Proposition – II

The expected yield on equity, K_e is equal to K_o plus a premium. This premium is equal to the debt – equity ratio times the difference between K_o and the yield on debt, K_d. This means that as the firm's use of debt increases its cost of equity also rises, and in a mathematically precise manner.

Proposition – III

The cut-off rate for investment decision making for a firm in a given risk class is not affected by the manner in which the investment is financed. It emphasizes the point that investment and financing decisions are independent because the average cost of capital is not affected by the financing decision.

Example

Let us take the case of two firms X and Y, similar in all respects except in their capital structure. Firm X is financed by equity only; firm Y is financed by a mixture of equity and debt. The financial parameters of the two firms are as follows:

Financial Particulars of Firms X and Y

(Amount in Rs.)

Particulars	*Firm X*	*Firm Y*
Total Capital Employed	1000000	1000000
Equity Capital	1000000	600000
Debt	Nil	400000
Net operating Income	100000	100000
Debt Interest	0	20000
Market value of debt	0	400000
Equity earnings	100000	80000
Equity capitalization rate	10%	12%
Market value of equity	1000000	666667
Total market value of the firm	1000000	1066667
Average cost of capital	10%	9.37%
Debt-Equity ratio	0	0.6

From the above particulars, it can be seen that the value of leverged firm Y is

higher than that of the unleveraged firm. According to Modigliani Miller approach, such a situation cannot persist because equity investors would do well to sell their equity investment in firm Y and invest in the equity of firm X with personal leverage. For example, an equity investor who owns 1% equity in firm Y would do well to:

— Sell his equity in Firm Y for Rs. 6,667

— Borrow Rs. 4,000 at 5% interest on personal account and

— Buy 1.0667% of the equity of firm X with the amount of Rs. 10,667 that he has.

Such an action will result in the following income:

	(Rs.)
Income on investment in firm X	1066.70
Less: Interest (4000 x 0.5%)	200.00
Net Income	866.70

This net income of Rs. 866.7 is higher than a net income of Rs. 800 foregone by selling 1 percent equity of firm Y and the leverage ratio is the same in both the cases.

When investors sell their equity in firm Y and buy the equity in firm X with personal leverage, the market value of equity of firm Y tends to decline and the market value of equity of firm X tends to rise. This process continues until the net market values of both the firms become equal because only then the possibility of earning a higher income for a given level of investment and leverage by arbitraging is eliminated. As a result of this the cost of capital for both the firms is the same.

The above example explained that due to the arbitrage mechanism the value of a leveraged firm cannot be higher than that of an unleveraged firm, other things being equal. It can also be proved that the value of an unleveraged firm cannot be higher than that of leveraged firm, other things being equal.

Let us assume the valuation of the two firms X and Y is the other way around and is as follows:

(Amount in Rs.)

Particulars	*Firm X*	*Firm Y*
Debt Interest	0	20000
Market Value of debt		
(Debt capitalisation rate is 5%)	0	400000
Equity earnings	100000	80000
Equity Capitalisation rate	8%	12%
Market value of equity	1250000	666667
Total Market value	1200000	1066667

If a situation like this arises, equity investors in firm X would do well to sell the

equity in firm X and use the proceeds partly for investment in the equity of firm Y and partly for investment in the debt of firm Y. For example, an equity investor who owns 1 percent equity in firm X would do well to:

— Sell his 1% equity in firm X for Rs. 12,500

— Buy 1.01% of the equity and debt in firm Y involving an outlay of Rs. 12,500

Such an action will result in an increase of income by Rs. 172 without changing the risk shouldered by the investor. When investors resort to such a change, the market value of the equity of firm X tends to decline and the market value of the equity of firm Y tends to rise. This process continues until the total market value of both the firms becomes equal.

CRITICISM OF MM HYPOTHESIS

If the MM theory was correct, managers would not need to concern themselves with capital structure decisions, because such decisions would have no impact on stock prices. However, like most theories, MM's results would hold true only under a particular set of assumptions. Still, by showing the conditions under which capital structure is irrelevant, MM provided important insights into when and how debt financing can affect the value of a firm.

MM Hypothesis with Corporate Taxes

In 1963, MM added corporate taxes to their model. With corporate taxes considered, a firm's stock price was shown to be directly related to its use to debt financing – higher the percentage of debt financing, the higher the stock price. Under the MM with tax theory, firms should use virtually 100% debt financing. The reason for this result is the corporate tax structure – returns to stockholders come from after-tax earnings, but returns to creditors are paid before tax. The effect of this tax treatment is that more of a company's operating income is left for investors when more debt financing is used.

Empirical evidence Against MM Hypothesis

In spite of the MM arguments, firms do not usually use anywhere close to 100% debt financing. In an attempt to modify MM's model to make it more consistent with actual behaviour, many of their assumptions were relaxed in papers by other authors. In particular, the possibility of financial distress drastically changed the MM results. In the modified model, tax savings cause the value of a firm to rise as more and more debt is used, but at some point (the optimal structure), the value of the firm begins to fall with additional debt because the tax benefits are more than offset by the increasing costs of potential financial distress.

The MM model as modified to include financial distress suggests to managers .

— that a certain amount of debt is good

— that too much debt is bad, and

— that there is an optimal amount of debt for every firm.

Thus, the modified MM theory, which is called the trade-off theory of capital structure, provides useful insights into the factors that affect a firm's optimal capital structure. Here the marginal costs and benefits of debt financing are balanced

against one another, and the result is an optimal capital structure that falls somewhere between zero and 100% debt.

LEVERAGE

In business analysis, leverage refers to relationship between two variables as reflected in a unit change in one variable consequent upon a unit change in another variable. The variables can be production units, sales volumes, fixed cost, profit before tax, earning per share etc. Leverage is numerically expressed as

$$\text{Leverage} = \frac{\text{Unit change in desired result}}{\text{Unit change in chosen variable}}$$

Here

— Unit change refers to per rupee change, per tonne change or preferably % change for both the variables.

— The desired result is the result expected due to change in the denominator. The desired result can be % change in sales, profit or usually earning per share.

— The chosen variable is an intermediate variable that contributes to the end result. It can be a particular input or expense.

If we assume that a firm has the following composition of its product mix:

Particulars	*Sales*	*Margin*	*Profit*
Total	10000	20%	2000
Manufactured Goods	6000	30%	1800
Traded Goods	4000	5%	200

It alters the product mix to 80:20 from the present 60:40 then total profit changes to 2500:

Particulars	*Sales*	*Margin*	*Profit*
Total	10000	25%	2500
Manufactured Goods	8000	30%	2400
Traded Goods	2000	5%	100

Then we can say that leverage of 1% change in share of manufacture goods is 0.76.

$$\text{Leverage} = \frac{\text{25\% change in profit}}{\text{33\% change in share of mfg. Goods}} = \frac{25}{33} = 0.76$$

Once it is established that manufactured goods contribute to increase in profitability of the firm, the firm uses this leverage to the maximum advantage. The manufactured goods are being produced more resulting in better utilization of installed capacity and better allocation of fixed costs.

The degree to which fixed costs should be used is a fundamental question of choice. A fixed cost is the cost that remains the same regardless of the level of operations. As sales increase, fixed costs do not increase. With margin remaining the same for a larger number of units, overall margin or profitability of the firm increases.

We can view leverage also as the degree to which the firm increases fixed costs. These fixed costs can relate to manufacturing overheads, employee cost, interest cost or the like. The essence is that irrespective of level of operation, these costs represent a liability that has to be met.

There are two major types of leverage - financial leverage and operating leverage. Financial leverage measures the extent to which the cost of project has been funded by borrowed money as compared to owners' equity. The greater the percentage of debt compared to equity, greater is the financial leverage of the firm because of fixed interest charge on borrowed funds. Operating leverage is concerned with the extent to which a firm commits itself to high level of fixed costs other than interest payments. A firm that uses rented premises has less leverage than a firm that incurs huge cost in development of its own property. A firm that has substantial vertical integration has created a highly leveraged situation. If a firm integrates vertically by acquiring its raw materials supplier it may have to spend less on purchase of raw materials. But at the same time it will have to bear the fixed costs associated with the supplier subsidiary. In case of both financial and operating leverage, the crucial question is, how much leverage is appropriate. The level of appropriateness varies from firm to firm.

Let us take a look at the concept of risk in the financial environment. Risk is the probability that the future revenue streams of a firm shall show a variation from the expected figures. The variation is normally on the negative or the lower side because a positive variation reduces the investment risk and a reduction of risk is always welcome.

For linkage with leverage, we can divide risk into two broad categories, i.e. business risk and financial risk. Business risk pertains to risks associated with day to day operations of the firm. For example, decisions made regarding purchase of raw materials, manufacturing expenses and administrative expenses change the business risk profile of the firm. These decisions have an impact upon the operational profitability of the firm, i.e. the profits before interest and taxes. Financial risk, on the other hand, is associated with introduction of fixed interest bearing debt obligations in the capital structure of the firm. These obligations create a prior charge on EBIT before distribution of post tax profits among the owners.

The distinction between business risk and financial risk can be clarified through the following illustration:

ABC Company Limited
Profit and Loss Statement for the year ended 31.03.2008

(Amount in Rs. Lacs)

(a) Net Sales	8500	
(b) Cost of goods Sold	5000	(1)
(c) Gross Profit	3500	

(d)	Selling Expenses	1500	(2)
(e)	EBIT	2000	(3)

Business risk is associated with the impact of item no. (3) above of changes in item nos. (1) and (2). The "Cost of goods sold" item consists of cost of raw materials, labour cost, factory rent and other manufacturing expenses. Out of these elements, labour cost and factory rent are fixed costs while the rest are variable depending upon the level of sales. Now if the fixed costs are increased the expectation would be that the sales would rise in anticipated proportion. However if the sales do not rise as anticipated, business risk of the firm increases.

Uptill now we have assumed that the firm has no debt and as such, no interest cost. Let us assume that the firm raises debt with yearly interest payment of Rs. 500 lacs. The Profit & loss account would now be extended as shown below:

Sr. No	*Particulars*	*Amount*	
(a)	EBIT	2000	
(b)	Interest	500	(4)
(c)	Profit before tax	1500	
(d)	Tax @ 40%	600	
(e)	Profit after Tax	900	(5)

Now item no. (5) i.e. profit after tax is dependent on interest payments which are fixed. If EBIT decreases as a result of changes in items (1) and (2) and item no. (4) remains the same, the venture would become riskier as an additional element of financial risk has been built in. The change in risk profile of the firm has been caused by change in its leverage. The changes in fixed labour costs and factory rent are referred to as changes in operating leverage while the changes in fixed interest costs are described as changes in financial leverage.

A firm has operating leverage when it can expand output and sales without a proportionate increase in fixed costs. Let us assume that in our earlier illustration, cost of sales has the following break-up:

Cost of raw materials	2500
Labour Cost	500
Factory rent	500
Other manufacturing costs	1500

Labour cost and factory rent are fixed costs for running the factory for manufacturing, say, 1,00,000 units of the product. The firm now plans to expand the capacity to 2,00,000 units in the same factory by increasing the number of factory labour and installation of new machinery. The profit and loss account under the two levels of capacity would now read as under:

Sr. No	*Particulars*	*Capacity (100000 units)*	*Capacity (200000 units)*
1.	Net Sales	8500	17000
2.	Cost of raw material	2500	5000

3.	Labour cost	500	1000
4.	Factory rent	500	500
5.	Other mfg. Costs	1500	2500
6.	Gross profit	3500	8000
7.	Selling Expenses	1500	2500
8.	EBIT	2000	5500
9.	Tax @ 40%	800	2200
10.	Profit after tax	1200	3300

We see that while net sales have increased by 100%, the EBIT has increased by 175%, thanks to the operating leverage provided by the fixed factory rent and the fixed component of manufacturing expenses and selling expenses, which we assume to be Rs. 500 lacs each.

Now, if due to recessionary conditions, capacity utilisation of the factory is reduced to 50% and 40% in two subsequent years respectively, profitability of the firm would change as under:

Sr. No	*Particulars*	*Capacity 50%*	*Capacity 40%*
1.	Net Sales	8500	6800
2.	Cost of raw material	2500	2000
3.	Labour cost	1000	1000
4.	Factory rent	500	500
5.	Other mfg. Costs	1500	1300
6.	Gross profit	3000	2000
7.	Selling Expenses	1500	1300
8.	EBIT	1500	700
9.	Tax @ 40%	600	280
10.	Profit after tax	900	420

We see that the fall in EBIT is much sharper than the decline in sales. This has happened due to operating leverage.

In the earlier discussion, we have seen how operating leverage is created by expansion through addition of fixed operating costs. We saw that the firm expanded its capacity two fold by increasing the labour cost only while it leveraged on the fixed factory rent and manufacturing and sales expenses. If the expansion of capacity were to be attained by borrowing from the banks, then the firm would have tied-up another fixed cost. This fixed cost is not an operating cost, however. The leverage created by this financial cost is called financial leverage.

Let us assume that the firm decides to move from rented factory premises to own premises. This is achieved by borrowing a sum of Rs. 15 crores from the bank carrying fixed interest of 12% p.a. The capacity is also simultaneously doubled. The comparative profit & loss figures shall now read as under:

Sr. No.	*Particulars*	*Original Capacity*	*Double Capacity*
1.	Net Sales	8500	17000

2.	Cost of raw material	2500	5000
3.	Labour cost	500	1000
4.	Other mfg. Costs	1500	2500
5.	Gross profit	4000	8500
6.	Selling Expenses	1500	2500
7.	EBIT	2500	6000
8.	Interest	180	180
9.	Profit before tax	2320	5820
10.	Tax @ 40%	928	2328
11.	Profit after tax	1392	3492

By creating financial leverage, the firm has not only ensured rise in EBIT but in PAT as well. But at the same time, it has increased its financial risk, i.e. the risk of default on repayment of loan amount and the interest on loan.

Now let us see how does financial leverage impact the performance of the firm in recessionary conditions:

Sr. No	*Particulars*	*Original Capacity*	*Double Capacity*
1.	Net Sales	8500	6800
2.	Cost of raw material	2500	2000
3.	Labour cost	1000	1000
4.	Other mfg. Costs	1500	1300
5.	Gross profit	3500	2500
6.	Selling Expenses	1500	1300
7.	EBIT	2000	1200
8.	Interest	180	180
9.	Profit before tax	1820	1020
10.	Tax @ 40%	728	408
11.	Profit after tax	1112	612

We can see that in case of financial leverage, the impact on PAT upon reduction in capacity utilisation is much severe. The degree of financial leverage can be calculated by the rate of change of PAT for a one percent change in sales.

EBIT – EPS ANALYSIS

One widely used means of examining the effect of leverage is to analyse the relationship between earning before interest and taxes (EBIT) and earnings per share (EPS). The use of EBIT – EPS analysis indicates to management the projected EPS for different financial plans. Generally, management wants to maximise EPS if doing so also satisfies the primary goal of financial management - maximisation of the owner's wealth as represented by the value of business, i.e. the value of firm's equity. If the firm attempts to use excessive amounts of debt, shareholders (who are risk - averters) may sell their shares, and thus its price will fall. While the use of large amount of debt may result in higher EPS, it may also result in a reduction in the price of the firm's equity. The optimum financial structure for a firm (that is, the use of debt in relationship of equity and retained earnings as sources of financing) should be the one which maximises the price of the equity.

Given the importance of earnings per share (EPS) as a measure of a firm performance, analysis of the impact of financing alternatives on EPS is an important first step. Essentially, the method involves the comparison of alternative methods of financing under various assumptions as to EBIT.

Let us assume that a firm has a capital structure of Rs. 100000. The equity capital is of Rs. 100 each and debt carries rate of interest of 10% p.a. We further assume that the firm has the following combination of components of this structure:

Case No.	*Equity (%)*	*Debt (%)*
1.	100	0
2.	75	25
3.	50	50
4.	25	75

For calculating the impact on EPS of various levels of EBIT, we take five values of Rs. 5000, 7500, 12500 and 15000. The tax rate is assumed to be 40 %.

(a) EBIT = 5000

Debt Level (%)	0	25	50	75
EBIT	5000	5000	5000	5000
Intt.	0	2500	5000	7500
PBT	5000	2500	0	□2500
Tax	2000	1000	0	0
PAT	3000	1500	0	□2500
Equity	100000	75000	50000	25000
EPS	3.0	2.0	0	□1.0

We find that with increasing level of debt in the capital structure, the EPS decreases.

(b) EBIT = 7500

Debt Level (%)	0	25	50	75
EBIT	7500	7500	7500	7500
Intt.	0	2500	5000	7500
PBT	7500	5000	2500	0
Tax	3000	2000	1000	0
PAT	4500	3000	1500	0
Equity	100000	75000	50000	25000
EPS	4.5	4.0	3.0	0

In this case also, the EPS decreases with increasing level of debt.

(c) EBIT = 10000

Debt Level (%)	0	25	50	75
EBIT	10000	10000	10000	10000

Intt.	0	2500	5000	7500
PBT	10000	7500	5000	2500
Tax	4000	3000	2000	1000
PAT	6000	4500	3000	1500
Equity	100000	75000	50000	25000
EPS	6.0	6.0	6.0	6.0

At this level of EBIT, the EPS remains unchanged irrespective of any change in the capital structure.

(d) EBIT = 12500

Debt Level (%)	0	25	50	75
EBIT	12500	12500	12500	12500
Intt.	0	2500	5000	7500
PBT	12500	10000	7500	5000
Tax	5000	4000	3000	2000
PAT	7500	6000	4500	3000
Equity	100000	75000	50000	25000
EPS	7.5	8.0	9.0	12.0

Now we see that EPS increases with increasing level of debt.

(e) EBIT = 15000

Debt Level (%)	0	25	50	75
EBIT	15000	15000	15000	15000
Intt.	0	2500	5000	7500
PBT	15000	12500	10000	7500
Tax	6000	5000	4000	3000
PAT	9000	7500	6000	4500
Equity	100000	75000	50000	25000
EPS	9.0	10.0	12.0	18.0

If we increase the EBIT further, the impact on EPS is better still.

We can conclude from the above illustration that the firm should resort to financing its operations through debt only beyond a threshold or indifference level in order to benefit from tax breaks provided by interest on borrowings. In other words, debt is suitable if the EBIT is expanding rapidly. If the operations are shrinking, it should change its capital structure immediately in favour of equity capital.

The EBIT-EPS analysis of the above illustration can be summarised in the form of following table :

	Debt Levels (%)			
	0	25	50	75
EBIT	**EPS at above levels**			

5000	3.0	2.0	0	□1.0
7500	4.5	4.0	3.0	0
10000	**6.0**	**6.0**	**6.0**	**6.0**
12500	7.5	8.0	9.0	12.0
15000	9.0	10.0	12.0	18.0

The indifference point of a firm (EBIT of Rs. 10000 in this case) varies from firm to firm but normally it approximates the break even point.

COST OF CAPITAL

By the term capital employed, we mean the total funds deployed in a firm. These funds consist of both the owners' capital and the borrowed funds. The capital employed is essentially long term in nature. The capital employed has a cost to the firm. It is very essential that the firm should ascertain this cost correctly because the return on capital employed must be greater than the cost for long term solvency and profitability of the firm.

Factors determining cost of capital

Cost of capital, like all other costs, is a variable term, subject to changes in a number of factors. The various factors that play a part in determination of cost of capital are described below:

General economic conditions

The structure of interest rates is linked to the general economic conditions prevalent in the economy. Cost of capital, in turn, is related to the interest rate structure. Fluctuation in interest rates occurs as a result of changes in the demand supply equilibrium of investible funds. When investment demand is more than the supply, the rate of interest tends to rise and hence the cost of capital is also more during these periods. On the other hand, during times of slack investment demand, the cost of capital declines due to available supply of funds being more than the demand. The fluctuation in the cost of capital may not be as frequent as the changes in interest rates because the deployment of funds in the debt component of capital is for a longer period of time. But nevertheless, the cost of capital reflects the prevailing returns expected from investments in avenues of similar risk profile.

Risk profile of the project

Given a particular set of economic conditions, the cost of capital might vary between industries and between firms in the same industry. This happens because of variation in the risk profile of the firm. A project considered risky would attract capital at a higher cost than a project in the same industry having lesser risk.

COST OF DEBT

While discussing the cost of debt, we are concerned essentially with long term debt of the firm. It is assumed that either short term debt plays insignificant part in determining the cost of debt or that the interest on short term debt is balanced by

interest on short term receivables. We also assume that the long term debt has been used to finance long term projects. Deployment of long term funds for built up of short term or current assets results in sub-optimal use of the resources. Use of short term funds for long term uses on the other hand results in a maturity mismatch and the resultant liquidity problem for the firm.

We denote cost of debt by the symbol K(d). It is calculated in different ways depending upon whether the debt is a rolling or a fixed term debt redeemable at the expiry of the term. In case of rolling debt, the debt is assumed to roll over from one term to another at the same rate of interest. The term of debt is also assumed to be same.

In this case K(d) is calculated as under :

$$K(d) = I / P(d)$$

where I = annualised interest payment
P (d) = Principal amount of the debt

Under the situation, i.e. when the debt is assumed to be of a fixed term, K(d) is ascertained by equating the market value of the debt aggregate of the present value of the sum of the annualised interest payments (net of tax) and periodic repayment of the principal. The equation is solved for the appropriate rate of discount K(d) which is after the tax cost of debt.

COST OF PREFERENCE SHARE CAPITAL

Preference Share Capital differs from the equity share capital in two major ways:

— While Paying dividend, Preference Share Capital has prior right of been paid at the stipulated role.

— The preference capital can be redeemed as per terms of the issue while equity capital cannot be redeemed except under special circumstances.

Preference Capital is in fact a disguised form of debt. The preference dividend is akin to the interest payment and redemption of preference capital is equivalent to redemption of debt. Its inclusion in the share capital component is primarily done to tone down the borrowings of the firm in the balance sheet. In India preference share capital is not much in vogue.

Cost of Preference Share Capital is arrived at by equating the aggregate of present value of the periodic dividend payments and the redemption amount.

COST OF EQUITY CAPITAL

Equity Capital is the money invested by the promoters in the firm. The return which promoters get is of two kinds:

— Periodic Payments in the form of dividends. This is an explicit return.

— The capital appreciation which they might get by selling the shares at the increase in the market value of the shares. This return is an implicit return. The market value is an indicative measure of the return to the investors when they wish to redeem their investment

What then is the cost of equity capital to the firm. Is it equal to the rate of dividend payment? In case the firm does not pay any dividend, can we say that the cost of equity capital to the firm is zero?

No, we cannot say that the cost of equity capital is nil. In fact this cost is a residual cost which is dependent upon other components of the Capital structure. By residual cost we mean that the cost of equity is calculated after the cost of debt and cost of preference capital have been arrived at. We have seen that the cost of debt and the cost of preference share capital are approximations of the rate of interest on debt and rate of preference dividend respectively. These costs are more or less known at the time of investment and financing. The cost of equity share capital is not known in advance. At the end of the year, the firm distributes earnings among the shareholders in the form of dividends. The amount of dividend paid is an appropriation of the post tax surplus of the firm. For the sake of simplicity, we can treat the rate of dividend paid as a cost of the company. But there is a retained surplus also which is ploughed back into the business. How do we measure the cost of these retained earnings?

Fundamentally, cost of equity share capital is the expected return on investment made in the firm after accounting for servicing of outside liabilities. This cost has thus two components, cost of dividends and cost of retained earnings.

Cost of Dividends

Since dividend is an annual payout to the share holders, we assume that the cost of dividend is the rate of dividend expected to be paid annually. We can express K(e) the cost of equity in a simple case, where the equity shares are intended to be sold and dividend is received annually in perpetuity, as under:

Constant Perpetual Dividend

$$K(e) = d / P(e)$$

where d = Annual Dividend Payment
& P(e) = Principal investment in equity capital less the floatation costs.

Variable Fixed period Dividend

As a variation of this example, we can consider a situation where the dividends are not expected to be received in perpetuity but over a period of five to seven years after which the shareholders might take a decision about liquidating the investment . In such a case, the cost of dividend is calculated as under:

$$P(p) = \frac{d1}{(1+ K(e))1} + \frac{d2}{(1+ K(e))2} + ...+ .....+ \frac{d5}{(1+ K(e))5}$$

where d1, d2, ……., d5 = Dividend received over five years.
and K(e) = Rate of return or the cost which equates the present value of the dividends with the present value of equity investment net of floatation costs

Perpetual Growing Dividend

If we consider that dividend is to be paid in perpetuity and has as annual constant growth rate of g, then the cost of dividends is given by the following equation :

$$K(e) = \frac{di}{P(e)} + g$$

where di = Dividend received during the current year
g = Constant growth rate of dividends

Cost of Retained Earnings

The second component of cost of equity capital is the retained earnings. These are reinvested in the firm. Since there is no explicit pay-out from the retained earnings, it has been argued that there is no cost to the firm for carrying these retained earnings. It is further stated that these retained earnings acquire the character of owners' perpetual capital and as such, the return on investment of the firm is ultimately proportional to the rate of growth of retained earnings. These arguments, though valid to a limited extent, ignore a vital element of equity investment, i.e. the redemption or exit price. Investors in equity capital are always looking at the market value or realisable value of the investment while evaluating it. They stay invested in equity so long as the returns from this investment are equal to or better than the returns obtainable from an investment having matching size and risk quotient. In case of inadequate returns, they seek to liquidate the investment. Therefore, the cost of retained equity is the opportunity cost of returns obtained in a similar investment elsewhere.

Combined cost of capital

We can now arrive at the combined cost of capital for the firm as shown below:

C = Cost of Debt +
Cost of Preference Share Capital +
Cost of equity Share Capital +
Cost of retained earnings.

Out of the above, cost of debt and cost of preference share capital are explicit costs. Cost of equity share capital as measured by the cost of dividends is also an explicit cost if the assumptions regarding constancy and growth rate can be validated. Cost of retained earnings, on the other hand, is an implicit cost, dependant upon the opportunity cost of investment elsewhere in the system.

But we can not arrive at the total cost of capital by simple averaging of various component costs. Consider the case of a firm which has the following capital structure :

Name of component	*Amount*	*Cost (%)*
Debt	4000	14
Preference capital	1000	9
Equity capital	1000	15
Retained earnings	4000	18
Average cost = 14%.		

The average cost of 14% is not a realistic estimate of the total cost of capital. For doing this, we have to take recourse to the weighted average cost of capital.

Weighted Average Cost of Capital

The weighted average cost of capital (WACC), as the name implies, is the weighted average of the costs of different components of the capital structure of a firm. WACC is calculated after assigning different weights to the components according to the proportion of that component in the capital structure.

Hence in the above illustration, the weights would be assigned as shown below:

Component	*Weight (%)*	*Cost (%)*	*Weighted Cost*
Debt	40	14	14 x 0.4 = 5.6
Preference capital	10	9	9 x 0.1 = 0.9
Equity capital	10	15	15 x 0.1 = 1.5
Retained earnings	40	18	18 x 0.4 = 7.2
Total WACC	= 5.6 + 0.9 + 1.5 + 7.2 = 15.2 %.		

Marginal Cost of Capital (MCC)

MCC can be defined as the cost of additional capital introduced in the capital structure since we have assumed that the capital structure can vary according to changing requirements of the firm.

The following illustration shows how marginal cost of capital can be calculated:

Let us assume that the capital structure of the firm has been expanded by addition to various components. The addition has been Rs. 2000 lacs for debt, Rs. 1000 lacs for preference capital , Rs. 2000 lacs for equity capital and Rs. 6000 lacs for retained earnings. The cost of each component of the capital structure after addition would be the weighted average of the old and new values of the component:

Component	*Existing Value*	*Cost (%)*	*Additional Value*	*Cost (%)*	*Weighted Average Cost (%)*
Debt	4000	14	2000	16	14.6
Pref. Capital	1000	9	1000	12	10.5
Equity Capital	1000	15	2000	20	18.34
Ret. Earnings	4000	18	6000	18	18.00

Having calculated the weighted cost of each component, we calculate the weighted average cost of the entire capital structure now:

Component	*Weight (%)*	*Cost (%)*	*Weighted Cost*
Debt	28.57	14.6	14.6 x 0.29 = 4.23
Preference capital	9.52	10.5	10.5 x 0.0952 = 1.00

Equity capital	14.28	18.34	18.34 x 0.1428 = 2.62
Retained earnings	47.62	18	18 x 0.4762 = 8.57
Total	WACC = 4.23 + 1.00 + 2.62 + 8.57 = 16.42 %		

Marginal cost of addition is 16.42 – 15.2 = 1.22%. The return on investment has to be more than the revised weighted average cost of capital in order to ensure that the investors stay invested.

LESSON ROUND-UP

- Capital Structure of a firm is a reflection of the overall investment and financing strategy of the firm. It shows how much reliance is being placed by the firm on external sources of finance and how much internal accruals are being used to finance expansions.
- Optimal capital structure means arrangement of various components of the structure in tune with both the long-term and short term objectives of the firm.
- The three Capital Structure Theories are—Net Income Approach, Net Operating Income Approach and Modigliani Millar Approach.
- Net income approach provides that the cost of debt capital, K_d and the cost of equity capital K_e remains unchanged when the degree of leverage, varies.
- Net Operating Income approach states that cost of the capital for the whole firm remains constant, irrespective of the leverage employed in the firm.
- Modigliani and Miller have restated the net operating income position in terms of three basic propositions:

  Proposition I – The total value of a firm is equal to its expected operating income divided by the discount rate appropriate to its risk class.

  Proposition II – The expected yield on equity, Ke is equal to Ko plus a premium.

  Proposition III – The cut off rate for investment decision making for a firm in a given risk class is not affected by the manner in which the investment is financed.
- Leverage: leverage refers to relationship between two variables as reflected in a unit change in one variable consequent upon a unit change in another variable.

  $$\text{Leverage} = \frac{\text{Unit change in desired result}}{\text{Unit change in chosen variable}}$$
- Two major types of Leverages are: Financial leverage and operating leverage.
- Financial leverage measures the extent to which the cost of project has been funded by borrowed money as compared to owner's equity.
- EBIT –EPS Analysis indicates the projected EPS for different financial plans.
- Cost of the Debt is calculated in different ways depending upon whether the debt is a rolling or a fixed term that redeemable at the expiry of the term.
- Cost of the preferential share capital is arrived at by equating the aggregate of present value of the periodic dividend payments and redemption amount.
- Cost of equity share capital is the expected return on investment made in the firm after accounting for servicing of outside liabilities.

- Cost of Dividend is the rate of dividend expected to be paid annually.
- Cost of Retained Earnings is an implicit cost dependent upon the opportunity cost of the investment elsewhere.
- Weighted Average Cost of Capital is weighted average of the costs of different components of the capital structure of a firm.
- Marginal Cost of Capital can be defined as the cost of the additional capital introduced in the capital structure.

SELF-TEST QUESTIONS

1. What is the significance of capital structure? Describe its various kinds.
2. What points need to be kept in mind while deciding the capital structure of a firm?
3. Describe the process of planning and designing of capital structure.
4. Briefly discuss the theories of capital structure.
5. Illustrate the difference between operating leverage and financial leverage.
6. What factors determine the cost of capital?
7. Explain the various types and leverages and their significance in financial decision making.

Suggested Readings:

(1) Introduction to Financial Management—*O. Maurice Joy*
(2) The Capital Budgeting Decisions—*Harold Bierman Jr. and Seymour Smidt*; Macmillan Publishing Company, New York.
(3) Management of Company Finance—*Samuel and Wilhies*

STUDY IV

SOURCES OF FINANCE

LEARNING OBJECTIVES

The object of the study is to enable the students to understand various financial instruments:

- Classification of instruments
- Equity Shares
- Preference shares and its various kinds
- Tracking stocks
- Sweat Equity shares
- Foreign Currency Convertible Bonds/Global Depository Receipts
- Derivatives
- Debenture and Bonds
- Company Deposits
- Term Loan from Financial Institutions and Banks
- Internal Fund as Source of Finance
- Dividend Policy and Retention of Profits
- Bonus Shares
- International Finance and Syndication of Loans
- International Financial Market
- Finance from various Foreign Financial Institutions and Banks.

INTRODUCTION

The capital structure of a company constitutes mainly the owners' funds and the borrowed capital. The owners' funds come in the shape of their contributions made voluntarily known as shares which are of two main types viz., the equity shares and preference shares. The share capital of a company limited by shares shall be of two kinds only, namely:

(a) equity share capital:
  (i) with voting rights; or
  (ii) with differential rights as to dividend, voting or otherwise in accordance with such rules and subject to such conditions as may be prescribed;

(b) preference share capital.

The borrowed funds which come in the shape of long, short or medium term loans or debentures or bonds are mainly secured loans. There is another type of borrowed capital known as public deposits which remain unsecured and carry higher risk for investors.

All these above types of elements of capital structure are the sources of company

finance and the same are discussed below in detail.

EQUITY SHARES

Equity shares, commonly referred to as ordinary share also represents the form of fractional ownership in which a shareholder, as a fractional owner, undertakes the maximum entrepreneurial risk associated with a business venture. The holder of such shares are member of the company and have voting rights. A company may issue shares with differential rights as to voting, payment of dividend etc.

Equity capital and further issues of equity capital by a company are generally based on the condition that they will rank *pari passu* alongwith the earlier issued share capital in all respects. However, as regards dividend declared by the company such additional capital shall be entitled to dividend ratably for the period commencing from the date of issue to the last day of the accounting year, unless otherwise specified in the articles or in the terms of the issue.

Important characteristics of equity shares are given below:

1. Equity shares, other than non-voting shares, have voting rights at all general meetings of the company. These votes have the affect of the controlling the management of the company.
2. Equity shares have the right to share the profits of the company in the form of dividend (cash) and bonus shares. However even equity shareholders cannot demand declaration of dividend by the company which is left to the discretion of the Board of Directors.
3. When the company is wound up, payment towards the equity share capital will be made to the respective shareholders only after payment of the claims of all the creditors and the preference share capital.
4. Equity share holders enjoy different rights as members such as:
   (a) right of pre-emption in the matter of fresh issue of capital (Section 81)
   (b) right to apply to the court to set aside variations of their rights to their detriment (Section 107)
   (c) right to receive a copy of the statutory report before the holding of the statutory meeting by public companies (Section 165)
   (d) right to apply to Central Government to call for the Annual General Meeting, if the company fails to call such a meeting (Section 167)
   (e) right to apply to Company Law Board for calling for an extra-ordinary general meeting of the company (Section 186)
   (f) right to receive annual accounts along with the auditors report, directors report and other information (Sections 210, 217 and 219).

[The rights mentioned at 4(b), 4(c), 4(d), 4(e) and 4(f) are also available to the preference shareholders. The right of pre-emption in the matter of fresh issue of capital is available only to the equity shareholders vide Section 81(1)(a)].

Equity shareholders, other than non-voting shares are entitled to voting rights in all matters, whereas preference shareholders are entitled to voting rights if the assured dividend to which they are entitled has been in arrears for a specified period. In the normal course where there is no dividend in arrears to be paid to them they

have no voting rights except in a class meeting convened for preference share holders for specific purposes.

Shares with Differential Voting Rights

The Central Government notified Companies (Issue of Share Capital with Differential Voting Rights) Rules, 2001 vide GSR No. 167(E) dated 9th March, 2001.

Rules 3 of the Rules enables companies limited by shares to issue shares with differential rights as to dividend, voting or otherwise, subject to fulfilment of certain conditions. The conditions are required to be fulfilled at the time of issue of equity shares with differential rights for the simple reason that these are the conditions subject to which a company may issue shares with differential rights. The conditions are:

1. The company has distributable profits in terms of Section 205 of the Companies Act, 1956 for preceding three financial years preceding the year in which it was decided to issue such shares.
2. The company has not defaulted in filing annual accounts and annual returns for three financial years immediately preceding the financial year of the year in which it was decided to issue such share. The period of three financial years prescribed above shall be reduced proportionately in the case of companies, which are in existence for less than three financial years. In cases where the default has been condoned by the prescribed authority, it shall be deemed, for the purpose of this clause that the company had not defaulted in filing of the documents. In other words, the condition does not apply to companies, which have made good the default.
3. The company has not failed to repay its deposits or interest thereon on due date or redeem its debentures on due date or pay dividend.

   The above two conditions are similar to the provisions of Section 274(1)(g) disqualifying a director under that section.
4. The Articles of Association of the company authorizes the issue of shares with differential voting rights. Where the articles of association of a company do not authorize issue such shares, then a special resolution under Section 31 of the Act shall be passed in the general meeting to suitably alter the articles.
5. The company has not been convicted of any offence arising under, Securities Exchange Board of India Act, 1992; Securities Contracts (Regulation) Act, 1956. Foreign Exchange Management Act, 1999. All the above rules are stringent, for they prohibit companies having defaulted/convicted, as the case may be, in the specified areas once in a lifetime. The clause, however, does not cover the offences under Companies Act, 1956.
6. The company has not defaulted in meeting investors' grievances. The definition of "meeting" of investors' grievances is not clear. In true sense, it means satisfaction of investor or doing the rightful thing, which will reach the logical end. One may say that replying investors may amount to meeting investor's grievance. This argument seems justifiable in cases where the investors do not respond by submitting necessary information/documents, whereby the cases remains pending at their end.
7. The company has obtained the approval of shareholders in general meeting

by passing resolution as required under the provision of sub-clause (a) of Sub-section (1) of Section 94 read with Sub-section (2) of the said section.

This rule requires companies to obtain approval of the shareholders in the general meeting by passing resolution under Section 94(1)(a) for increase in share capital by issuing new shares. However, such resolution is not required in cases where a company does not issue new shares with differential rights, but varies the rights of the existing equity shares to include an element of difference in rights attached to those shares, subject to compliance with the conditions prescribed under Sections 106 and 107 and the provisions in the articles of association of the company.

The opening words of Rule 3 namely, "Every company limited by shares may issue with..." do not supersede the provisions of Sections 106 and 107 and do not, thereby, require companies to issue fresh shares with differential rights. Sections 106 and 107 deal with the shares of different classes of shares. Therefore, a company having equity share capital may have two classes of shares e.g. — A—class equity shares and B—class equity shares. Further, Section 94(1)(a) deals with increase in share capital by issue of new shares only. However, there is a room for debate on this issue.

8. The listed public company has obtained the approval of shareholders through postal ballot. One will have to carry out necessary procedures under the Rules governing Postal Ballot.

9. The notice of the meeting at which resolution is proposed to be passed is accompanied by an explanatory statement stating—

(a) the rate of voting rights which the equity share capital with differential voting right shall carry (differential voting right here includes right to voting, dividend or otherwise);

(b) the scale or in proportion to which the rights of such class or type of shares will vary (the particulars of the differential right shall be provided for);

(c) the company shall not convert its equity capital with voting rights into equity share capital with differential voting rights and the shares with differential voting rights into equity share capital with voting rights (however, one may take shelter under Sections 106 and 107 as explained above);

(d) the shares with differential voting rights shall not exceed 25% of the total share capital issued; (this clause limits the quantum of shares that may be issued with differential rights). The limit could have been restricted to paid-up capital rather than issued capital.

Clauses (c) and (d) of Rule 9 of the Rules, could have been bifurcated into sub-rules stipulating conditions, rather than requiring companies to make them a part of the explanatory statement;

(e) that a member of the company holding any equity share with differential right shall be entitled to bonus shares, right shares of the same class;

(f) the holders of the equity shares with differential right shall enjoy all other rights to which the holder is entitled to excepting the differential right as

indicated in (a) above.

The holders of the equity shares with differential voting rights shall enjoy all other rights to which the holder is entitled to excepting the differential right.

Rule 4 of the Rules requires every company referred to in rule 3 to maintain a register as required under Section 150 of the Act containing the particulars of differential rights to which the holder is entitled.

As per Section 2(46A) a share with differential rights means a share that is issued with differential rights in accordance with the provisions of section 86 of the Act. The equity shares with differential rights include equity shares with differential rights as to—

(a) voting; (b) dividend; and (c) otherwise.

Neither the Act nor the Rules define the term—"otherwise", which may include any other right attached to equity shares.

Preference Shares

Owners of this kind of shares are entitled to a fixed dividend or dividend calculated at a fixed rate to be paid regularly before dividend can be paid in respect of equity shares. They also enjoy privity over the equity shareholders in payment of surplus. But in the event of liquidation their claims rank below the claims of company's creditors, bondholders/debenture holders.

The following kinds of preference shares are dealt with by the companies:

1. cumulative preference shares
2. non-cumulative preference shares
3. convertible preference shares
4. redeemable preference shares
5. irredeemable preference shares
6. participating preference share
7. non participating preference shares

Cumulative preference shares

In the case of this type of share the dividend payable every year becomes a first claim while declaring dividend by the company. In case the company does not have adequate profit or for some reason the company does not want to pay preference dividend, it gets accumulated for being paid subsequently. Such arrears of preference dividend will be carried forward and paid out of the profits of the subsequent years, before payment of equity dividend. However, if a company goes into the liquidation no arrears of preference dividend will be payable unless the Articles of Association of the issuing company contains a specific provision to make such payment even in winding up.

Non-cumulative preference shares

In the case of these shares, dividend does not accumulate. If there are no profits or the profits are inadequate in any year, the shares are not entitled to any dividend for that year. Unless there is a specific provision in the Articles of Association of the company, the preference shareholders have no right to participate in the surplus

profits or in the surplus assets in a winding up. They are entitled to payment of the declared preference dividend in any particular year and to the repayment of their preference capital in the event of winding up before payment to the equity shareholders.

Convertible preference shares

If the terms of issue of preference shares includes a right for converting them into equity shares at the end of a specified period they are called convertible preference shares. In the absence of such condition or right, the preference shares are not converted into equity shares to become eligible for various rights such as voting, higher dividend, bonus issue etc. as in the case of equity shares. These shares are some times referred to as quasi equity shares in common parlance. Companies may even charge a premium as part of the terms of conversion of preference shares, as they do sometimes while converting debentures into equity shares.

Redeemable preference shares

If the articles of a company so authorise, redeemable preference shares can be issued. This is in contrast to the principle that the company normally can not redeem or buy back its own shares vide Section 77 of the Act, except by following the procedure for reduction of capital and getting the sanction of the High Court in pursuance of Sections 100 to 104 or of Section 402. With effect from 31st October, 1998 a new Section 77A has been inserted in the Act empowering companies to purchase its own securities under certain circumstances and subject to certain conditions.

Section 80 regulates the redemption of redeemable preference shares as follows:

1. The partly paid shares, if any, must be made fully paid up.
2. The shares are to be redeemed only out of the profits of the company, which would otherwise be available for distribution of dividend or out of the proceeds of a fresh issue of shares made for the purpose.
3. The premium, if any payable, on redemption should be provided for out of the profits of the company or its security premium account.
4. Where redemption is made out of profits, a sum equal to the nominal value of the shares redeemed, must be transferred to a capital redemption reserve account which can be utilised only to pay up unissued shares of the company to be issued as fully paid bonus shares.

With effect from 1st March, 1997 a new sub-section 5A has been inserted under Section 80 laying down that no company limited by shares shall issue any preference shares which is irredeemable or is redeemable after the expiry of a period of 20 years from the date of its issue.

Irredeemable preference shares

If the terms of issue provide that the preference shares are not redeemable except on the happening of certain specified events which may not happen for an indefinite period such as winding up, these shares are called irredeemable preference shares. Issue of irredeemable preference shares was permitted till the

amendment of the Act by introduction of Section 80A with effect from 15th June, 1988 (This has been further amended by Sub-section 5A with effect from 1st March, 1997). As per the 1988 amendment all preference shares existing on 15th June, 1988 which were not redeemable within 10 years from the date of the issue and had not been redeemed on or before 15th June, 1998 were to be compulsorily redeemed by the company on the due date of redemption or within a period not exceeding 10 years from 15th June, 1988. Where a company was not in a position to redeem any shares within the period aforesaid and to pay the dividend thereon, the company may with the consent of Company Law Board on a petition made by it in this behalf, issue further redeemable shares equal to the amounts due including the dividend thereon in respect of unredeemed preference shares. On the issue of such further redeemable preference shares, the unredeemed shares shall be deemed to have been redeemed.

Participating preference shares

Preference shareholders are not entitled to dividend more than what has been indicated as part of the terms of issue, even in a year in which the company has made huge profits. Subject to provision in the terms of issue these shares can be entitled to participate in the surplus profits left, after payment of dividend to the preference and the equity shareholders to the extent provided therein. Subject to provisions in the terms of issue such preference shares can be entitled even to bonus shares.

Non participating preference shares

Unless the terms of issue indicate specifically otherwise, all preference shares are to be regarded as non-participating preference shares.

SAFEGUARDS FOR THE PREFERENCE SHAREHOLDERS

Preference shareholders do not undertake risk with regard to return on their investments unlike equity shareholders. Due to this reason the preference shareholders take following safeguards for securing their rights.

Firstly, preference shareholders may enter into an agreement with the issuing company to secure their rights in different ways viz., they can reserve the right to participate on a restricted basis in the profits of the company after the dividend to equity holders is paid at a certain pre-fixed rate. They may also insist upon the company to pay arrears of dividends on a cumulative basis.

Secondly, preference shareholders do not have any voting rights but if they do like, they can secure their voting rights with the company in certain emergency cases viz., when their dividends are in arrears, heavy accumulation of debts or creation of prior interest, or reorganisation or consolidation schemes. They may also contract for being given the right to appoint their directors or their voting power may be balanced with equity holders on matters which are likely to affect them directly. Preference shareholders generally have prior claim against the proceeds of assets at the time of liquidation of the company before the equity holders are paid anything. Despite the above, their rights of repayment of capital on preference basis are not guaranteed during the voluntary liquidation of the company caused due to unprofitable nature of the business. Further, in circumstances when the company is being absorbed by some other concern their rights are again challenged as equity holders are in a better

position to bargain their rights. Preference shareholders may also ensure through an agreement with the issuing company to provide for maintenance of certain ratios like current assets to current liabilities, equity dividends to net profits, working capital to fixed capital, etc. transfer of profits to reserves to pay dividends when the company's results are not profitable. They may also have the option reserved for, converting a part of the preference shares into the equity shares of the company. This aspect has now been amply guaranteed under the new instruments of security as announced by the government for creation of cumulative convertible preference shares as referred to in the preceding paragraph. So far, the preference shares issued by the Indian corporate sector are of cumulative redeemable nature with fixed period of maturity like debentures and bonds. Then preference shares are treated equally with equity shares in the balance sheet of the company although these are compared to debt with fixed rate of return, no voting rights, except in certain cases of vital interest to them as provided under the Companies Act, 1956.

A study done by Dr. L.C. Gupta reveals that preference shares do not compare well with bonds with regard to regularity of income because dividends on preference shares is skipped too often and by too many companies. This is instrumental in depressing the market price of preference shares. Besides, the market for preference shares is merely institutional and these institutions carry in their portfolio sizeable amount of non-yielding preference shares. Figures of the capital raised by Non-Government Public and Private Limited companies for the last 5 years reveal that the share of preference shares in the total amount raised constitute a negligible portion i.e. less than one percent. This is so because preference shares are issued by the companies at the instance of the institutions. Many times, the financial institutions providing loan capital insist for having this instrument. The Government has fixed preference equity ratio as 1:3 which is being demanded to be reduced to 1:5 or 1:6. In any case, preference share capital carry its importance in the capital structure of the corporate units for providing long term funds for the finance of trade and industry.

RIGHTS ISSUE

A rights offer is an offer of a company's shares to its existing shareholders. It gives them the first opportunity to purchase a new issue of shares. As per the terms of the offer, each existing shareholder has the right to be allotted a certain number of shares upon payment of the stipulated price. The number of shares he is offered is determined by the percentage of his existing share ownership in relation to the total number of company shares; he is offered a similar percentage of the new shares to be issued i.e. if the shareholder takes up the offer he will maintain his existing percentage ownership of the company.

Section 81 of the Companies Act, 1956 regulates 'further issue of capital' and gives the shareholders a pre-emptive right of subscribing to such shares issued after the expiry of two years from the formation of a company or one year from the date of the first allotment, whichever is earlier. It is because of this pre-emptive right that these shares are called 'right shares'. The shareholders have the right of renunciation of the shares offered to them in favour of any other person, unless the company's articles otherwise provide.

The pre-emptive right of shareholders may be withdrawn or modified by applying

Section 81(1A) of the Companies Act, 1956. While offering rights issue the following points should be taken into account:

(1) Offer of rights shares to the existing shareholders must be made by notice specifying the number of shares offered.

(2) Where public and rights issues are made as a composite they can be made at different media.

(3) Gap between the closure dates of rights issue and public issue should not exceed 30 days.

(4) Reservation of rights issue is allowed and it is subjected to a lock-in-period of 3 years.

(5) Rights issue must have been underwritten atleast to the extent of net rights offer.

(6) Rights issue is not to be kept open for more than 60 days.

(7) Proposed rights issue should not result in the dilution of the value or rights of FC/PC debenture holders.

(8) The letter of offer must conform to the disclosure prescribed in Form 2A under Section 56(3) of the Companies Act, 1956.

(9) Under any circumstances, no part of over subscription should be retained i.e. the issue should not exceed the quantum specified in the prospectus.

DEBENTURES AND BONDS

The Companies Act, 1956, defines debentures as "including debentures stock, bonds and any other securities of a company whether constituting a charge on the assets of the company or not". The terms debentures and bonds are interchangeable, and represent loan component in the capital structure of the company. Providers of debenture capital are known as debenture holder. They are creditors of the company and have no right in the company except for payment of interest on their loans and repayment of the loans in accordance with the terms and conditions on which they are issued. The company can raise money against issues of debentures as authorised under its Memorandum of Association and Articles of Association.

Debenture stock is the consolidated mass of debenture capital for the sake of convenience. Debenture stock differs from debentures in form rather than in substance.

The different classes of debentures are shown in the following chart:

Nature	*Type*
Security	Unsecured/Naked Debentures Secured Debentures Convertible Debentures Partially Convertible Debentures
Repayment of Capital	Redeemable Debentures Irredeemable Debentures

Transfer	Bearer Debentures Registered Debentures

Debentures may be secured or unsecured and companies frequently issue both kinds of debentures. Secured debentures bear charge on certain assets of the company viz., both existing and future, upon which the debenture holders may look in the event of default on interest payment/repayment of loan instalment. Unsecured debenture holders, on the other hand, are entitled to repayment equally with ordinary secured creditors and rank in priority for their repayment *vis-a-vis* unsecured creditors. In the event of liquidation the unsecured debenture holders rank after secured debentures/loans equally with general creditors and before share capital. Trustees are appointed for unsecured loan stock in the same way as for secured debenture stock but they hold no assets and simply watch the interests of stock holders particularly with regard to restrictions on borrowings which are included in the terms of issue of debentures.

Both these types of debentures may be convertible or non-convertible. Convertible debentures are those which carry a right of being converted into equity capital of the company in a phased manner on fixed dates, whereas this privilege is not available to non-convertible debentures. The difference between the two, from the point of view of security, is that convertible debenture stock carries a lower coupon rate than the non-convertible loan stock because the former carries the right of conversion into equity shares at some future date. Debentures of some companies are quoted on Stock Exchange.

Other classification of debentures include redeemable and irredeemable debentures or perpetual debentures. Debentures which are repayable on the expiry of the term of the loan are called redeemable debentures. These debentures can be reissued on redemption. When a company re-issues the redeemed debentures it keeps the old debentures alive by transferring them to a nominee of the company who transfers them back and re-issue to the new holders. The perpetual debentures shall not be paid back and become redeemable only on winding up of a company or on appointment of recoverer as per the terms of agreement of the issue of debentures.

Another way of classification is bearer debentures and registered debentures. Bearer debentures are negotiable instrument and are transferable by mere delivery like share warrants. The holder of such debentures is entitled to claim interest and recover the principal when due. He is a holder in due course unless contrary is proved. A person who acquires them in a due course gets a good title. No stamp duty is paid on transfer of such debentures as these are not required to be registered in the name of the holder. On the other hand, registered debentures are required to be registered in the name of the holder in the register of the company. They are transferable in the same manner as the shares. The interest payment and re-payment of instalments of principal sum are made to the holders, whose names appear in the register of debenture holders.

In the last few years, another instrument has gained immense popularity, i.e. partially convertible debentures. Combining the features of both types of debentures and equity shares, the instrument provided an opportunity to the corporate sector to

fix a lower premium on the issues of the company.

IMPORTANCE OF DEBENTURES

Importance of debentures and bonds in the capital structure of a company is very significant particularly due to the following reasons:

1. Debenture holders or suppliers of loan capital have no controlling interest in the company.
2. Finance is available for a fixed period with certainty and thus the company can adjust its investment plans suitably by taking into account the funds available.
3. It enhances the earnings of equity holders through the operation of financial leverage.
4. In depressed market conditions debentures provide a good source of finance for a company and is beneficial to the investors.
5. It provides long-term finance to company on easy and cheap terms. The cost of debt is lower than cost of equity or preference shares as interest is tax deductible.
6 Debenture help in mobilisation of savings from public particularly from those investors who are risk aversive.

Debentures as a source of finance suit companies which have regular earnings to service the debt, have higher proportion of fixed assets in their assets structure which offers adequate security and motivates investors. The company has to ensure maintenance of prudent debt equity ratio.

Recent trend in the issue of debentures has been quite encouraging because of the following factors viz.

1. Support from investment institutions is adequately available. LIC, UTI, GIC and others have been in field to invest public funds in the debenture issues;
2. Emergence of institutions acting as trustees for debenture holders have reposed confidence in the investing public for the security of their money and safeguard of their interest as creditors;
3. Institutional underwriters, merchant banks in public and private sector have come up to render successful underwriting services to the investor as well as the needy companies;
4. Investors preference to high yielding securities with minimum risk has encouraged issue of debentures by the companies.
5. Cost of raising money through debenture is minimum as against the cost involved in other sources of finance;
6. Debenture issuing company is obliged now to create a debenture redemption fund to protect the interest of debenture holders.

COMPANY DEPOSITS

Indian financial system has a popular practice of acceptance of fixed deposit from the public by all type of manufacturing firm and non-banking financial companies in the private sector.

The term deposit has been defined in Section 58A of the Companies Act 1956, as any deposit of money with and includes any amount borrowed by a company but shall not include such categories of amount as may be prescribed in consultation with the Reserve Bank of India.

Now-a-days public deposits are a prominent source of finance to the companies. Non-banking companies and even big group of companies resort to acceptance of deposits from public owing to number of advantages available like:

(1) Funds are available at low cost.

(2) There is no need to provide security.

(3) Process is very simple and no restrictive covenants are involved.

(4) Restrictions put by the RBI on financial institutions to advance, to prevent hoarding and black marketing leads the companies to accept deposits from the public.

(5) Tax deductibility of interest paid on deposits.

BENEFITS TO THE DEPOSITORS

(i) High rate of interest.

(ii) Maturity period is relatively short.

The Companies (Acceptance of Deposit) Rules, 1975 require the companies to comply with the following for accepting deposits:

(1) Limit upto which deposit can be accepted,

(2) Maximum interest and brokerage payable, on deposits,

(3) Maintenance of liquid assets,

(4) Issue of advertisement or statement in lieu of advertisement,

(5) Form to be supplied by the company,

(6) Receipt to be issued for deposit,

(7) Register of deposits,

(8) Return to be filed with Registrar,

(9) Penalties for default.

SECURED PREMIUM NOTES (SPN)

These instruments are issued with detachable warrants and are redeemable after a notified period say 4 to 7 years. The warrants enable the holder to get equity shares allotted provided the secured premium notes are fully paid. During the lock in period no interest is paid. The holder has an option to sell back the SPN to the company at par value after the lock in period. If the holder exercises this option, no interest/ premium is paid on redemption. In case the holder keeps it further, he is repaid the principal amount along with the additional interest/premium on redemption in installments as per the terms of issue. The conversion of detachable warrants into equity has to be done within the specified time. TISCO took the lead in July, 1992 by making a mega rights issue of equity shares and secured premium notes aggregating

to Rs.1,212 crores.

The terms of the SPN were so formulated that the return on investment was treated as capital gain and not regular income. Consequently, the rate of tax applicable was lower.

EQUITY SHARES WITH DETACHABLE WARRANTS

Essar Gujarat, Ranbaxy and Reliance issued this type of instrument. The holder of the warrant is eligible to apply for the specified number of shares on the appointed date at the pre-determined price. These warrants are separately registered with the stock exchanges and traded separately. The practice of issuing non convertible debentures with detachable warrants also exists in the Indian market. Reliance has used this method.

DEEP DISCOUNT BOND

IDBI and SIDBI had issued this instrument. For a deep discount price of Rs.2,700/- in IDBI the investor got a bond with the face value of Rs.1,00,000. The bond appreciates to its face value over the maturity period of 25 years. Alternatively, the investor can withdraw from the investment periodically after 5 years. The capital appreciation is charged to tax at capital gains rate which is lower than normal income tax rate. The deep discount bond is considered a safe, solid and liquid instrument and assigned the best rating by CRISIL.

FULLY CONVERTIBLE DEBENTURES WITH INTEREST (OPTIONAL)

In this case there is no interest payment involved say for the first 6 months. Then the holder can exercise option and apply for securities at a premium without paying additional amount. However interest will be payable at a determined rate from the date of first conversion to second/final conversion and in lieu thereof equity shares are issued.

Partly convertible debentures can also be issued with similar or modified features as indicated above.

FULLY CONVERTIBLE CUMULATIVE PREFERENCE SHARE (EQUIPREF)

This instrument is in two parts A & B. Part A is convertible into equity shares automatically and compulsorily on the date of allotment without any application by the allottee, and Part B is redeemed at par/converted into equity after a lock in period at the option of the investor, at a price 30% lower than the average market price. The dividend is given only for part B shares.

Upon conversion of each part, the face value stands reduced proportionately on the date of conversion.

SWEAT EQUITY SHARES

Sweat equity share is a instrument permitted to be issued by specified Indian companies, under Section 79A of Companies Act, 1956 inserted by Companies (Amendment) Act, 1999 w.e.f. 31st October, 1998. According to this section a public company may issue sweat equity shares of a class of shares already issued if the following conditions are fulfilled:

(a) The issue of sweat equity share is authorised by a special resolution passed by the company in the general meeting.

(b) The resolution specifies the number of shares, current market price, consideration if any and the class or classes of directors or employees to whom such equity shares are to be issued.

(c) Not less than one year has elapsed at the date of the issue, since the date on which the company was entitled to commence business.

(d) The sweat equity shares of a company whose equity shares are listed on a recognised stock exchange are issued in accordance with the regulations made by SEBI in this regard.

However, in the case of a company whose equity shares are not listed on any recognised stock exchange, the sweat equity shares are to be issued in accordance with the guidelines as may be prescribed.

The expression “company” means company incorporated, formed and registered under the Companies Act, 1956, and includes its subsidiary company incorporated in a Country outside India.

All the limitations, restrictions and provisions relating to equity shares are also applicable to such sweat equity shares issued under the new Section 79A.

As per explanation II under the Section, sweat equity shares can be issued by the company to employees or directors at a discount or for consideration other than cash, for providing know how or making available rights in the nature of intellectual property rights or value additions, by whatever name called.

It may be noted that the intellectual property right, know how or value additions arise as of now mainly in the case of Information Technology related companies and Pharmaceutical companies. Categories of industries which are eligible to issue sweat equity shares have not been indicated by the Government either in the Act or otherwise.

The term “sweat equity” indicates equity issued to directors and long time employees who have toiled from the inception of the company to build it with a brand image and thus contributed significantly by their efforts in this direction.

Since these shares are issued at a discount or for consideration other than cash, the company will generally select those employees and directors as per norms approved by the Board of Directors, based on the know how provided or intellectual property rights created and given for value additions made by such directors and employees to the company.

TRACKING STOCKS

Dr. J.J. Irani Expert Committee constituted by the Government to make recommendation on the Concept Paper on Company Law has recommended in its report for the introduction of ‘Tracking Stocks’ in the Indian Capital Market.

A Tracking stock is a type of common stock that “tracks” or depends on the financial performance of a specific business unit or operating division of a company,

rather than the operations of the company as a whole. As a result, if the unit or division performs well, the value of the tracking stocks may increase, even if the company's performance as a whole is not up to mark or satisfactory. The opposite may also be true.

A tracking stock is a special type of stock issued by a publicly held company to track the value of one segment of that company. By issuing a tracking stock, the different segments of the company can be valued differently by investors. Tracking stocks are generally issued by a parent company in order to create a financial vehicle that tracks the performance of a particular division or subsidiary. When a parent company issues a tracking stock, all revenues and expenses of the applicable division are separated from the parent company's financial statements and bound to the tracking stock. Often this is done to separate a high-growth division from large losses shown by the financial statements of the parent company. The parent company and its shareholders, however, still control operations of the subsidiary.

Tracking stock carries dividend rights tied to the performance of a targeted division without transferring ownership or control over divisional assets. In contrast to a spin-off or an equity carve-out, the parent retains full control, allowing it to enjoy any operating synergies, or economies of scale in administration or finance.

Shareholders of tracking stocks have a financial interest only in that unit or division of the company. Unlike the common stock of the company itself, a tracking stock usually has limited or no voting rights. In the event of a company's liquidation, tracking stock shareholders typically do not have a legal claim on the company's assets. If a tracking stock pays dividends, the amounts paid depends on the performance of the business unit or division. But not all tracking stocks pay dividends.

A company has many good reasons to issue a tracking stock for one of its subsidiaries (as opposed to spinning it off to shareholders).

(i) First, the company keeps control over the subsidiary (although they don't get all the profit), but all revenues and expenses of the division are separated from the parent company's financial statements and attributed to tracking stock. This is often done to separate a high growth division with large losses from the financial statements of the parent company.

(ii) Second, they might be able to lower their costs of obtaining capital by getting a better credit rating

(iii) Third, the businesses can share marketing, administrative support functions, etc.

(iv) Finally, if the tracking stock shoots up, the parent company can make acquisitions and pay in stock of subsidiary instead of cash.

When a tracking stock is issued, the company can choose to sell it to the markets (i.e., via an initial public offering) or to distribute new shares to existing shareholders. Either way, the newly tracked business segment gets a longer lease, but can still run back to the parent company in tough times.

Advantages of Tracking Stock

A key advantage of tracking stock is that it offers divisional managers a degree of decision-making authority that might otherwise be unattainable, given top management's reluctance to dilute its control over the division's assets. The practical effect should be to enhance job satisfaction for divisional managers, thus reducing retention risk and also increasing the company's responsiveness to changing market conditions. Also, investors have more direct access to the specific businesses of the parent, which can be highly useful in the case of a diversified company. Another possible reason for the growing popularity of trackers is that trackers allow mainstream companies to exploit the dual stock market pricing between conventional and high-tech or Internet businesses. By creating tracked business units, conventional businesses too can benefit from the pricing frenzy.

Disadvantages of Tracking Stock

For investors, tracking stocks can be of a mixed bag. Like regular stocks, tracking stockholders are entitled to dividends paid out by the subsidiaries issuing the tracking stock. Yet the holders of tracking stocks do not have ownership in the company, instead, at-times tracking stock shareholders vote on issues affecting the corporate parent, not the subsidiary whose stocks they own. Another downside is the fact that the board of directors of the tracking-stock subsidiary is often put in place by the parent company and is not elected by tracking stock shareholders, which would cause conflicts of interests.

The tracking stocks are highly skeptical also. Shareholders have limited voting rights, if any, and they cannot elect their own boards. Moreover, if the parent company falls on hard times, conflict could develop between the shareholders of a tracked division, especially if it continues to do well, and the shareholders of the parent company. The potential for such conflict could affect the performance of the tracking stock.

Another important drawback with tracking stock is that it can dramatically increase the potential for conflict and litigation over accounting policy. It is because the owners of the tracking stock have rights only over dividends, and dividend payouts are driven by the recognition of divisional profits, the arguments over profit recognition are almost sure to arise whenever tracking stock investors are disappointed in their returns. They will surely be tempted to accuse corporate management of adopting policies that deliberately understate their profits.

DISASTER BONDS

These are issued by companies and institutions to share the risk and expand the capital to link investors return with the size of insurer losses. The bigger the losses, the smaller the return and vice-versa. The coupon rate and the principal of the bonds are decided by the occurrence of the casualty of disaster and by the possibility of borrowers defaults.

OPTION BONDS

This instrument covers those cumulative and non-cumulative bonds where interest is payable on maturity or periodically and redemption premium is offered to attract investors.

EASY EXIT BONDS

This instrument covers both bonds which provide liquidity and an easy exit route to the investor by way of redemption or buy back where investors can get ready encashment in case of need to withdraw before maturity.

PAY IN KIND BONDS

This refers to bonds wherein interest for the first three to five years is paid through issue of additional bonds, which are called baby bonds as they are derived from parent bond.

SPLIT COUPON DEBENTURES

This instrument is issued at a discounted price and interest accrues in the first two years for subsequent payment in cash. This instrument helps better management of cash outflows in a new project depending upon cash generating capacity.

FLOATING RATE BONDS AND NOTES

In this case interest is not fixed and is allowed to float depending upon market conditions. This instrument is used by the issuers to hedge themselves against the volatility in interest rates.

Some of the above instruments have been used selectively by companies and institutions recently to raise funds.

CLIP AND STRIP BONDS

Clip and strip bonds also referred to as coupon notes, split the principal and coupon portions of a bond issue and two separate coupon instruments are sold to the investors.

In structuring a coupon note issue, a conventional current coupon bond is sold to the investor. The streams of coupon payments are stripped away and the principal amount of bond is sold as a deep discount bond. The gain to the investor is difference between the purchase price and the par value. The coupon streams are sold like zero coupon bonds where the investor pays discount for it and receives the payment at a lower rate.

DUAL CONVERTIBLE BONDS

A dual convertible bond is convertible into either equity shares or fixed interest rate debentures/preference shares at the option of the lender. Depending on the prospects of the project during the conversion period, the lender may exercise either of the options. The fixed interest rate debenture may have certain additional features including higher rate of interest distinct from the original debt instrument.

DEBT INSTRUMENTS WITH DEBT WARRANTS

Debt instruments may be issued with debt warrants which give the holder the option to invest in additional debt on the same terms within the period specified in the warrant. This instrument is beneficial to the investors in periods of falling interest rates when the holder can exercise the debt warrant option and hold additional debt

at, interest rates above market rates.

INDEXED RATE NOTES

In indexed rate notes, the interest rate fixation is postponed till the actual date of placement, rather than fixing it on the date of the commitment. The interest rate is computed on the date of take down at the then prevailing private placement rates, using a formula based on the index such as the 182 days treasury bill yield rates. These instruments are beneficial to a company in a high interest rate environment, if the interest rates are expected to decline between the date of commitment and the date of takedown.

STEPPED COUPON BONDS

Under stepped coupon bonds, the interest rate is stepped up or down during the tenure of the bond. The main advantage to the investor is the attraction of higher rate of interest in case of general rise in interest rates.

DUAL OPTION WARRANTS

Dual option warrants are designed to provide the buyer with good potential of capital appreciation and limited downside risk. Dual option warrants may be used to sell equity shares in different markets. For example, equity shares or debentures may be issued with two warrants - one warrant giving right to the purchaser to be allotted one equity share at the end of a certain period and another warrant with a debt or preference share option.

EXTENDABLE NOTES

Extendable notes are issued for 10 years with flexibility to the issuer to review the interest rate every two years. The interest rate is adjusted every two years to reflect the then prevailing market conditions by trying the interest rate to a spread over a bond index such as two years treasury notes. However, investors have a put option at par value every two years i.e. they have the right to sell the bond to the issuer at a fixed rate on the expiry of every two years.

This instrument encourages long term investor participation in the scheme by favourable review of interest rates every two years.

LEVEL PAY FLOATING RATE NOTES

Level pay floating rate notes are issued for a long period of time say 20 years, with adjustment in interest rate every five years. These notes provide for level payments for time intervals during the term of the note, with periodic interest adjustments tied to an index, and adjustments to the principal balance to reflect the difference between the portion of the payment allocable to interest and the amount of floating rate interest actually incurred. Maximum limits on upward adjustments to principal are specified at the outset to protect the lender from runaway floating exposure. The level pay note has the advantage to the issuer of having a predictable level of debt service for a period of years, thereby avoiding the uncertainties of floating debt on cash flows during that time.

INDUSTRIAL REVENUE BONDS

Industrial revenue bonds are issued by financial institutions in connection with the development or purchase of industrial facilities. These may become attractive if certain income-tax and wealth-tax concessions are offered.

The bond proceeds could be used to purchase or a construct facilities which are subsequently leased or sold to the company. The institution acts as a conduit of funds between the lenders and the company in order to take advantage of tax benefits enjoyed by the institutions.

COMMODITY BONDS

Commodity bonds are bonds issued to share the risk and profitability of future commodity prices with the investor. For example, petro bonds, silver bonds, gold bonds and coal bonds.

A petro bond may carry a fixed rate of interest with part of the face value of the bonds denominated in barrels of oil. There would be a floor in the face value of the bond. In view of the upside profit potential in oil prices, the interest rate could be lower than the market rate of interest. These bonds may be issued for decontrolled items.

PARTICIPATING PREFERENCE SHARES

These are quasi equities and can be issued by companies to bolster the net worth without dilution of management control. They are similar in all respects to non voting equity shares except for preference over equity in the event of winding up. The face value of the share may be Rs.10 or Rs.100. The coupon rate may be linked into equity dividend. These shares will have the right to fully participate in the profits of the company and also be eligible for bonus shares. These are irredeemable in nature and hence an amendment to Section 80 of the Companies Act is necessary to enable the issue of such shares.

They are issued to risk averse investors interested in a study return.

PARTICIPATING DEBENTURES

These debentures are profit sharing debentures which are unsecured with a right to participate in the profits of companies. These debentures can be issued upto a maximum of 50% of the voting equity shares. They shall have a maturity period of 3-10 years, and shall be listed separately on the stock exchanges.

These instruments are suited for high growth oriented existing dividend paying companies and may be issued by companies with a track record of dividend payment in the last two years and in 4 out of 5 or in 5 out of 7 previous years.

These debentures may be offered to all classes of investors including NRIs and foreigners. The investors in these instruments may also be given entitlement in right and bonus issues.

THIRD PARTY CONVERTIBLE DEBENTURES

These are debt instruments with warrant attached which gives an option to subscribe to the equity shares of another company at a price lower than the market price. These are similar to convertible debentures with warrant option except that

these debentures give an option to the investor to subscribe for shares in another company. The coupon rates on these debentures are lower than pure debt in view of the warrant option. The debentures are secured and can be issued to all classes of investors. These instruments are suitable for high profile companies raising resources for greenfield projects.

Possible variations of the instruments are detachable equity coupons and debentures with equity coupons.

MORTGAGE BACKED SECURITIES

These securities assure a fixed return which is derived from the performance of the specific assets. They are issued with a maturity period of 3 to 10 years and backed by pooled assets like mortgages, credit card receivables, etc. There is a commitment from the loan originator and/or intermediary institution to ensure a minimum yield on maturity.

Features of Assets to be Securitised

The assets to be securitised shall have the following features:

(a) The cash flows generated from the assets should be received periodically in accordance with a pre-determined schedule.

(b) The actual cash flows generated from the assets should be predictable.

(c) The assets should be large in number and total value to be issued in securitised form.

(d) The assets should be sufficiently similar in nature to enable pooling of their cash flows.

(e) The assets should be marketable.

Types of Asset backed Securities: There are two types of asset backed securities. In the first type, the investors have an interest in the underlying assets, usually through a special purpose trust. These are known as ‘Unitisation’ in UK and ‘Pass through Securities’ in USA.

The second type is where a special purpose vehicle, usually a company issues negotiable securities whose value is derived from and secured by the assets held by the vehicle. These are known as ‘securitisation’ in UK and ‘asset backed securities’ in USA.

Advantages of Asset backed Securities to Issuer:

(a) The issuer can generate cash from the assets immediately enabling funds to be redeployed in other projects.

(b) The issuer may be able to improve balance sheet ratios by excluding the original assets and the securities created by the assets from the balance sheet by suitable structuring of the transaction.

Advantages of Asset backed Securities to Investor.

These instruments have a relatively low credit risk since the securities are backed by good quality collateral and offer a higher yield than Government securities.

CONVERTIBLE DEBENTURES REDEEMABLE AT PREMIUM

These are convertible debentures issued at face value with a put option to the investor to resell the debentures to the issuer at a premium on a future date. The date value of the debentures is higher than the market value of the equity shares into which they are to be converted.

The pricing of the debenture is a very vital factor to the issuer, since the value of the debentures is fixed higher than the market value of the equity shares into which they are to be converted. Accordingly, the issuer is able to lower the financing cost by raising debentures at a high price and lower coupon rate as compared to convertible debenture redeemable at par.

If the price of the underlying equity shares does not rise sufficiently to make conversion attractive to the investor, he may exercise his put option and sell the debentures to the issuer at a premium.

The investor is not required to pay any tax on conversion of debentures into equity shares. The investor stands to gain if there is rise in price of the equity shares.

CARROT AND STICK BOND

Another variation of the above instrument is the carrot and stick bond. The carrot is the lower than normal conversion premium i.e. the premium over the present market price of the equity shares is fixed at a reasonable level so that the price of the equity shares need not increase significantly to make conversion practical. The stick is the issuer's right to call the issue at a specified premium if the price of the equity shares is traded above a specified percentage of the conversion price.

CAPITAL INDEXED BONDS

Capital indexed bonds are inflation-protection securities. Such bonds, therefore, provide good hedge against inflation risk. The benefits do extend beyond hedging. Capital index bonds can be used as a market indicator for inflation expectation. This will help investors take a more intelligent decision on their current consumption. Finally, the spot yield curve can be better constructed based on the real yields.

Inflation risk: A nominal bond is exposed to high inflation risk. This is the risk that inflation will increase, leading to increase in interest rate. Essentially then, inflation risk is a sub-component of interest rate risk. A capital indexed bonds lowers the interest rate risk by neutralising the inflation risk.

The effectiveness of the hedge will, however, depend on the appropriateness of the inflation index. The purpose of issuing capital indexed bonds will not be fully served if the RBI were to use the Wholesale Price Index (WPI) or the Retail Price Index (RPI) as the index for inflation. The reason is that these indices do not adequately capture inflation as it affects the investors, especially the retail class.

If banks are protected against inflation risk, they may, perhaps, pass on the

benefits in the form of higher interest rate to the retail investors. That, in turn, provides retail investors a higher cushion against inflation risk. In such cases, more the inflation index is aligned to price levels affecting retail consumption, better the hedge.

Inflation expectation: Investors buy bonds by postponing their current consumption. There is, therefore, a trade-off between investment and consumption. To make an intelligent decision between these two states of nature, investors need an indicator to measure inflation expectations. At present, due to lack of adequate measures, we assume that inflation expectation is the same as current inflation. If actual inflation were higher in the future, the investment decision may be unattractive. It is, therefore, important to proxy inflation expectation. A capital indexed bond helps in this regard.

If the RBI were to issue capital indexed bonds across the yield curve, we will have real yields for each maturity sector. We already have nominal yields as well for these sectors. The difference between the nominal and the real yields is a proxy for inflation expectation.

Moreover, the RBI also proposes to introduce STRIPs. Such instruments will make more sense on real interest-bearing bonds than the nominal ones.

DEBT FOR EQUITY SWAP

These instruments give an offer to the debt holders to exchange the debt for equity shares of the company.

The issuers offering debt for equity swaps are interested in increasing equity capital by improving their debt-equity ratios and enhancing their debt issuing capacity. They reduce their interest burden and replace it with dividend burden which is payable at the discretion of the issuer. However, the issuer faces the risk of dilution of earnings per share by a sharp rise in the equity. In addition, dividends are not tax deductible.

From the investors point of view, there is potential gain from rise in the value of the equity shares. The potential rise in price of equity shares may or may not materialise.

Variations of this instrument are mortgage backed securities that split the monthly payment from underlying mortgages into two parts - each receiving a specified portion of the principal payments and a different specified portion of the interest payments.

ZERO COUPON CONVERTIBLE NOTES

These are debt convertible into equity shares of the issuer. If investors choose to convert, they forgo all the accrued and unpaid interest. These convertibles are generally issued with put option to the investors. The advantages to the issuer is the raising of convertible debt without heavy dilution of equity. Since the investors give up acquired interest by exercise of conversion option, the conversion option may not be exercised by many investors.

The investor gains in the event of appreciation in the value of the equity shares.

Even if the appreciation does not materialise, the investor has the benefit of a steady stream of implied income. If the instrument is issued with put option, the investor can resell the securities to the investor.

GLOBAL DEPOSITORY RECEIPTS

It is a form of depository receipt or certificate created by the Overseas Depository Bank outside India denominated in dollar and issued to non-resident investors against the issue of ordinary shares or foreign currency convertible bonds of issuing company. In simple words, it is basically a negotiable instrument denominated in US dollars. It is traded in Europe or the US or both. After getting approval from the Ministry of Finance and completing other formalities, a company issues rupee denominated shares in the name of depository which delivers these shares to its local custodian bank, the holder on records, thus depository. The depository then issues dollar denominated depository receipts (or GDR) against the shares registered with it. Generally one GDR is equivalent to one or more (rupee denominated) shares. It is traded like any other dollar denominated security in the foreign markets, in addition to equity financing (as GDR represents equity) over debt financing. GDR issue also possesses merits like less issue formalities, less administrative works as regards dividend payment, information dissemination, annual general meeting etc. as the issuer deal only with a single shareholder, the depository; easy availability of foreign exchange and no foreign exchange risk. Besides issuing companies, foreign investors especially FIIs also get advantage of investing in the Indian companies without getting registration with SEBI, relief from cumbersome settlement and delivery procedures, adequate liquidity (as GDR is as liquid as the shares of the company in its home market) and generally higher returns. In fact, GDR holders enjoy all economic benefits of the underlying shares but has none of the corporate rights like right to vote.

FOREIGN CURRENCY CONVERTIBLE BONDS (FCCBs)

A foreign currency convertible bond (FCCB) is a quasi debt instrument which is issued by any corporate entity, international agency or sovereign state to the investors all over the world. They are denominated in any freely convertible foreign currency. Euro Convertible Bonds are usually issued as unsecured obligation of the borrowers. FCCBs represent equity linked debt security which can be converted into shares or into depository receipts. The investors of FCCBs has the option to convert it into equity normally in accordance with pre-determined formula and sometimes also at a pre-determined exchange rate. The investor also has the option to retain the bond. The FCCBs by virtue of convertibility offers to issuer a privilege of lower interest cost than that of similar non convertible debt instrument. By issuing these bonds, a company can also avoid any dilution in earnings per share that a further issue of equity might cause whereas such a security still can be traded on the basis of underlying equity value. The agreement providing for the issuance of FCCBs normally carry less restrictive covenants as they relate to the issuer. Further, FCCBs can be marketed conveniently and the issuer company can expect that the number of its shares will not increase until investors see improved earnings and prices for its common stock. Like GDRs, FCCBs are also freely tradeable and the issuer has no control over the transfer mechanism and cannot be even aware of ultimate beneficiary. The Finance Ministry vide Notification dated 20.6.1994 stated that w.e.f. this date FCCBs will be considered an approved instrument of accessing external

commercial borrowings. The terms and conditions normally applicable to commercial borrowing would be binding on convertible bonds. This would include restrictions on end-use, import of capital goods and minimum maturity for bonds. Priority for accessibility to this facility would be given to firms with good forex earnings record or potential.

TERM LOAN FROM FINANCIAL INSTITUTIONS AND BANKS

The bulk of term finance required by large and medium industry is provided by term lending institutions which include all India Institutions viz. Industrial Development Bank of India (IDBI), Industrial Finance Corporation of India (IFCI), Industrial Credit and Investment Corporation of India (ICICI), Industrial Reconstruction Bank of India (IRBI), Small Industries Development Bank of India (SIDBI), etc.

Financial institutions channel the funds mobilised by them into productive avenues. They make available funds in bigger lots to needy industrial sector. These institutions act as conduits through which scattered savings are aggregated and put to productive channels. Besides, financial institutions help in allocation of funds between different industries and different sectors of the economy in consonance with the priorities laid down in the plans. They, finance to those industries which seek to make a strong base for accelerating the pace of industrialisation and foster fast economic development. Today, financial institution are an instrument in developing the backward areas through rapid industrialisation by providing long term finance on concessional rates and help entrepreneurs in selection of projects and make available technical know-how at cheaper rates.

Term loans from financial institutions and banks is a syndicated activity. For big projects financial institutions provide finance on a consortium basis and commercial banks also join them where ‘gap’ is left in financing arrangements of the project costs.

The All-India Financial Institutions comprise six All-India Development Banks (AIDBs), three Specialised Financial Institutions (SFIs) and three investment institutions. At the state level, there are 18 State Financial Corporations (SFCs) and 28 State Industrial Development Corporations (SIDCs).

Among the AIDBs, IFCI, ICICI, IRBI and SCICI provide financial assistance to medium and large industries, whereas SIDBs caters to the needs of small and tiny industries. The AIDBs also undertake promotional and developmental activities. Of the SFIs, RCTC and TDICI provide risk capital, venture capital and technology development finance and TFCI extends finance to hotels and tourism-related projects. Among the investment institutions, LIC takes care of the business of life insurance, whereas GIC offers general insurance facilities. Both LIC and GIC deploy their funds in accordance with the priorities set out for them. UTI mobilises the savings of the society through sale of units and channelises them into corporate investments. The investment institutions are major players on the secondary market; they also extend assistance to the corporate sector by way of term loans/underwriting/direct subscription to equity and debentures. The SFSs provide finance mainly to small and medium enterprises, whereas SIDCs cater to the needs of medium and large industries in their respective states. Apart from providing financial assistance, the SFCs and SIDCs also play a promotional and developmental role.

With the increasing integration of Indian economy with the global economy, the financing requirements of corporate sector have undergone tremendous change, and accordingly, financing institutions in India have re-oriented their policies and product range with much sharper customer focus to suit the varied needs of the corporates. With a view to leverage new opportunities thrown open by the developments in the economy, the financial institutions have set up several subsidiaries/associate institutions offering a wide range of new products and services covering areas such as commercial banking, consumer finance, investor and custodial services, broking, venture capital financing, infrastructure financing, registrar and transfer services, credit rating and E-commerce.

IFCI Ltd.

The Industrial Finance Corporation of India (IFCI), was set up in 1948 under IFCI Act to meet the medium and long-term credit requirements of industrial concerns in India. In tandem with the changing macro-economic environment, the undertaking of IFCI was transferred to and vested in a new company called Industrial Finance Corporation of India Ltd. with effect from July 1, 1993 in order to achieve greater operational flexibility and access to the capital market. The scope of financial assistance provided by IFCI cover principally project financing, financial services and promotional and development activities. Financial services includes merchant banking and allied services, equipment financing/leasing/credit/procurement and buyers/supplier's credit schemes; promotional services include support activities for technical consultancy training, risk capital, technology finance, tourism, development finance, entrepreneurship development, science and technology parks and various subsidy schemes to help mainly new entrepreneurs and enterprises mainly in sub urban areas and villages and small industries sector. Project financing operations of IFCI basically cover direct financial assistance in the form of loans, direct subscription to equity for establishment of new industrial undertaking as also for expansion, diversification, renovation or modernisation of existing industrial units in the corporate and/or cooperative sector engaged or to be engaged in:

— the manufacture, preservation or processing of goods;

— shipping;

— mining;

— hotel industry;

— generation, storage or distribution of electricity or any other form of energy etc.

ICICI

The Industrial Credit and Investment Corporation of India was established on January 5, 1955 as a public limited company through the initiative of the Government of India, the World Bank and the representatives of Indian Industry with the primary objective of providing foreign currency loans to industrial projects and promote industries in the private sector. Its principal business is to provide assistance by way of rupee and foreign currency loans, underwriting/direct subscription to shares/ debentures and guarantees to suppliers of equipment and foreign lenders. However,

over the years it has diversified into a number of other activities and now offers various types of financial and advisory services either directly or through its subsidiaries. ICICI through its subsidiaries has entered into new areas of business such as commercial banking, asset management, investment banking, investor services and broking and has diversified its own range of activities into several fee and commission based services including custodial services to cater to the needs of the foreign and domestic institutional investors. ICICI has also been managing United States Agency for International Development (USAID) and World Bank funds through its various technology financing programmes which include Programme for Advancement of Commercial Technology (PACT), Programme of Acceleration of Commercial Energy Research (PACER), Agricultural Commercialisation and Enterprise Programme (ACE), Trade in Environmental Services and Technologies Programme (TEST), Sponsored Research and Development Programme (SPREAD) and Technology Institutions Programme (TI).

With a view to have a strong capital base and optimise operational efficiencies in the changing business environment SCICI Ltd. was merged with ICICI with effect from April 1, 1996. To meet the large investment requirements in the infrastructure sector in the country and the complex nature of such projects, ICICI set up a separate Strategic Business Division to exclusively focus on the sectors of power, telecom, ports, roads and mining.

Effective April 01, 1997, ICICI acquired ITC Classics to gain a strong retail distribution and investor service franchise, particularly in the eastern part of the country. Further, Anagram Finance Ltd. was merged with ICICI effective April 1, 1998 to acquire its retail network particularly in the western and northern sectors of the country.

IIBI

Industrial Investment Bank of India (erstwhile Industrial Reconstruction Bank of India) (IRBI) was set up in 1985 under the IRBI Act, 1984 as the principal credit and reconstruction agency for aiding rehabilitation of sick and closed industrial units. However with the setting up of Board for Industrial & Financial Reconstruction (BIFR), the role of IRBI became irrelevant and as a sequel to that Government of India decided to convert IRBI into a full fledged all-purpose development finance institution. Accordingly, IRBI was incorporated as a government company in the name of Industrial Investment Bank of India Ltd. (IIBI), under the Companies' Act, 1956 on March 17, 1997 thereby providing it with adequate operational flexibility and financial autonomy. Besides project finance, IIBI also provides short duration non-project asset-backed financing in the form of underwriting/direct subscription, deferred payment guarantees and working capital/other short-term loans to companies to meet their fund requirements, financing for acquisition of equipment and machinery on lease or hire purchase basis and funding of new and modernisation projects.

SIDBI

Small Industries Development Bank of India (SIDBI), a wholly- owned subsidiary of Industrial Development Bank of India (IDBI), set up by an Act of Parliament, is the

principal financial institution for the promotion, financing and development of industry in the small, tiny and cottage sectors and for co-ordinating the functions of the institutions engaged in similar activities. It commenced its operations on April 2, 1990 by taking over the outstanding portfolio and activities of IDBI pertaining to the small scale sector and has emerged, over the years as the main purveyor of credit to small, tiny and cottage sectors.

Given the apex role, the approach of SIDBI has been to supplement the efforts of existing institutions, strengthening their capabilities through financial and support services and instituting suitable co-ordination mechanism while providing assistance for the small scale sector. While continuing with the schemes operated by IDBI under Small Industries Development Fund (SIDF), the Bank took initiatives by identifying the gaps in existing credit delivery system and devised tailor-made schemes for direct lending to small scale sector so as to supplement the efforts of Primary Lending Institutions (PLIs), which include State Financial Corporation (SFCs), State Industrial Development Corporation (SIDCs) (including twin function IDCs), Scheduled Commercial Banks (SCBs) both in public and private sector, State Co-operative Banks, Scheduled Urban Co-operative Banks and Regional Rural Banks (RRBs).

Under indirect assistance, assistance to small scale sector is channelised through the large network of PLIs across the country by way of refinance, bills rediscounting and resource support in the form of lines of credit in lieu of refinance, etc.

Granting refinance to institutions is also one of the principal business of SIDBI. After the enforcement of SIDBI Amendment Act, 2000, SIDBI may grant refinance assistance to any State Financial Corporation, State Industrial Development Corporation, State Small Industries Corporation, Scheduled Bank, State Co-operative Bank and any other financial institution approved by the Board. With effect from June 1, 2000, the Government of India and SIDBI have instituted a new credit Guarantee Scheme for small industries.

INTERNAL FUNDS AS SOURCE OF FINANCE

Internal finance is also known as self financing by a company. Internal finance includes the funds generated within the corporate unit irrespective of the nature of source. In other words the extent of profitability after tax, the size of dividend payments and the amount of depreciation provided for alongwith the reserves and surplus all contribute to the sources of internal funds and these funds can be used by a company financing the cost for acquisition of fixed assets, expansion, modernisation or diversification, etc. There exists a controversy whether depreciation should be taken as a source of funds. Whatever may be the outcome of such controversy, the fact remains that the depreciation is a sum that is set apart out of profits and retained within the business and finance the capital needs in the normal business routine, and as such depreciation in true academic sense be deemed as a source of internal finance.

Internal finance can be differentiated with total finance as under:

Sources of Total Finance	*Sources of Internal Finance*

Paid up share capital
- Equity and
- Preference

Reserves and Surplus
- including Share Premium

Secured Loans
Unsecured Loans
Current Liabilities and Provisions
Depreciation Provision

Bonus issue of shares paid-up
Bonus issue of preference shares
Reserves and Surpluses
Provisions including provisions for depreciation

Amongst all the sources of internal finance, main source is depreciation on an average as revealed by some research studies done by research scholars. The second source is reserves and surplus and lastly the bonus issue of preference shares or equity shares.

As regards depreciation, the term denotes the funds set apart for replacement of worn-out assets. Depreciation is a deduction out of profits of the company calculated as per accounting rules on the basis of estimated life of each assets each year to total over the life of the assets to an amount equal to original value of the assets. Although depreciation is meant for replacement of particular assets but generally it creates a pool of funds which are available with a company to finance its working capital requirements and sometimes for acquisition of new assets including replacement of worn-out plant and machinery. Depreciation is an expenditure recorded in the accounting system of a company and is allowed to be deducted while arriving at the net profits of the company subject to adherence of the percentages of allowable depreciation fixed under the tax laws.

Surplus are total sum of the left overs from various accounts in the accounting system of a company i.e. the “surplus” is the remaining part of the net income after distribution of dividends to the shareholders. A company is required to transfer 10% to the profit to reserves while declaring dividend which could be more depending upon the profitability of the company.

A company can distribute dividend out of the surplus but according to the rules as prescribed from time to time by the Government. Surplus is accumulated from other sources besides the remainder of earned income which are known as capital surplus and surplus arising from revaluation of assets. The entire surplus belongs to the equity holder as part of the net worth. The main sources of surplus remain the net profits from operations at a close of accounting period, past accumulated profits, conversion of unnecessary reserves, and non operating income. Surplus remain an important source of capital for both newly promoted companies and established companies. Surplus adds to the credit standing of newly promoted company to establish a market price for its equity shares. For an established company it becomes source of finance for comparison/modernisation/diversification motivated schemes. Surplus also supplement the reserves.

Reserve, surplus and provisions, both form good sources of financing internally the development programmes within the company without much depending upon outside funds through borrowing. They meet the fixed and working capital

requirements within the industry. Internal financing through utilisation of company's own funds is also known as ploughing back of profits. Besides, internal funds help the company in number of ways viz. (1) achieve a suitable dividend policy and enlisting the support of the public; (2) help internal finance of projects without resumption of borrowings; (3) deficiencies in liability and reserves are fulfilled out of the retained income; (4) it is used for retiring bond or debentures for building up sinking funds for redemption of debt.

Thus, reserves and surplus add to the capital formation at micro level. The main determinants of internal funds are corporate earnings, taxation and corporate savings, and the dividends policy of the company which are as discussed below:

DIVIDEND POLICY AND RETENTION OF PROFITS

Board of directors of a company have to take a decision as to what portion of the profits be retained and what should be actually paid out to the shareholders in the shape of dividend. Many reasons may be given by the Directors in the annual report of the company to justify actual profits appropriated but what is in the mind of the Board behind their decisions is rarely given in the annual accounts. Generally, it is argued that if profit in a company increases then dividend quantum should also be increased. But studies done by many scholars prove this otherwise. Dividend lag behind profits in the amount and proportion. A 10% increase in profit is seldom matched by an equal proportionate increase in dividends. In the theoretical frame work on dividend policy, we had screened the hypothesis put forth by Portfield which really give guidelines on optimal level of dividend. According to Portfield, in a year the size of current dividend should be raised until the marginal increase in the dividend equals the marginal decline in the ex-dividend value of the company. This means that dividend should be increased until actual value of dividend (D_A) is equal to the value of the firm before dividend V_0 announced and the value after dividend announcement V_1.

$$D_A = V_0 - V_1$$

But share price determination is quite difficult and so optimal level of dividend is also difficult to be arrived at.

The company does not pay dividend with the sole objective to increase cash in the hands of shareholders who can otherwise have cash by selling the shares or pledging them with banks. Therefore, one has to decide whether a particular dividend payment is in the interest of the shareholders, the company must decide how it believes shares are valued. This is a different approach as propounded by Portfield and can be expressed as under:

Let M_1 = Market price per share before declaration of dividend.

M_2 = Market price per share after declaration of dividend.

DA = Actual Dividend Price.

DE = Expected Dividend Price.

A change dividend payment ($D_A > D_E < D_A$) is acceptable if $M_2 + D_A > M_1 + D_E$. This suggests solution as to how the dividend decision affect market price and the company can take simultaneous decisions in regard to retained earning i.e. payment

of dividend in cash or kind like bonus issue with a view to finance its project costs or meet working capital requirements. Nevertheless, the dividend distribution policy are affected by following considerations viz.,

1. type of industry;
2. age of company;
3. extent of distribution of shares in profit;
4. company need for additional capital;
5. business cycles and vicissitudes;
6. changes in government policies;
7. taxation policy.

From corporate angle dividend policy should be based on two main things i.e. regularity of dividend and stability of its rates. It should be remembered that if there is no profitable investment opportunity within the company, the dividend policy of the company should be liberal.

BONUS SHARES

The basic idea behind issue of bonus shares is the objective of retention of profits and capitalising the accumulated earning for financing from internal sources the cost of company's expansion, modernisation or diverisification schemes.

A conservative dividend policy is necessary for having good accumulation of retained earnings so that bonus issue could be based on such surplus to broad base the capital structure and fruitfully utilise the retaines earning for company growth project.

Issue of bonus shares does not affect the liquidity position of the company. The company issues bonus shares to serve the following ends:

(a) to enhance the prosperity of the company by conserving the cash inflows;

(b) to increase capitalisation, lower rate of dividend can be followed by issue of bonus shares by a company. Increase in equity shares through bonus issue reduces the rate of dividend; Usually high rate of dividend may attract adverse notice of the general public or authorities towards profiteering.

(c) to transfer the formal ownership of surplus and reserves to equity holders by issuing bonus shares;

(d) financing the growth programme of the company by expansion, modernisation or diversification;

(e) with broad based equity structure, a company can better bargain the debt to balance its capital structure and increase earnings on equity shares through financing leverage.

The management of a company should be careful about the bonus issue consequences. The bonus shares entail an increase in the capitalisation of the corporate unit which should be justified by a proportionate increase in the earning capacity of the company. Bonus issue suit to such companies who have regularity in

profits and it does not suit to those companies who are uncertain in their earnings and have fluctuating income. Because the company should be able to honour the expectation of the investors by distributing the cash dividend. To maintain suitability and regulating bonus issue. Government brings out guidelines from time to time for the issue of bonus shares.

DEFERRED PAYMENT ARRANGEMENTS

Deferred payments arrangements is one of the source of finance to industry. Machinery suppliers in India or overseas where machinery is proposed to be imported may agree to accept payment in a scheduled manner in instalments in the period ahead of delivery. This is known as deferred payment arrangement with the machinery suppliers. The machinery suppliers in India or abroad may agree to above arrangement on security which is procured in the form of guarantee from financial institutions and banks of repute relied upon by the machinery suppliers.

Guarantee for deferred payments is offered by All India Institution viz, IFCI, IDBI, ICICI to foreign machinery supplier and also to indigenous machinery supplier against the request of the company for financing project cost of the company. The application made by the borrower for facility of guarantee is processed in the same manner as applicable for loan. However, the borrower company to be able to avail the facility should be in possession of requisite import licence where the guarantee is required for import of machinery from abroad or should have tied up the foreign currency loan from the foreign institution with the approval of the Government of India where the guarantee for such loans is required to be given to such foreign lending institution.

INTERNATIONAL FINANCE AND SYNDICATION OF LOANS

International finance plays a very important role in financing the cost of capital of projects of the corporate sector.

International finance in Indian private business has been encouraged by the Government in a selective and phased manner. After independence the inflow took shape of foreign collaboration and foreign loans and grant on Government basis from different countries as also international agencies like IBRD and IDA are mainly utilised for financing the public sector projects and meeting the country's trade deficit. Foreign capital in private company came through investments made by Multinational Corporation (MNCs) in Indian subsidiaries. In 1973, Government of India enacted Foreign Exchange Regulation Act (FERA) with a view to synchronising the inflow of foreign investment with the changing need of the country.

Today international finance for the development of industry in India is coming through many channels viz. Bilateral arrangement of the Government as discussed above. All-India Financial Institutions. Foreign Banks operating in international Market. Indian Banks operating in international market.

All India Financial Institutions raise their resources in foreign currency to enable the Indian entrepreneurs the import of capital goods, technical know-how and technology in India for accelerating the pace of Industrial development. These institutions raised the resources in foreign currencies through prescribed modes.

Besides, the above, finance in international markets is being arranged by private

organisations with the permission of Central Government through bond issue or syndicated loans arranged through commercial banks and foreign banks.

INTERNATIONAL FINANCIAL MARKET

In international financial market the borrower from one country may seek lenders in other countries in specific currency which need not be of the participant country. In international financial market, the availability of foreign currency is assured under four main systems:

(a) Euro currency market; (b) Export credit facilities; (c) Bond issues; and (d) Financial institutions.

Eurocurrency market—Here funds are made available as loans through syndicated Eurocredits/instruments known as Floating Rate Notes FRNS. Interest rates vary every 3 to 6 months based on London—Interbank offered—Rate. Syndicated Euro Currency bank loan has developed into one of the most important instruments for international lending. Syndicated Euro credit is available through instruments viz. Term loan and Revolving Line facility.

Export Credit Facilities are made available by several countries through an institutional frame work in which EXIM Banks play a prominent role. EXIM Bank of India is playing a significant role in financing exports and other off shore deals.

International Bond Market provide facilities to raise long term funds by using different types of instruments. The bond market is generally known as Euro bond market.

UN Agency financial institutions viz. IMF of World Bank and its allied agencies, IFC (W), ADB, etc. provide finance in foreign currency.

New International Instrument

Swap is the international finance market instrument for managing funds. The basic concept involved in swaps is matching of difference between spot exchange rate for a currency and the forward rate. The swap rate is the cost of exchanging one currency into another for a specified period of time. The swap will represent an increase in the value of the forward exchange rate (premium of a decrease discount). There are three main types of swaps (a) interest swap; (b) currency swap; (c) combination of both.

The degree of integration of most developing countries in the international financial system when measured in terms of gross capital flows, is less than it was at the start of the decade.

Nonetheless, the amount of foreign direct investment in these countries has been rising over the past few years. To attract funds from foreign investors, well-functioning domestic financial system must exist and particularly interest rates need to be market determined.

Two factors viz. Lack of credit worthiness and standards of investor protection on

domestic financial markets prevent fuller utilization of international financial markets by developing countries.

International financial markets offer developing countries the possibility of attracting the funds they need for their development.

The share of developing countries utilisation of international bonds is negligible.

SYNDICATED EUROCURRENCY LOANS

The Eurocurrency market refers to the availability of a particular currency in the international financial market outside the 'home country' of that currency. For example, the Eurodollar market refers to the financial market for US dollars in England, France, West Germany, Hong Kong and other financial centres outside the US. The Eurodollar borrowing may be evidenced by issue of commercial paper in the form of promissory notes, or by subscription to bond/debentures or it may be syndicated loans type.

Main Objectives of Syndication (Borrowers' point of view)

(a) Large sums is arranged without delay and at least cost.

(b) Gets better introduction to enter into international loan market without much difficulty.

(c) Funds are made available easily for meeting balance of payment deficit and for financing large industrial projects.

(d) The borrower is allowed to select the length of the roll over period and in choosing different currencies to repay or cancel agreements after a short notice period without penalty.

Lenders' point of view

(1) It helps the bank to share large credits with other banks, to finance many borrowers.

(2) Different size banks can participate.

(3) It provides more profitability to banks as costs are relatively low.

(4) Syndicated loan is under-written by a small group banks which resell portions of the commitments to other banks.

*Types of Euro-bond market instruments*There are four types of Eurobond instruments viz.

(1) Straight-debt Eurobonds carrying a fixed rate of interest.

(2) Convertible bonds having a fixed rate of interest with option of conversion into equity of the borrowing company.

(3) Currency option bonds, giving the option of buying them into one currency while taking payments of interest and principal in another.

(4) Floating rate notes, where rate of return is adjusted at regular intervals to reflect changes in short-term money market rates.

During the last more than four decades the syndicated loan market, has developed into a vital source of foreign capital and the major international banks have 'syndicated' to provide billion of dollars worth of foreign capital to finance medium

term requirements of five to eight years for all categories of borrowers comprising governments, public and private sectors.

Generally, syndicated medium term loans are 'roll over' credits consisting of the following three elements:

- an interest rate fixed every 3, 6 or 12 months in accordance with the prevailing short term interest rates 'LIBOR';
- a premium or spread (margin over the LIBOR) fixed for the life of the loan; and
- fees components, mostly recovered up-front.

Syndicated Eurocredits are arranged by a single bank called the lead manager. But for larger loans running into billions of dollars three or four banks join together to function as the lead management group. The party which wants to raise Eurocredit has to authorise a lead manager or the lead management group of the choice and furnish all details about its proposed scheme of investment. The lead manager completes the necessary formalities like loan documentation and loan servicing mechanism.

The major advantage of syndicated Euroloan are retention of full control over the management of the company, speed, flexibility and short-procedure. For example, the borrower has to deal with only the lead manager, who, in turn, mobilises the required finance from other banks, by coordinating the entire process expeditiously. Secondly, the source is flexible and there are no registration or regulating requirement. Eurocurrency loans are ideal for the procurement of plant and machinery for which payments have to made in hard currency and the gestation period of the project is five to eight years.

The international financial scenario has been changing very faster. It is therefore, advisable to take into account the fluctuating rates of interest and the value of major currencies while mobilising finance from the international market. The resource mix of finance should be optimum to minimise its cost. Large scale borrowings entail large scale interest and debt repayments. Finally, it is not the quantum of finance that alone brings industrial development, but the efficient and productive use of financial resources that determine the end result. This is capital formation for further self reliant growth.

As such, external borrowings should be resorted to within safe limits and must be utilised efficiently. Imprudence in external finance lead to high debt-service-burden, debt trap and depletion of credit worthiness, not only for the corporate sector but for the nation as a whole. And therefore cautions approach is necessary in this area.

Euro-market is patronised by the following types of customers:

(1) Companies desiring US$ in Euro-market and thereafter the companies can convert it into the currency required;

(2) Raising of funds is easier in Euro-market and thereafter the companies can convert it into the currency required;

(3) Investment by multinational companies in a particular country is easier without transfer of capital directly from their base country;

(4) Government, associations connected with the Government, local bodies,

international agencies prefer use of Euro-market;

(5) The market is used for their bank activity particularly inter bank lending.

Euro-market became more popular in 1970s in the recycling of petro-dollar. Surplus funds of petroleum producing nation lying in banks were channelled to countries who needed funds through Euro-markets. Now market has become a permanent feature of international finance and a major source of finance.

Short-term to medium term financial needs are catered through Euro currency market and is the largest international financial markets. Suppliers of funds to Euro currency market place their money on deposits with a bank for a period of time varying from overnight to five years. Loans can be arranged in their market for 3 year period or even more. Important currencies in order of strength in this market are Dollar, DM, Swiss France. Companies or Government in different countries make use of these funds.

Similarly, Euro-credit market is for medium term syndicated loan with borrowers being allowed to draw on funds are required up to an agreed upper limit. It is most important source of finance in international capital markets. Mostly governments use the funds to finance foreign trade, balance of payments deficits and build as infrastructure and industries base. Other big borrows in the market are big international companies.

Euro-bond and Euro-equity market enable to sell the issues of bonds or equity through syndicated bankers in more than one nations simultaneously. These securities can be issued public and private i.e. in the former state quoted in stock exchange and in the later state can be privately placed and taken up by institutional investors.

FINANCE FROM FOREIGN SOURCES

Finance from foreign sources is available for the corporate sector in various ways as noted below:

1. Sub-loans in foreign currency is available from All India Financial Institutions. IDBI and IFCI have been linked with lines of credit in DM from West Germany, pound Sterling from U.K. and Sw. Kr. under Indo-Swedish Development Cooperation Agreement. Sub-loans are granted under the aforesaid line of credit as also against DM revolving funds for financing the import of capital goods required for new projects or expansion or balancing or modernisation of existing undertakings. In the case if Pound Sterling credit, import of machinery is to be made only from U.K. sources but in the case of DM or Swedish or Swedish Kroners, there is no such restriction and import of machinery can be made from the approved countries.
2. Sub-loans are also available from All India Financial Institution in other currencies like Japanese Yen and U.S. Dollars. All India Financial Institution have been raising resources in International Capital market through bonds issues and are in a better position to cater the needs of the industries in much better way today.
3. Finance from foreign sources is also available to the company from the international institutions like IMF, IBRD, IDA, Asian Development Bank etc.

4. Public limited companies are also permitted by Government of India on selective basis to issue bonds in international market for raising foreign finance for the industry.
5. Foreign Banks operating in India are having good business of loan syndication in foreign currency of arranging foreign loans from the banks who make available foreign finance to the corporate sector.
6. Finance from foreign sources is also available to the company from the international institutions like IMF, IBRD, ADB, IFC(W), IFAD (International Fund for Agricultural Development), EEC etc.

The bulk of external assistance received by India is accounted for by the member of Aid India Consortium now restructured as India Development Forum provided over by the World Bank.

Foreign countries viz. UK, Spain, France, Austria, Netherlands, Denmark, Switzerland, Norway, Sweden, Italy, Japan, Australia, Canada, Belgium provide financial assistance to India for the development of corporate sector.

Amongst the finances from foreign sources UK has been the largest and most concessional ever since 1958.

World Bank Group

India is a member of four constituents of the World Bank group.

1. International Bank for Reconstruction and Development (IBRD)
2. International Development Association (IDA)
3. International Finance Corporation (IFC)
4. International Investment Guarantee Agency

However, India is not a member of World Bank's fifth institute, i.e., International Centre for the settlement of Investment dispute. India hold 44,795 shares in IBRD, each being valued at US $ 120,635. India has been availing of borrowings from the World Bank, both for investment lending and adjustment lending (sectoral/structural). Investment lending is project based and constitutes about $9/10^{th}$ of India's overall borrowing. Adjustment lending addresses the borrower's medium term program of policy and institutional reforms either on a sectoral basis or countrywide basis.

INTERNATIONAL FINANCE CORPORATION (IFC)

The International Finance Corporation, Washington (IFC) an affiliate of World Bank was established in 1956 as an affiliate of the World Bank, but as a separate entity, to promote the growth of private and joint enterprises which would contribute to the economic development of its member-countries. Its capital resources are provided by 179 member countries, both developed and developing, who collectively determine its policies and activities. India is one of the founder-member of the IFC. Some of the important functions of IFC.

- investing in private productive enterprises, by way of loan as well as equity, in association with the private investor and without government guarantee or repayment.
- servicing as a clearing house to bring together investment opportunities,

private capital of both foreign and domestic origin and professional technocrats; and

- stimulate productive investment of private capital, both foreign and domestic.

In addition, to providing financial and technical assistance, the IFC also facilitates the process of specialisation in those areas where the countries have comparative advantages. It seeks to encourage the flow of capital, both at domestic and international levels, through the establishment/expansion of local capital markets and financial institutions. It also offers technical assistance to support indigenous efforts meant to create an investment environment which will encourage productive and beneficial domestic and foreign equity participation.

At present the total authorised share capital of IFC(W) is US$ 2.45 billion after the increase of US$ 1 billion in May 1992, and US$ 0.15 billion in December, 1992. At the time of increase in share capital, India was holding 45,976 shares of US$ 1000 each and was placed at 6th position along with Italy and Canada with voting power of 3.59%. Consequent upon the capital increase, India was allocated 35,366 additional shares which were fully subscribed by her on 1.8.1997. India is now holding 81,342 shares of IFC. After the completion of subscription of IFC's 1991, capital increase, India's rank would remain the same i.e. 6th alongwith Italy, Canada and Russia with its voting power 3.41%.

Since it began operation in 1956, IFC has been associated with more than 3,000 companies and financial institutions in supporting over 4,000 projects in more than 90 countries.

IFC provides without government guarantee both equity and loan capital to the private/joint sector projects in which it participates. The loans are usually for 7 to 12 years and interest vary from currency to currency and according to circumstances of particular transactions. IFC investments in India are subject to country clearance from Government of India/RBI as the case may be unless it is covered by the automatic approval scheme. IFC has been investing in Indian companies since 1959. They have upto 31.11.02, approved and signed investments in 169 companies for US$7.71 billion. The average investment for these 169 companies not large being US$ 45.51 million. The investments are mostly in the areas of steel, power, textiles, infrastructure and engineering companies. During the period 1.1.02 to 31.12.02, IFC has approved total investments to US$ 312.02 million.

The legal documentation of IFC is sound as it incorporates provisions regarding periodic setting of interest, repayment schedules, final maturity, grace period, financial covenants and reporting requirements.

Inspite of its holding equity interest in the assisted companies, the IFC does not participate in their management, barring exceptional cases where its financial interests are adversely affected due to poor management of projects.

Investment in equity of the borrower enterprise is more attractive to IFC as it can sell its investment and revolve the Funds. IFC can obtain convertible debentures, subscription warrants or similar rights to obtain capital stock or shares, which can easily be sold to private investors. By acquiring such rights, IFC is in a position to

realise capital gains by selling successful investments and thus offsets losses, build up reserves and enlarge its funds for investment in other enterprises.

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT (IBRD)

The repayment period for India is at present 20 years, inclusive of 5 years grace period. The Bank offers three types of loans presently – single currency variable spread loans, single currency fixed spread loans and local currency loans. Presently India is borrowing under variable spread single currency loans. The current rate of interest per annum on IBRD loans ranges between 1.6 to 1.9% depending upon the type of loan, currency mix of loan and year of negotiation.

The total value of assistance extended by IBRD by way of loans to India has been US $ 23,870.27 million as on 1.1.2002. During the current financial year, new assistance for US $ 718 million was signed making it US $ 24,588.27 million in all as on 31.12.2002. But US $ 131.038 million amount was cancelled during 1.1.2002 - 31.12.2002 and due to this, the total IBRD loans aggregate US $ 24,457.232 million up to 31.12.2002. The sectors for which assistance is provided are Irrigation, Forestry, Earthquake Reconstruction Programme, Transport Projects, and Structural Adjustment Loans and so on.

INTERNATIONAL DEVELOPMENT ASSOCIATION (IDA)

IDA, the soft-loan affiliate of the Bank, depends almost entirely on contributions made from time to time by the wealthier member governments for its financial resources, repayments of earlier credits and transfer from the net income of IBRD.

IDA commitments, which are known as “credits” carry no interest charge but a service charge of 0.75% for 35 years inclusive of a grace period of 10 years. Commitment charges on undisbursed balances are fixed every year upto a maximum of 0.5%. However, Commitment Charges are being waived fully since 1989-90. The credits to India approved upto 30th June, 1987 are repayable in 50 years, inclusive of a grace period of 10 years and those approved from 1st July 1987 are repayable in 35 years inclusive of a grace period of 10 years. The voting power of India in IDA is 3.06% with 405,142 votes. The IDA – 13 replenishment process, initiated and administered by the World Bank has been concluded with the last meeting held in London on 1st July, 2002.

Being the soft loan counterpart of the Bank, IDA has concentrated its lending in social sectors consisting of poverty reduction, human development and agriculture/ rural sector, each accounting for about a third of total IDA commitments in recent years. The other sectors of funding have been infrastructure, economic adjustment and natural resources. IDA opened up a new avenue of sustainable development lending for low-income countries in the sixties. It has supplemented the loan-able resources of the Bank in sizeable measure. Because of the highly concessional nature of its credits, its operations are not inhibited by the creditworthiness of its borrowers nor do they jeopardize it. Moreover, the injection of IDA financing by softening the debt burden of low-income countries, has enabled some of them to borrow also from other sources (including the Bank) on harder terms. The creation of IDA has been the single most important factor paving the way for the Bank Group’s lending to India to expand swiftly and significantly in the sixties and beyond.

The total value of assistance extended by IDA by way of credits to India for which agreements were signed was US $ 26447.9 million as on 1.1.2002. During the financial year 2002-03, new assistance for US $ 1229.5 million was signed making it US $ 27,677.4 million in all as on 31.12.2002. This includes assistance in the form of non-project credits for industrial imports and credits for various sectors. The major sector for which assistance is provided are Forestry, Irrigation, Water Supply, Transport and Gujarat emergency Reconstruction.

INTERNATIONAL MONETARY FUND (IMF)

The International Monetary Fund (IMF) is an organization of countries that seeks to promote international monetary cooperation and to facilitate the expansion of trade and economic development in all member countries. It was set up by an international treaty, its Article of Agreement drafted at conference of 44 nations held in Bretton Woods, New Hampshire in July 1944. The articles of agreement of IMF came into force on December 27, 1945. IMF is the Principal International Monetary Institution established to promote a co-operative and stable global monetary framework. At present, 184 nations are members of the IMF.

India is a founder member of the IMF. India borrowed an amount of SDR 3.56 billion, SDR 1351.98 million under Compensatory and Contigency Financing Facility (CCFF), SDR 2207.925 million under Standby Arrangement.

Repayment of all the loans taken from International Monetary Fund has been completed.

ASIAN DEVELOPMENT BANK (ADB)

The Asian Development Bank (ADB) an international partnership of 67 member countries was established in 1966 with its headquarters in Manila, Philippines. India is its founder member. The Bank is engaged in promoting economic and social progress of its developing member countries in the Asia and the Pacific region with principle functions as follows:

(1) to make loans and equity investments for the economic and social advancement of its developing member countries;

(2) to provide technical assistance for the preparation and execution of development projects and programmes and advisory services;

(3) to respond to the requests for assistance in coordinating development policies and plans of developing member countries; and

(4) to promote investment of public and private capital for development purposes.

India and the Asian Development Bank have a sociable relationship. The Asian Development Bank has provided India with loans of huge amounts over the years. The Asian Development Bank has helped India to reduce its level of poverty, improve infrastructure, and has also given boost to its economy.

India's relationship with the Asian Development Bank

India and the Asian Development Bank have had a relationship since the 1966 when India was incorporated as a member of the ADB. India holds around 224,010

shares in the ADB and the percentage of votes that the country holds in ADB is 5.374%. The Asian Development Bank has provided India with large amounts of loans in various sectors such as infrastructure, energy, financial, health, agriculture, and industry.

The loans provided by the Asian Development Bank to India till 2006, in various sectors are:

- trade and industry the loan provided amounts to US$ 185.90 million
- nutrition, health, and social protection the loan provided amounts to US$ 20.00 million
- energy the loan provided amounts to US$ 5,125.80 million
- natural resources and agriculture the loan provided amounts to US$ 46.1 million
- finance the loan provided amounts to US$ 2,460.00 million
- communication and transportation the loan provided amounts to US$ 4,979.20 million
- waste management, waste supply, and sanitation the loan provided amounts to US$ 50.20 million
- economic management and law the loan provided amounts to US$ 850.00 million
- in the multi sector the loan provided amounts to US$ 2,280.00 million.

The Asian Development Bank's future assistance to India

The Asian Development Bank has proposed to increase the amount of assistance to India from US$ 2.2 billion in 2002 to US$ 2.85 billion by 2009. This is sure to improve even more the relationship of India and the Asian Development Bank in the days to come.

INDIA'S COMMERCIAL BORROWINGS

External Commercial Borrowing (ECB) refers to commercial loans in foreign exchange availed by persons resident in India from non-resident lenders. Thus, the ingredients of ECB are:

(a) It is a commercial loan;

(b) It is in foreign exchange;

(c) It is availed by a person resident in India; and

(d) It is availed from non-residents lenders.

All forms of borrowing having all the above four ingredients are not permitted. Neither all permissible borrowings are ECB under the ECB policy. The borrowings from specified lenders by specified borrowers for specified purposes under specified terms are considered ECB. For example, it is ECB if it has a minimum average maturity of 3 years. The borrowing with maturity of less than one year is considered short term credit. The borrowing for imports by the overseas supplier, bank and financial institution for maturity of less than 3 years is considered Trade Credit.

The ECB outstanding at the end of December 2007 was about US$ 57 billion which accounted for nearly one third of India's external debt. The year 2007-08 reportedly witnessed An ECB of about US$ 30 billion, making it a major source of resource for the corporate sector. The sharp increase in ECB in recent years is attributable to two factors: (a) a step-up in domestic industrial activity since 2004-05 has increased the corporate sector's appetite for funds, and (b) the interest rate wedge between overseas borrowing and domestic borrowing has motivated Indian corporate to raise larger resources by borrowing from abroad. The details of ECB flows are presented in Table 1.

Table 1: External Commercial Borrowing*

(US$ million)

Year	*Approvals*	*Gross Disburse-ment*	*Amorti-sation*	*Interest*	*Total Debt Service*	*Debt Out-standing*
2000-01	2837	9295	5043	1683	6726	30922
2001-02	2653	2933	4013	1534	5547	29579
2002-03	4235	3033	5001	1180	6181	28074
2003-04	6671	5149	8015	2031	10046	25809
2004-05	11490	9094	3571	959	4530	31595
2005-06	17175	14606	11554	3015	14569	32671
2006-07	26156	20058	4182	1772	5954	47972

ECB imposes a cost on the economy in the form of sterlization cost at the time of borrowing and prepayment/repayment in foreign exchange. Besides, it may at times entail difficulties of servicing debt, given the fact that India is the 5th largest debtor country in the world. It may, however, cause a reduction in cost of resources in the domestic economy by allowing the borrowers to raise resources at favourable rates from overseas and thereby reducing demand on domestic resources. It could also raise the cost at the time of repayment. Given the costs and the benefits associated with ECB to the economy, the policy allows ECB from such sources and for such purposes and at such terms as would maximize the benefits for the economy. It encourages borrowings with long maturities and at low costs for financing investment in infrastructure and exports which are crucial for overall growth of the economy and discourages borrowing for working capital or general corporate purposes. Requests for ECB are considered by RBI within the overall annual ceiling, consistent with prudent debt management, the sectoral requirements and outcome of balance of payments in the medium term.

CORPORATE TAXATION AND THE IMPACT ON CORPORATE FINANCING

Companies are legal entities that exist to allow the ownership of company to be sub-divided into shares that are easily transferable. The corporate income is taxed twice, once when company earns profit, and once again in the hands of the investors

* Source: India's External Debt – A Status Report, August 2007, Ministry of Finance.

when they receive the proportion of profit. This is applicable to corporate units who receive dividend from other company where they have invested money in shares, but only to the extent of dividends received by them if not distributed further to their shareholders.

Corporate entities pay tax on their earned income. The advantage which taxation carry on external financing is that interest paid on borrowings is deducted from the income. The deductibility of interest induces companies to finance purchases with borrowed capital. In other words, it becomes financially advantageous for companies to launch expansion programmes on borrowed money rather than raising equity from the public. Earning Per Share (EPS) increases with increase in proportion of debt capital in the total capital structure as borrowings become less costly. As a result equity share holders are benefited from enhancement of EPS as a result of increase in trading on equity. Thus, corporate taxation creates incentive for advancement to the company by utilising borrowed funds for financing its growth schemes.

As observed the from above discussion, tax incentives are boon for industrial growth and development. The Government of India have offered a number of incentives and concession to the industry which are summed up as under:

1. Deductions in respect of profits and gains by an undertaking or enterprise engaged in development of specialized economic zone.
2. Deductions in respect of profits and gains from industrial undertaking or enterprises engaged in infrastructure of development etc.
3. Deduction in respect of profits and gains by an undertaking or enterprise other than infrastructure development undertakings.
4. Deduction in respect of profits and gains of certain undertaking in certain category of states.
5. Depreciation allowance is allowed at varying rates for different types of plant and machinery.
6. All revenue expenditure incurred on scientific research is allowed as deduction.
7. Amortisation of preliminary expenses such as feasibility report or project report expenses are allowed in 10 equal instalments against profits.
8. Capital expenditure incurred on acquisition of patent rights or copy rights is also allowed to be amortised in equal instalments over a period of 14 years.
9. Tax exemption on interest on loans borrowed by companies for purchase of plant and machinery or raw-materials is also allowed as a deduction.

FINANCING COST ESCALATION

Cost escalation results in the increase in project cost for many reasons viz. Delay in implementation of project and inflationary pressure on corporate purchasing are the main reasons for cost escalation.

Financing cost escalation will depend upon the corporate arrangements as to how the project cost has originally been financed. There may be two different aspects

to treat the financing of cost escalation as discussed below:

1. Firstly, financing cost escalation in the case when he project is new and financed by owner fund only. In such cases, the raising of equity is costly but issue of right shares to existing shareholder could be planned and this cost be met out.

   There may be another situation when the company is existing company and project cost is being financed by its internal funds. In this case the company can capitalise its reserves and surplus and use the amount in financing cost escalation.

2. In the second situation where the company has been using borrowed sums in addition to equity capital for financing the project cost, it can always make request of additional funds to the lending institutions to meet the cost escalations or over runs in the project cost. In case the cost escalation is of greater magnitude then the company will have to go to raise funds from equity holders besides raising loans from the institutions so as to maintain the debt equity ratio tin the existing balanced and planned proportions.

LESSON ROUND-UP

- Equity Shares, commonly referred to as ordinary share represents the form of fractional ownership in which a shareholder, as a fractional owner, undertakes the maximum entrepreneurial risk associated with a business venture.
- Owners of Preference shares are entitled to a fixed dividend or dividend calculated at a fixed rate to be paid regularly before dividend can be paid in respect of equity shares.
- Debenture is a document evidencing a debt or acknowledging it and any document which fulfills either of these conditions is a debenture.
- Debenture includes debenture stock, bonds and any other securities of a company, whether constituting a charge on the assets of the company or not.
- A right issue is an offer of a company's shares to its existing shareholders.
- The term deposit has been defined in Section 58A of the Companies Act 1956, as any deposit of money with and includes any amount borrowed by a company but shall not include such categories of amount as may be prescribed in consultation with the Reserve Bank of India.
- Internal finance includes the funds generated within the corporate unit irrespective of the nature of source.
- Bonus shares is the objective of retention of profits and capitalizing the accumulated earning for financing from internal sources the cost of company's expansion, modernization or diversification schemes.
- Share with differential rights means a share that is issued with differential rights in accordance with the provisions of section 86 of the Companies Act, 1956. The equity shares with differential rights include equity shares with differential rights as to—(a) voting; (b) dividend; and (c) otherwise.

- Sweat equity share is a instrument permitted to be issued by specified Indian companies, under Section 79A of Companies Act, 1956.
- A Tracking stock is a type of common stock that "tracks" or depends on the financial performance of a specific business unit or operating division of a company, rather than the operations of the company as a whole.
- GDR is a form of depository receipt or certificate created by the Overseas Depository Bank outside India denominated in dollar and issued to non-resident investors against the issue of ordinary shares or foreign currency convertible bonds of issuing company.
- International finance for the development of industry in India is coming through many channels viz. Bilateral arrangement of the Government, All-India Financial Institutions, Indian Banks and Foreign Banks operating in international Market.
- External Commercial Borrowings (ECBs) are defined to include commercial bank loans, buyers' credit, suppliers' credit, securitized instruments such as Floating Rate Notes and Fixed Rate Bonds etc., credit from official export credit agencies and commercial borrowings from the private sector window of Multilateral Financial Institutions such as International Finance Corporation (Washington), ADB, AFIC, CDC, etc.

SELF-TEST QUESTIONS

1. Outline the procedure to be followed on issue of securities in India.
2. What is meant by Bonus Shares? What are the SEBI guidelines for issue of Bonus Shares?
3. What are the finances available from foreign sources and explain in detail the role of various institutions providing foreign finance?
4. Narrate the impact of corporate taxation on corporate financing.
5. Write short notes on:
   (i) Foreign bonds
   (ii) Role of IFC(W)
   (iii) Dividend policy
   (iv) Deferred Payment Arrangement
   (v) Requirements and advantages of listing
   (vi) Asian Development Bank.
   (vii) External commercial Borrowings.

6. State the trends of external commercial borrowings in India.
7. Evaluate equity capital, preference capital, and debenture capital from the company as well as investor's point of view.
8. What are the important characteristics of rights issue and discuss the guidelines to be followed for obtaining the approval of SEBI?
9. What are the major type of services of Indian financial institutions?
10. What are the promotional and financial services of IFCI and how does such activities benefit the corporate bodies?
11. Write short notes on
    (i) (ERAS) Exchange Risk Administration Scheme.
    (ii) Company Deposits as a source of finance.
    (iii) Main ingredients of international finance market.
    (iv) Swap (new marketing instruments).
    (v) Syndicated Euro Currency Loans.

Suggested Readings:

(1) Corporation Finance Principles and Problems — *S.C. Kuchhal;* Chaitanya Publishing House, Allahabad.
(2) Investment Management — *V.K. Bhalla;* S. Chand & Co. Pvt. Ltd., Ram Nagar, New Delhi.
(3) Management of Investment — *Jack Clark Frances*
(4) Management of Company Finance — *Samuel and Wilkies;* Nelson, 1982.
(5) IBRD Annual Report (Latest).
(6) Ministry of Finance, Annual Report (Latest).
(7) Economic Survey (Latest).
(8) Compendium on SEBI Capital Issues & Listing by *K.R. Chandratre, Bipin S. Acharya, S.D. Israni and K. Sewraman;* Bharat Publishing House, New Delhi.
(9) Preference Shares and Company Finance (Institute of Financial Management and Research, Madras) — *I.C. Gupta*
(10) Share Capital and Debentures
(11) Management and Indian Financial Institutions — *R.M. Srivastava*
(12) Companies Act, 1956
(13) Bank Finance for Industry (Working Capital & Terms Loan) — *S.N. Bidani, P.K. Mitra;* Vision Books, 36-C, Connaught Place, New Delhi.
(14) Investment Decisions and Capital Costs — *J.T.S. Portfield* (Prentice-Hall of India Pvt. Ltd., New Delhi)
(15) Financial Decision Marking, Second Edn. — *John J. Hampton;* Prentice Hall of India Pvt. Ltd., New Delhi.

(16) IDBI, IFCI, ICICI,IRBI Annual Reports (Latest)

(17) IDBI Report on Development Banking

(18) Merchant Banking Practice & Procedures — *J.C. Verma;* Bharat Law House, 1989

(19) Merchant Banking Organisation & Management — *J.C. Verma;* Tata McGraw Hill Book Co. Ltd., Darya Ganj, New Delhi.

STUDY V

DIVIDEND POLICY

Introduction
Forms of Dividend
Different Types of Dividend Policies
Stable Dividend Policy Theory
Residual Theory of Dividend Policy
Relevance of Dividend – Walter Formula
Dividend Growth Model
Irrelevance of Dividend
Marginal Analysis and Residuary Theory
Determinants of Dividend Policy
Recommendation as a Finance Manager
Legal Aspects of Dividends
Transfer of Unpaid/Unclaimed Dividend to Investor Education and Protection Fund
Corporate Dividend Practices in India

SELF-TEST QUESTIONS

DIVIDEND POLICY

LEARNING OBJECTIVES

The object of the study is to enable the student to understand:

- Dividend Policy
- Types of the Dividend Policy
- Residual Theory of Dividend Policy
- Relevance of Dividend – Walter formula
- Dividend Growth Model
- Irrelevance of Dividend – Modigliani – Miller formula
- Marginal Analysis and Residual Theory
- Determinants of Dividend Policy
- Cooperate Dividend Practices in India

INTRODUCTION

Dividend policy determines what portion of earnings will be paid out to stock holders and what portion will be retained in the business to finance long-term growth. Dividend constitutes the cash flow that accrue to equity holders whereas retained earnings are one of the most significant source of funds for financing the corporate growth. Both dividend and growth are desirable but are conflicting goals to each other. Higher dividend means less retained earnings and *vice versa*. This position is quite challenging for the finance manager and necessitate the need to establish a dividend policy in the firm which will evolve a pattern of dividend payments having no adverse effects on future actions of the firm.

The formulation of the dividend policy poses many problems. On the one hand theory would seem to dictate that the firm should retain all funds which can be employed at a higher rate than the capitalization rate; on the other hand, stock-holders preference must be considered.

Two important considerations evolve from the above, firstly, whether owners' needs are more important than the needs of the firm. It is not easy to ascertain the extent to which shareholders best interest or desires affect dividend policy because of the following difficulties: (1) in determining the dividend 'needs of the stock-holders, as related to tax position, capital gains, current incomes; it is also difficult to locate exactly what more affects the interest of the shareholders current income requirements or alternative use of funds, or tax considerations. (2) existing conflict of interest amongst shareholders dividend policy may be advantageous to one and not to other. Nevertheless, investor's expectations of dividend are mainly based on three factors viz., (a) reduction of uncertainty due to current earnings by way of dividend. (b) indication of company's strength and sound position that reposes confidence in investors. (c) to meet the need of current income.

Secondly, need of the firm are easier to determine which is the centre of attention for the policy makers. Firm-oriented 154 relating to dividend policy can be

grouped under the following six categories, affecting directly or indirectly the determination and the appropriateness of the policy:

(1) Firms' contractual obligations, restrictions in loan agreement and/or legal limitations/considerations; and insufficiency of cash to pay dividends.

(2) Liquidity, credit standing and working capital requirement and considerations. Ability to borrow, nature of stockholders, degree of control, timing of investment opportunities, inflation and need to repay debt.

(3) Need for expansion-availability of external finance, financial position of promoters, relative cost of external funds, the ratio of debt to equity.

(4) Business cycle considerations.

(5) Factors relating to future financing.

(6) Past dividend policies and stockholders relationship.

The above factors affect the different firms or industry in different manner in different situations.

FORMS OF DIVIDEND

The most common type of dividend is in the form of cash. Public companies usually pay cash dividend, sometimes a regular cash dividend and sometimes an extra cash dividend. Paying a cash dividend reduces the corporate cash and retained earnings.

Dividend is also paid in the form of shares of stock and this is referred as stock dividend or Bonus shares. In this form of dividend, no cash leaves the firm rather number of shares outstanding gets increased thereby reducing the value of each share.

A firm may also declare dividend in the form of stock split. As each share is now entitled to a smaller percentage of the firm's cash flow, stock split leads to increase in the total number of shares. A stock split resembles a stock dividend except it is usually much larger. There is also difference in accounting treatment. In case of bonus shares, the balance of the reserves and surplus account decreases due to a transfer to the equity capital and the share premium accounts. Earnings per share gets diluted and the market price per share falls proportionately with a share split. Reduction in the market price, caused by the share split, motivates more investors, particularly those with small savings, to purchase the shares. These are used by the management to communicate to the investors that the company is expected to earn higher profits in future.

DIFFERENT TYPES OF DIVIDEND POLICIES

The dividend decision should reflect the different factors already mentioned above as well as company's present operating and financial position. In this total framework, the firm will find that it has a choice of several dividend policies to follow, viz.:

(1) steady dividend at the present level;

(2) steady dividend at a lower level;

(3) steady dividend at a higher level;

(4) dividend fluctuating with earnings;

(5) low regular dividend plus extra dividends;

(6) elimination of dividend entirely.

The theoretical sketch work prepared to outline the different dividend policies could be precisely narrated as under:

STABLE DIVIDEND POLICY THEORY

Profit of the firm fluctuates considerably with changes in the level of business activity. Most companies seek to maintain a target dividend per share. However, dividend increase with a lag after earnings rise and this increase in earnings appear quite sustainable and relatively permanent. When dividends are increased strenuous efforts are made to maintain them at increased new level. This stability could take three forms: (1) keep dividends at a stable rupee amount but allow its payout ratio to fluctuate, or (2) maintain stable payout ratio and let the rupee dividend fluctuate, or (3) set low regular dividend and then supplement it with year end "extras" in years when earnings are high. As earnings of the firm increase the customary dividend will not be altered but a year end "extras" will be declared.

RESIDUAL THEORY OF DIVIDEND POLICY

According to Ezra Solomon, dividend policy is strictly a financing decision, the payment of cash dividend is a passive residual. The amount of dividend payout will fluctuate from period to period in keeping with fluctuations in the amount of acceptable investment opportunities available to the firm. If the opportunities abound, percentage of payout is likely to be zero; on the other hand, if the firm is unable to find out profitable investment opportunities, payout will be 100 per cent. The theory implies that investors prefer to have the firm retain and reinvest earnings rather than pay them out in dividends if the return on re-invested earnings exceeds the rate of return the investors could themselves obtain on other investments of comparable risks.

WALTER FORMULA

Professor James E. Walter has developed a theoretical model which shows the relationship between dividend policies and common stock prices. The basic premise underlying the formulation is that prices reflect the present value of expected dividend in the long run. The model operates on the objective of maximising common stockholders wealth. In general, if a firm is able to earn a higher return on earnings retained than the stockholder is able to earn on a like investment then it would appear beneficial to retain these earnings all other things being equal. Walter's model is as under:

$$P = \frac{D + \frac{R_a}{R_c}(E - D)}{R_c}$$

Where:

P : market price per share of common stock
D : dividend per share
E : earnings per share
R_a : return on investment
R_c : market capitalization rate.

Example: To illustrate the above formula suppose

R_a = return on investment is given as 0.12
R_c = market capitalization rate is as 0.10
E = earnings per share is Rs. 4/-
D = dividend per share is Rs. 2/-

Then, the market price per share would be:

$$P = \frac{2 + (0.12 \div 0.10)(4 - 2)}{0.10}$$

= Rs. 44/-

The optimal payout ratio is determined by varying D until we obtain the maximum market price per share. According to Walter the dividend payout ratio should be zero if R_a is greater than R_c. This will maximise the market price of the share. In the instant case, we have P = Rs. 48 as calculated under:

$$P = \frac{2 + (0.12 \div 0.10)(4 - 0)}{0.10}$$

= Rs. 48/-

So, with payout ratio 0, the market price is maximised and comes to Rs. 48/-. Similarly, if R_a is less than R_c the optimal payout ratio should be 100%. This point can be exemplified if R_a = 0.8 instead of 0.12 and other figures remain unchanged as in the above example, then we have market price of share as under:

$$P = \frac{2 + (0.8 \div 0.10)(4 - 2)}{0.10}$$

= Rs. 36/-

However, with Dividend payout ratio at 100%, we have:

$$P = \frac{4 + (0.8 \div 0.10)(4 - 4)}{0.10}$$

= Rs. 40/-

Thus, market price per share can be maximised with complete distribution of earnings. If R_a is equal R_c, then market price per share is insensitive to payout ratio. To sum up Walter's conclusions, the firm should distribute all the earnings in dividends if it has no profitable opportunities to invest.

Dividend Growth Model

Besides Walters formula there is a continuing Dividend Growth Model which gives the following formula for calculating the value of a firm's stock with dividend declaration:

$$P = \frac{E(1-b)}{Ke - br}$$

Where, P = price of share
E = earning per share
b = Retention ratio or percentage of earnings retained
(1 – b) = dividend payout ratio, i.e., percentage of earnings distributed as

dividend
Ke = Capitalisation rate/cost of capital
br = growth rate in r, i.e., rate of return on investment of an all equity firm.

The model is also referred to as the dividend — capitalization model. Grahm and Dodd Myron Gordon and others worked on the model which considers capitalization of dividends and earnings. The model is also referred to as the dividend growth model. The model considers the growth rate of the firm to be the product of its retention ratio and its rate of return.

The capitalization model projects that the dividend decision has a bearing on the market price of the share. In situations where the rate of return on investment (r) is greater than the capitalization rate (ke), the market price of share increases with decrease in dividend payout ratio. If r is less than Ke, market price of share declines with decrease in dividend payout ratio. If r is equal to ke, the dividend payout ratio has no effect on the market price of the security.

The dividend growth model thus, provides an additional measure of the intrinsic value of shares and may be used to supplement other valuation methods.

Example

Determine the market price of a share of LMN Ltd., given

ke = 11%
E = Rs. 20
R = (i) 12%; (ii) 11%; and (iii) 10%

The market price be determined if — (a) b = 90%
(b) b = 60% and
(c) b = 30%

$$P = \frac{E(1-b)}{ke - br}$$

(i) *r = 12%*

(a) *b* = *90%*
br = $.9 \times .12 = 0.108$

$$P = \frac{Rs.\ 20(1-0.9)}{.11-.108} = \text{Rs. } 100$$

(b) *b* = *60%*
br = $.6 \times .12 = 0.072$

$$P = \frac{Rs.\ 20(1-0.6)}{.11-.072} = \text{Rs. } 210.52$$

(c) *b* = *30%*
br = $.3 \times .12 = 0.036$

$$P = \frac{Rs.\ 20(1-0.3)}{.11-.036} = \text{Rs. } 189.19$$

(ii) *r = 11%*

(a) *b* = *90%*
br = $.9 \times .11 = 0.099$

$$P = \frac{Rs.\ 20(1-0.9)}{.11-0.099} = \text{Rs. } 181.82$$

(b) *b* = *60%*
br = $.6 \times .11 = 0.066$

$$P = \frac{Rs.\ 20(1-0.6)}{.11-0.066} = \text{Rs. } 181.82$$

(c) *b* = *30%*
br = $.3 \times .11 = 0.033$

$$P = \frac{Rs.\ 20(1-0.3)}{.11-.033} = \text{Rs. } 181.82$$

(i) *r = 10%*

(a) *b* = *90%*
br = $.9 \times .10 = 0.090$

$$P = \frac{Rs.\ 20(1-0.9)}{.11-0.090} = \text{Rs. } 100$$

(b) *b* = *60%*
br = $.6 \times .10 = 0.060$

$$P = \frac{Rs.\ 20(1-0.6)}{.11-.060} = \text{Rs. } 160$$

(c) *b* = *30%*
br = $.3 \times .10 = 0.030$

$$P = \frac{Rs.\ 20(1-0.3)}{.11-.030} = \text{Rs. } 175$$

The impact of dividend growth model can thus be analysed in three situations:

(1) When normal capitalization rate is less than the actual capitalization rate

$$CD_{norm} < CR_{act}$$

In such a situation, the shareholder gains more earnings by investing in the company than he expects as a norm. The shareholder would want the firm to retain more than to pay as dividend. If dividend payout is enhanced it will lower the intrinsic value as it lowers the growth rate of a highly profitable company.

(2) Another situation could be where normal capitalization rate equals the actual capitalization rate: $CD_{norm} = CR_{act.}$ This situation represents that the company is

doing well and shareholders are indifferent as to the level of dividend. If dividend is declared, it would be reinvested in the companies. Thus the dividend payout ratio does not effect the intrinsic value of the company.

(3) Where normal capitalization rate is more than actual capitalization rate i.e., $CD_{norm} > CR_{act}$: This situation represents the opposite side of (1) above. Here, the company is not doing well as expected, the shareholders would like to invest elsewhere in more profitable avenues, so dividend payout has to be higher and intrinsic value of shares accordingly gets enhanced.

The dividend growth model, thus an additional measure of the intrinsic value of shares that may be used to supplement other valuation methods.

IRRELEVANCE OF DIVIDEND

Professor Modigliani and Miller in their article, "Dividend Policy, Growth and the Valuation of Shares" advanced most comprehensive arguments to hold that investors are indifferent to dividends and capital gains and so dividends have no effect on the wealth of shareholders. They argue that the value of the firm is determined by the earning power of firms assets or its investment policy. The manner is which earnings are divided into dividends and retained earnings does not affect this value. These conclusions of MM thesis are based on certain assumptions viz. Existence of perfect market with rational investors, no floatation cost on issue of shares, no taxes, investment policy of firm not subject to change, perfect certainty by every investors as to future investments and profits of the firm (this is dropped by MM later). With these assumptions, the market price of a share at the beginning of the period is defined as equal to the present value of dividend paid at the end of the period plus the market price at the end of the period. Thus,

$$P_0 = \frac{1}{1+p}(D_1 + P_1)$$

P_0 = market price per share at 0 time
P = capitalisation rate for firm in that risk class (assumed constant throughout)
D_1 = dividend per share at time 1
P_1 = market price per share at time 1.

Suppose a share is expected to sell at Rs. 100/- one year from now, and is to pay a dividend of Rs. 5/- one year from now, the current value of stock is Rs. 105/- discounted by the appropriate rate p. A firm committed to equity financing may retain earnings and forego selling additional shares or it may pay dividend and sell shares. According to MM, the discounted value per share before and after a dividend payment (with an accompanying sale of shares) will be the same as if earnings had been retained (with no accompanying sale of shares). Let 'n' share be outstanding at period t_0 and let Δn be number of new shares sold at t_1 at a price of P_1, the new equation will be written as:

$$nP_0 = \frac{1}{(1+p)}[nD_1 + (n+\Delta n)P_1 - \Delta nP_1]$$

The total value of new shares to be sold (ΔnP_1) will depend on the volume of new Investment I, the net income earned Y during the period and the dividend paid on outstanding shares (nD_1) will be:

$$\Delta nP_1 = I - (Y - nD_1)$$

Substituting the above into main equation above we have:

$$nP_0 = \frac{1}{(1+p)}[(n + \Delta n)P_1 - I + Y]$$

Since D_1 does not appear in the above equation MM concludes that P_0 is not a function of D_1, the other variable $n, \Delta n, P_1, I, Y$ are assumed to be independent of D_1.

In the light of above, consider the following data:

p = .12

P_0 = 10

D_1 = .40

Shares outstanding 5,00,000

$$P_0 = \frac{1}{1+p}(D_1 + P_1)$$

$$= P_0(1+p) - D_1 = P_1$$

= 10 (1.12) □.40 = 10.80

If no dividend is paid, then the share price is 10(1.12) □0 = 11.20.

If the company earns Re. 1/- per share next year, new investment of Rs. 10,00,000 are expected and company pays dividend then new shares to be issued are as under:

$$\Delta nP_1 = I - (Y - nD_1)$$

$$\Delta n(10.80) = 10,00,000 - (5,00,000 - 2,00,000)$$

$$\Delta n = \frac{7,00,000}{10.80} = 64,815 \text{ shares.}$$

If no dividend is paid by the company the new share to be issued are:

$$\Delta n(11.20) = 10,00,000 - 5,00,000$$

$$\Delta n = \frac{5,00,000}{11.20} = 44,643$$

The discounted value per share before and after a dividend payment will be the same as if earnings had been retained. Further, the total value of new shares to be

sold will depend on the volume of new investment I, the net income earned during the period Y and the dividend paid on outstanding shares nD_1 which established that P_0 is not function of D_1 and all the variables in the equation are independent of D_1.

However, the unrealistic assumptions of MM thesis render the hypothesis unrealistic and insignificant.

MARGINAL ANALYSIS AND RESIDUARY THEORY

Besides the above approaches, the current thinking contributes to the significance of marginal analysis in the explanation of the residuary theory of the dividend policy. Every firm has some optimum debt ratio, new financing is done partly by equity and partly by debt which is a cheaper source of funds as compared to equity. Debt and equity forms the capital and gives the average cost of capital as long as firm finances at the optimum point using an optimum amount of equity and providing that it uses only internal earning as equity. Its marginal cost of capital (MCC) is equal to the average cost of capital.

If the firm turns up for more common stock than the retained earnings, it will be from outside and expensive. At the point where new stock must be sold the cost of equity and consequently the MCC rises. This concept is depicted below in Fig. 1:

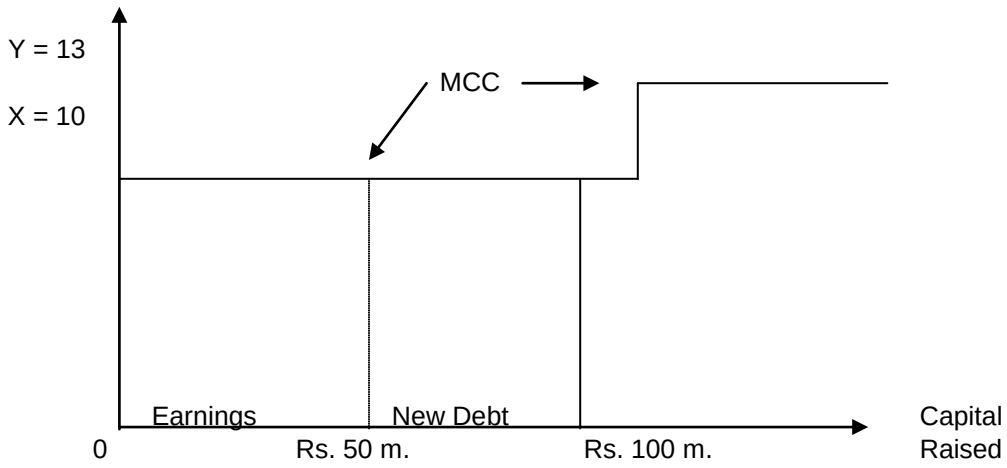


Fig. 1

Suppose the firm has Rs. 50 million of retained earnings and a 50% optimum debt ratio. It can invest Rs. 100 million, its marginal cost is constant at 10% for upto Rs. 100 m. of capital; beyond Rs. 100 million, MCC rises to 13% as firm begins to use more expensive new capital.

In case the investment opportunities are ranked in terms of their rate of return (IRR) as bad, normal and good as respectively shown by IRR_1, IRR_2 and IRR_3 in the Fig.2 then IRR_1 shows that firm can invest more money at higher rates of return than it can in other given situations.

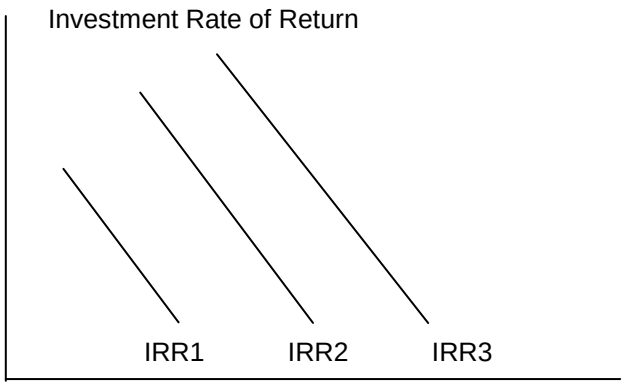


Fig. 2

If the above investment opportunities are combined with the cost of capital, the point where the investment opportunity curve cuts the cost of capital curve, defines the proper level of new investment. Where investment opportunities are relatively poor, the optimum level of investment is Rs. 25 million. Where it is normal, it is Rs. 75 million and when good, it is Rs. 125 million. (See the Fig. 3)

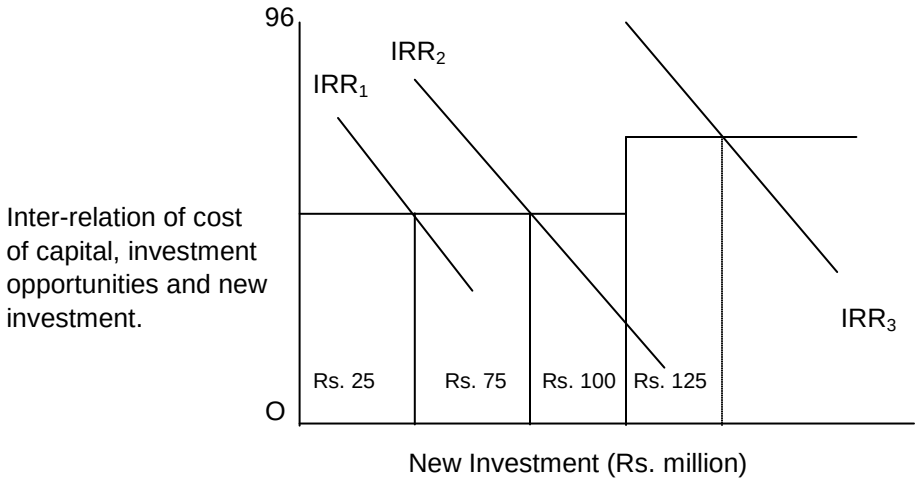


Fig. 3

An explanation to the above could be added. Consider the situation where firm can invest Rs. 100 million. It has Rs. 50 million debt and Rs. 50 million earnings so it can finance Rs. 100 million. If it pays part of the earnings as dividend, then it will have to use new stock and then cost curve will jump. This suggests that under this condition, its pay-out ratio is zero %. Under IRR_2 condition it can invest only Rs. 75 million by raising Rs. 25 million debt but the 50:50 ratio will change. To retain this, it should have 37.5 million equity and the same amount of debt. If it has Rs. 50 million in total earnings and decides to retain and reinvest Rs. 37.5 million, it must pay Rs.

12.5 million dividends. In this case pay out ratio is 25% (12.5/50). In the third situation it should invest only Rs. 25 million as it has Rs. 50 million earnings it could finance entire Rs. 25 million out of retained earnings and still have Rs. 25 million available for dividends. But this decision is not good, it will move it away from the target debt-equity ratio. The firm must retain Rs. 12.5 million and sell Rs. 12.5 million debt that is Rs. 50 million minus Rs. 12.5 million is equal to Rs. 37.5 million residual that should be paid out as dividend then pay out ratio is 75%.

The above theory can't be applied in fully. Flexibility may moderately be introduced.

An appropriate dividend policy must be evaluated in the light of the objectives of the firm, viz. Choose a policy that will maximise the value of the firm to its shareholders. Shareholders wealth includes not only the market price of stock but also current dividends which may be in the form of cash dividend or stock dividends. Payment of stock dividends does not fundamentally affect the value of the firm or influence the volume of financing available to the firm. But cash distributions, may effect the value of this firm or clearly influence the volume of funds available to the firm.

DETERMINANTS OF DIVIDEND POLICY

In the company organisation, dividend policy is determined by the Board of directors having taken into consideration a number of factors which include legal restrictions imposed by the Government to safeguard the interests of various parties or the constituents of the company.

The main considerations are as follows:

(1) *Legal:* As regards cash dividend policy several legal constraints bear upon it – a firm may not pay a dividend which will impair capital. Dividend must be paid out of firm's earnings/current earnings. Contract/Agreements for bonds/loans may restrict dividend payments. The purpose of legal restriction is to ensure that the payment of dividend may not cause insolvency.

(2) *Financial:* There are financial constraints to Dividend Policy. A firm can pay dividend only to the extent that it has cash to disburse; a firm can't pay dividend when its earnings are in accounts receivables or firm does not have adequate liquidity.

(3) *Economic Constraints:* Besides, there are economic constraints also. The question arise, does the value of dividend affects the value of the firm. If the answer to it is yes then there must be some *optimum level of dividend, which maximises the market price of the firm's stock*.

(4) *Nature of Business Conducted by a Company:* A company having a business of the nature which gives regular earnings may like to have a stable and consistent dividend policy. Industries manufacturing consumer/consumer durable items have a stable dividend policy.

(5) *Existence of the Company:* The length of existence of the company affects dividend policy. With their long standing experience, the company may have a better dividend policy than the new companies.

(6) *Type of Company Organisation:* The type of company organisation whether a private limited company or a public limited company affects dividend decisions. In a closely held company, a view may be taken for acquiescence and conservative policy may be followed but for a public limited company with wide spread of shareholder, a more progressive and promising dividend policy will be the better decision.

(7) *Financial Needs of the Company:* Needs of the Company for additional capital affects the dividend policy. The extent to which the profits are required to be invested in the company for business growth is the main consideration in dividend decisions. Working capital position of a company is an important condition that affects the dividend policy as no company would declare a dividend to undermine its financial strength and threaten its solvency.

(8) *Market Conditions:* Business cycles, boom and depression, affects dividend decisions. In a depressed market, higher dividend declaration are used to market securities for creating a better image of the company. During the boom the company may like to save more, create reserves for growth and expansion or meeting its working capital requirements.

(9) *Financial Arrangement:* In case of financial arrangements being entered into or being planned like merger or amalgamation with another company, liberal policy of dividend distribution is followed to make the share stock more attractive.

(10) *Change in Government Policies:* Changes in Government Policies particularly those affecting earnings of the company are also taken into consideration in settling dividend decisions. For example, higher rate of taxation will definitely affect company earnings and carry impact on dividend decisions. Besides, fiscal, industrial, labour, industrial policies do affect in different magnitude the dividend decisions of individual corporate enterprises.

RECOMMENDATION AS FINANCE MANAGER

The dividend policy has to be adopted to the nature and environments of the firm, industry and economy. If the company is operating in highly cyclical industry, like the machine tools industry, its management cannot create through regular dividends as stability does not exist. A low pay out in boom period cannot be off set by continuing dividends in prolonged period of large losses. It is better to relate dividends to earnings and not unduly attempt to protect shareholders from large fluctuations in earnings so inherent in business. Failure to pay dividends in one year may shock the market price of share and remove the security from the approved list of the investments used by institutional investors. A stable Dividend policy may lead to higher stock prices because it sustains investors confidence as they value more the dividend which are certain to be received. If dividends fluctuate investors may discount with some percentage probability factor i.e. the likelihood of receiving any particular amount of dividend.

LEGAL ASPECTS OF DIVIDENDS

The Companies Act, 1956 makes the following provision for payment of dividends:

(1) *Dividends to be paid only out of profits:* It is necessary for a company to declare and pay dividend only out of profits for that year arrived at after providing for depreciation in accordance with the provisions of Section 205(2) of the Act. Alternatively, Dividend could be declared out of profits of the company for any previous financial year or years arrived at after providing for depreciation in accordance with those provisions and remaining undistributed. The dividend can also be declared out of moneys provided by the Central Government or a State Government for the payment of dividend in pursuance of guarantee given by that government.

In this regard, three things are more important viz.

(a) to provide for depreciation before declaring dividend for the particular financial year;

(b) to set-off the amount of loss of previous financial year against the profit of the company in that year as per the provisions of the Companies Act, 1956.

(c) Central Government may allow company to declare or pay dividend for any financial year out of the profits of the company for that year or any previous financial year without providing for depreciation.

The company is required to transfer to the reserves such percentage of its profits for that year not exceeding ten percent in addition to providing for depreciation as required under Section 205(2A) of the Act. The company has the freedom to transfer voluntarily any amount of its profits or the higher percentage of its profits to the reserves in accordance with the rules as prescribed by the Government from time to time. The intention of the law is to restrict a company not to pay dividend out of capital.

It has been held in number of cases by Supreme Court that when a dividend is declared it becomes a debt of the company and a shareholder is entitled to sue for recovery of the same. Jurisdiction for such suit is at the place where the dividend is to be sent. (See AIR 1971 SC 206 *Hanuman Prasad Gupta* v. *Hiralal*).

(2) *Unpaid Dividend to be transferred to Special Dividend account:* Dividends are to be paid within 30 days from the date of the declaration. If they are not paid the company is required to transfer the unpaid dividend to Unpaid Dividend account within seven days of the expiry of the period of thirty days. The company is required to open this account in any scheduled bank as required under Section 205-A of the Companies Act, 1956 and deposit the amount of dividend within 5 days.

(3) Dividend is to be paid only to registered shareholders or to their order or their bankers because Section 206 places the restriction for dividend not to be paid to any other person excepting those named above. This provision has been made to prevent misuse of the funds and the litigation.

TRANSFER OF UNPAID/UNCLAIMED DIVIDEND TO INVESTOR EDUCATION AND PROTECTION FUND

The Companies (Amendment) Act, 1999 amended the provisions relating to the transfer of unpaid dividend account to the Central Government.

According to amended provisions, any money transferred to the unpaid dividend account of a company in pursuance of Section 205A(2) which remains unpaid or unclaimed for a period of seven years from the date of such transfer to unpaid

dividend account, shall be transferred by the company to the Investor Education and Protection Fund established under Sub-section (1) of Section 205C.

The company shall file the statements and deposit the money of unpaid dividend account as mentioned above to such authority or Committee as the Central Government may appoint. The company shall be entitled to a receipt from the authority or committee for any money transferred by it to the fund and such a receipt shall be an effectual discharge of the company in respect thereof. For this purpose Central Government has prescribed the Investor Education and Protection Fund (Awareness and Protection of Investor) Rules, 2001. Now a person can claim upto seven years from the date of transfer to unpaid dividend account, and thereafter the money will be transferred to the fund and the shareholder cannot claim dividend therefrom.

To curb the practice of companies declaring interim dividend and not paying the same promptly to the shareholders, the definition of dividend includes interim dividend and Sub-section (1A) of Section 205 stipulates that the Board of Directors may declare interim dividend and the amount of dividend including interim dividend is to be deposited in a separate bank account within five days from the date of declaration of such dividend and the amount of dividend including interim dividend so deposited under Sub-section (1A) shall be used for payment of interim dividend.

Section 207 stipulates that where a dividend has been declared by a company but has not been paid or the warrant in respect thereof has not been posted, within 30 days from the date of declaration, to any shareholder entitled to the payment of dividend, every director of the company, shall, if knowingly a party to the default, be punishable with simple imprisonment for a term which may extend to three years and shall also be liable to a fine of one thousand rupees for everyday during which such default continues and the company shall be liable to pay simple interest at the rate of eighteen percent per annum during the period for which such default continues.

CORPORATE DIVIDEND PRACTICES IN INDIA

Capital in the corporate sector is contributed by the investors with the main objective of earning a good return on their savings either as a regular annual income by way of dividend or the capital enhancement in the value of the shares. Corporate management has got to honour this legitimate expectation of the investors. Dividend makes equity investment attractive. Limitations of any nature put on the distribution of dividend by corporate sector has to bear upon the dis-incentive to savings and investment and thus to discourage economic growth. With this point in view, Public Companies (Limitation of Dividend) Act was allowed by the Government to lapse at the end of March, 1950 within a period of less than two years. But again, the government had promulgated Companies (Temporary Restrictions on Dividends) Ordinance on July 6,1974 which became an Act but was subsequently withdrawn on July 6, 1976.

The main drawback that is reflected in the context of dividend practice is the Government direct taxation. Dividend income is taxed twice, once at the hands of the company and once in the hands of the recipient shareholders. Despite representations from different segments particularly the corporate sector and the representative bodies of investors, Government has not done away with the existing practices. The large shareholders are not interested in receiving dividend in cash but are interested in long-term growth of the company on the basis of utilization of

retained earnings so that they escape the liability to pay tax on dividend income.

Corporate dividend practices, besides the above facts, are based on conservative management policies. Companies mostly prefer to depend for expansion, modification/renovation on the retained earnings rather than raising fresh equity or raising loans from financial institutions or banks. Governments credit policy also encourages the corporate units to declare dividend at lower rates and increase their retained earnings or free reserves so as to attain self-sufficiency of funds for utilisation in the implementation of modernisation schemes etc. With the higher profitability of certain companies, the shareholders have the grievances for not being paid higher dividend. Therefore, certain companies have now started paying higher dividend. This has in many cases raised the market, price of the share and provided opportunity to investors to encash their gains. Lower dividend keeps the market price general low unless special circumstances exist due to company's efforts for growth by way of expansion or modernisation or diversification to boost investors' sentiments.

LESSON ROUND-UP

- Dividend Policy determines what portion of earnings will be paid out to stockholders and what portion will be retained in the business to finance long term growth.
- The amount of dividend payout fluctuates from period to period in keeping with fluctuations in the amount of acceptable investment opportunities available to the firm. If the opportunities abound, percentage of payout is likely to be zero; on the other hand, if the firm is unable to find out profitable investment opportunities, payout will be 100 per cent.
- Walter formula: Prices reflect the present value of expected dividend in the long run. A firm is able to earn a higher return on earnings retained than the stockholder is able to earn on a like investment then it would appear beneficial to retain these earnings all other things being equal. Walter's model is as under:

$$P = \frac{D + \frac{R_a}{R_c}(E - D)}{R_c}$$

- Dividend Capitalization model projects that dividend decision has a bearing on the market price of the share.

$$P = \frac{E(1-b)}{Ke - br}$$

- Modigliani Miller Approach: According to MM, the discounted value per share before and after a dividend payment will be same as if earnings had been retained.

$$nP_0 = \frac{1}{(1+p)}[nD_1 + (n + \Delta n)P_1 - \Delta nP_1]$$

- Dividend Policy is determined by the Board of Directors having taken into consideration a number of factors which include legal restrictions imported by the Government to safeguard the interest of various parties or the constituents of the company.
- An appropriate dividend policy must be evaluated in the light of the objectives of the firm.
- Section 205 (2) of the Companies Act provides that dividend could be declared

out of profit of the company for any previous financial year or years arrived at after providing for depreciation in accordance with those provision and remaining undistributed.

- Dividend is also paid in the form of shares of stock and this is referred as stock dividend or bonus shares.

SELF-TEST QUESTIONS

1. What do you understand by 'dividend policy'? What are the main determinants of dividend policy in a corporate enterprise?
2. Do you feel that a dividend decision is backed by a theoretical framework? What are different dividend theories? Describe each of them precisely.
3. What steps as a corporate executive would you suggest to the management for following an appropriate dividend policy for your company that may be appreciated by the investors in general? Give reasons for your recommendations.
4. What are the legal constraints on payment of dividends? Discuss in the light of statutory framework existing in India.
5. How would you justify elimination of dividend entirely as a policy of your company to your shareholders? Under what circumstances a company should follow such a dividend policy?
6. Write short notes on the following:
   (1) Steady Dividend Policy.
   (2) Fluctuating Dividend Policy.

Suggested Readings:

(1) Planning in Financial Management — *R.W. Johnson's*
(2) Fundamentals of Financial Management — *Walkers*
(3) Financial Decision Making — *John J. Hampton*, Prentice Hall of India Pvt. Ltd., New Delhi.
(4) Investment Management — *V.K. Bhalla,* S. Chand & Co. Pvt. Ltd., Ram Nagar, New Delhi.
(5) Financial Management — *Weston and Birgham*
(6) Dividend and Interest — *ICSI Publication*

STUDY VI

WORKING CAPITAL MANAGEMENT AND CONTROL

LEARNING OBJECTIVES

The object of the study is to enable the student to understand:

- Concept of Working Capital
- Determinants of Working Capital
- Current Assets and Fixed Assets Financing
- Operating Circle
- Application of Quantitative Techniques
- Techniques for Allocation and control of Working Capital
- Financing of Working Capital
- Working Capital Leverage
- Banking Norms and Macro Aspect of Working Capital Management
- Cash Management
- Inventory Management
- Receivable Management

THE BASIC CONCEPT

Working capital is defined varyingly keeping in view the objectives and purposes. To businessmen, working capital comprises current assets of business whereas to the accountant/creditors/investment analysts working capital is understood as the difference of current assets minus current liabilities. This is also called the Net Working Capital. There is operative aspects of working capital i.e. current assets (which is known as 'funds' also) employed in the business process form the gross working capital. Current assets comprise: cash, receivables, inventories, marketable securities held as short-term investment and other items near cash or equivalent to cash. This is also known as going-concern concept of working capital.

On the basis of the above concepts of "Gross" and "Net" working capital, it can be classified in two ways. In the first case the classification may be linked with 'Gross' Concept. Such working capital shall be those sums invested in various components of current assets, such as cash, receivables, short-term unexpired costs and inventories. Second classification is based on "time" element which classify working capital as "permanent" or "temporary". Permanent working capital is that amount of funds required to produce goods and services necessary to satisfy demand at its lowest point. Such capital possesses the following characteristics viz. it is constantly changing from one asset form to another, and it remains permanently within the process of the business and can be returned back to its owners/suppliers when the business comes to an end. It has another special feature that it increases with the growth of business of the company. On the other hand, temporary working capital do change its form from cash to inventory to receivables and back to cash with the difference that it is not always gainfully employed. Seasonal business require more

temporary working capital.

Theoretical Description of Working Capital

Working capital comes into business operation when actual operation takes place. Generally, the requirement of quantum of working capital is determined by the level of production which depends upon the management attitude towards "risk" and the factors which influence the amount of cash, inventories, receivables and other current assets required to support given volume of production. Risk is understood in the sense of the probability of bearing unfavourable results on account of not maintaining sufficient current assets to meet all the financial obligations as they mature and to support the proper level of sales.

A Finance Manager takes three broad decisions in respect of working capital management and they are:

(i) the level of current assets

(ii) the structure/composition of current assets

(iii) the financing of current asset.

Determinants of Working Capital

Working capital is constantly affected by the criss-crossing economic currents flowing about a business. The nature of firm's activities, the industrial health of the country, the availability of material, the ease or tightness of the money markets are all part of these shifting forces. It is difficult to rank them because the influence in individual items rises and wanes over the years as a company's internal policies and environment in which it operates change.

The following factors are however important.

Nature of Business: A company's working capital requirements are directly related to the kind of business it conducts. A company that sells a service primarily on a cash basis does not have the pressure of keeping considerable amounts of inventories or of carrying customer's receivables. On the other hand, a manufacturing enterprise ordinarily finances its own customers, requires large amounts to pay its own bills, and uses inventories of direct materials for conversion into end products. These conditions augment the working capital requirements.

Degree of Seasonality: Companies that experience strong seasonal movements have special working capital problems in controlling the internal financial savings that may take place. Aggrevating this difficulty is the fact that no matter how clearly defined a pattern may be, it is never certain. Unusual circumstances may distort ordinary relationships. Although seasonality may pull financial manager from the security of fixed programmes to meet recurring requirements, flexible arrangements are preferable to guard against unforeseen contingencies. An inability to cope with sharp working capital swings is one of the factors that encourages companies to undertake diversification programmes.

Production Policies: Depending upon the kind of items manufactured, by adjusting its production schedules a company may be able to offset the effect of seasonal fluctuations upon working capital, at least to some degree, even without seeking a balancing diversified line. Thus in one year, in order to avoid burdensome inventories, firm may curtail activity when a seasonal upswing normally takes place. As a matter of

policy, the choice will rest on the one hand, and maintaining a steady rate of production and permitting stocks of inventories to build up during off season periods, on the other. In the first instance, inventories are kept to minimum levels but the production manager must shoulder the burden of constantly adjusting his working staff; in the second, the uniform manufacturing rate avoids fluctuations of production schedules, but enlarged inventory stocks create special risks and costs. Because the purchase of inventories is often financed by suppliers, the mere fact that a company carries bigger amounts does not necessarily mean that its cash problem is more serious.

Growth: As a company expands, it is logical to expect that larger amounts of working capital will be required to avoid interruptions to the production sequence. Although this is true it is hard to draw up firm rules for the relationship between the growth in the volume of a company's business and the growth of its working capital. A major reason for this is management's increasing sophistication in handling the current assets, besides other factors operating simultaneously.

Position of the Business Cycle: In addition to the long-term secular trend, the recurring movements of the business cycle influence working capital changes. As business recedes, companies tend to defer capital replacement programmes and deflect depreciations to liquid balances rather than fixed assets. Similarly, curtailed sales reduce amounts receivable and modify inventory purchases, thereby contributing further to the accumulation of cash balances. Conversely, the sales, capital, and inventory expansions that accompany a boom produce a greater concentration of credit items in the balance sheet.

The tendency for companies to become cash-poor as the tide of economic prosperity rises and cash-rich as it runs out is well known economic phenomenon. The pressure on company finances during boom years is reflected in the business drive for loans and the high interest rate of these years as compared with a reversal of such conditions during the periods of economic decline. The financial implications of these movements may be deceptive. A weakening of the cash position in favourable economic environment may suggest the need or difficulty of raising capital for the further expansion rather than a shortage of funds to take care of current needs. On the other hand, a strong cash position when the economic outlook is bleak may be the forerunner of actual financial difficulties. The financial manager must learn to look behind the obvious significance of the standard test of corporate liquidity interpret their meaning in the light of his knowledge of the company's position in the industry, the prospects of new business and the availability of external sources for supplying additional capital.

Competitive Conditions: A corporation that dominates the market may relax its working capital standard because failing to meet customers requirements promptly does not necessarily lead to a loss of business. When competition is keen, there is more pressure to stock varied lines of inventory to satisfy customer's demands and to grant more generous credit terms, thereby causing an expansion in receivables.

Production Collection Time Period: Closely related to a company's competitive status are the credit terms, it must grant. These arrangements may be result of tradition, policy within the industry, or even carelessness in failing to carry out announced principles. And the arrangements, in turn, are part of the overall production collection time sequence, that is, the time intervening between the actual

production of goods and the eventual collection of receivables, flowing from sales. The length of this period is influenced by various factors.

Purchases may be on a cash basis, but the manufacturing cycle may be prolonged and sales terms generous, causing a wide gap between cash expenditure and receipt and possibly placing heavy financing pressure on the firm. The pressure may be eased, despite long manufacturing cycle, if the company can persuade its suppliers to bear a large part of its financing burden or the manufacturing cycle may be short, and get the pressures heavy because suppliers do not bear a large part of financial burden. The financing requirements of the company may always be traceable to the relation between purchasing and sales credit volume and terms of operations.

Dividend Policy: A desire to maintain an established dividend policy may affect the volume of working capital, or changes in working capital may bring about an adjustment of dividend policy. In either event, the relationship between dividend policy and working capital is well established, and very few companies ever declare a dividend without giving consideration to its effect on cash and their needs for cash.

Size: The amount needed may be relatively large per unit of output for a small company subject to higher overhead costs, less favourable buying terms, and higher interest rates. Small though growing companies tend to be hard pressed in financing their working capital needs because they seldom have access to the open market as do large established business firms have.

Sales Policies: Working capital needs vary on the basis of sales policy of the same industry. A department store which caters to the “carries trade” by carrying a quality line of merchandise and offering extensive charge accounts will usually have a slower turnover of assets, a higher margin on sales, and relatively larger accounts receivable than many of its non-carriage, trade competitors. Another department store which stresses cash and carry operations will usually have a rapid turnover, a low margin on sales, and small or no accounts receivable.

Risk: The greater the uncertainty of receipt and expenditure, more the need for working capital. A business firm producing an item which sells for a small unit price and which necessitates repeat buying, such as canned foods or staple dry goods etc., would be subject to less risk than a firm producing a luxury item which sells for a relatively high price and is purchased once over a period of years, such as furniture, automobiles etc.

Factors influencing the amount of cash, receivables and inventories are discussed below:

1. *Cash:* In all enterprises, cash holding is maintained for three motives viz. transaction, precautionary and speculative. Cash held for transaction purposes meets the normal day to day cash needs of the business. The size of precautionary cash balance is directly related to the company’s ability to assume risk. The company’s motive for holding cash balance for speculative purpose is understood when the objective is to take advantage of profitable opportunities.

Factors which influence cash balance include the credit position of the firm, status of the firm’s receivables and inventory accounts, the nature of business enterprise, the management’s attitude towards risk.

For managing the cash balances cash budget is used as a planning device which determines the size of cash holdings. The budget could be prepared for a week, quarter of a month, monthly, bi-monthly, and so on. Excess cash or shortage of cash can be sorted out through cash budgets.

2. *Receivables:* Factors influencing investment in receivables are mainly the cost and time values of funds. Cost is associated with the amount of investment in receivables and the value of each sale rupee sold on terms will be greater if it is received in the immediate future than received at some later date. Therefore, both the cost and time value of funds be given consideration while setting credit policy for the company. Generally, an increase in receivables results from several causes i.e. (1) increase in sales, (2) length of credit terms, and (3) volume of delinquent accounts. Increase in sales generally requires larger investment in receivable. It is advantageous for a business enterprise to maintain the shortest credit terms possible alongwith the lowest cost of capital. Delinquent accounts should be avoided by expediting collections or by eliminating the delinquent customers or the cost of capital involved in such accounts be recovered from such customers for delinquency. The firm can reduce investment in receivables by offering cash discount to customers.

Risk is associated with receivables. The risk is related to bad debt losses to the profit margin i.e. a company can bear more risk with great profit margin. Risk associated with receivables can be accounted for by adjusting either (1) the discount rate used to ascertain the present value of receivables – cost of capital; or (2) the cash flow resulting from receivables. Standard deviation and co-efficient of variation are tools that may be used to determine the degree of risk associated with cash group.

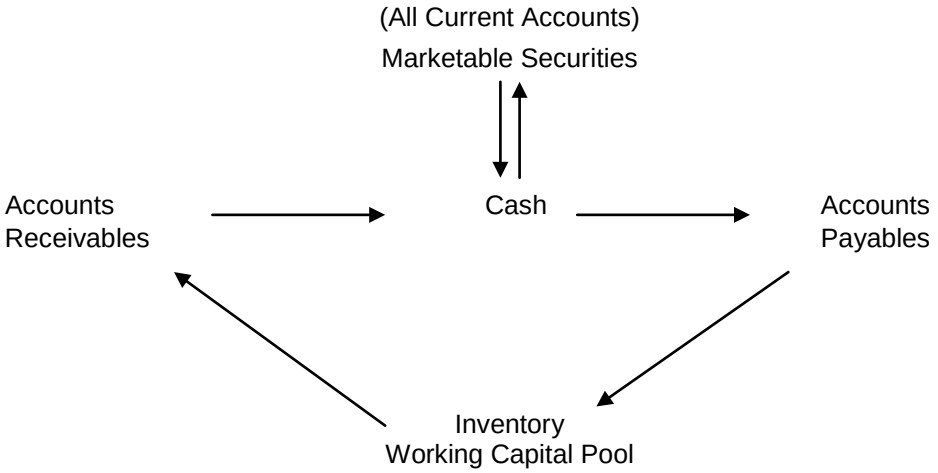
3. *Inventories:* There are several factors which influence the amount of funds invested in inventories at any one time. Firstly, the amount of time needed for inventories to travel through the various processes directly affect the amount of investment. Secondly, the cost associated with large inventories like storage costs, set-up and change over costs resulting from short production runs, costs associated with increased ordering activity and costs resulting from spoilage and obsolescence. Besides, there are certain costs associated with investment in inventories which cannot be measured like opportunity cost of not being able to invest funds in more profitable ventures, costs resulting from changes in price, or loss of sales for not having adequate inventories to satisfy demand. Therefore, the investment in inventories is guided by minimisation of costs. The third factor affecting investment in inventories is management's ability to predict the forces that may cause disruption in the flow of inventories like strikes or shifts in demand for the product, etc. Fourthly, the company's accounting procedure tend to influence the size of investment in inventories.

Current Assets and Fixed Assets Financing

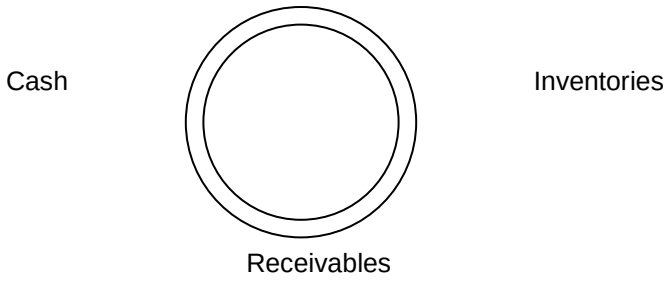
The more of the funds of a business are invested in working capital, lesser is the return in term of profitability and less amount is available for investing in long-term assets such as plant and machinery, etc. Therefore, the corporate enterprise has to minimise investment in working capital and to concentrate on investment of resources in fixed assets. Some economists argue that current assets be financed by current liabilities. But this all depends upon economic conditions prevailing at particular time requiring a company to keep business resources

liquid so that business can take immediate advantage of knocking opportunities. In short-run, opportunity may arise for investment in stocks to make immediate gains due to movement in prices, whereas investment in plant and machinery may not be possible.

Current assets financing can be viewed from the working capital pool as under:



Current assets usually are converted into cash within a current accounting cycle in one year. Cash is used to purchase raw material etc., i..e. to create inventories. When inventories are sold, it gives rise to accounts receivables. Collection of receivables brings cash into company and the process forms a circle and goes on as depicted below:



Thus, the current assets represent cash or near cash necessary to carry on business operations at all times. A level of current assets is thus maintained throughout the year and this represents permanent working capital. Additional assets are also required in business at different times during the operating year. Added inventory must be maintained to support peak selling period when receivables also increase and must be financed. Extra cash is needed to pay increased obligations due to spurt in activities.

Fixed assets financing is different to current assets financing. In fixed assets investment is made in building, plant and machinery which remains blocked over a period of time and generates funds through the help of working capital at a percentage higher than the return on investment in current assets. Working capital

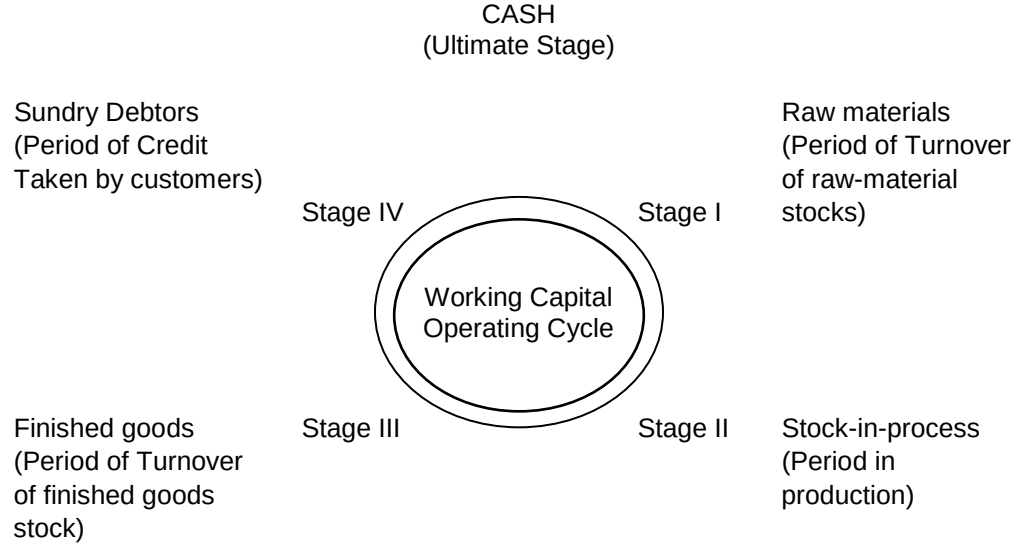
financing or current assets financing is done by raising short-term loans or cash credits limits but fixed assets financing is done by raising long-term loans or equity.

The working capital leverage and the capital structure leverage are, therefore, two different concepts. Capital structure leverage is associated with the fixed assets, financing, with an optional mix of owner's funds and borrowed funds. Owner's funds are the internal funds of the company comprised of equity holder's money in the shape of equity, retained earnings, depreciation fund and reserves. Borrowed funds are the external sources of funds raised from banks, financial institutions, issue of debentures, stock and term deposits from public. Financing of fixed assets with borrowed funds is cheaper than using owner's funds which increases the earnings per share and tends to increase the value of owner's capital in the share market. The detailed discussion on this aspect can not be accommodated as this topic is entirely devoted to the aspects of working capital.

Operating Cycle Concept and Application of Quantitative Techniques

The operating cycle is the length of time between the company's outlay on raw materials, wages and other expenditures and the inflow of cash from the sale of the goods. In a manufacturing business, operating cycle is the average time that raw material remains in stock less the period of credit taken from suppliers, plus the time taken for producing the goods, plus the time the goods remain in finished inventory, plus the time taken by customers to pay for the goods. Operating cycle concept is important for management of cash and management of working capital because the longer the operating cycle the more financial resources the company needs. Therefore, the management has to remain cautious that the operating cycle should not become too long.

The stages of operating cycle could be depicted through the diagram given on page 10.



The above figure would reveal that operating cycle is the time that elapses between the cash outlay and the cash realisation by the sale of finished goods and

realisation of sundry debtors. Thus cash used in productive activity, often some time comes back from the operating cycle of the activity. The length of operating cycle of an enterprise is the sum of these four individual stages i.e. components of time.

The operating cycle can be calculated for a period as under:

		Days
1.	Raw materials	
	Period of raw material stock $= \frac{\text{Average value of Raw material stock}}{\text{Consumption of raw material per day}} =$	
	Less: Period of credit granted by supplier $= \frac{\text{Average level of creditors}}{\text{Purchase of raw materials per day}} =$	
2.	Period of Production $= \frac{\text{Average value of work in progress}}{\text{Average cost of production per day}} =$	
3.	Period of turnover of finished goods stock $= \frac{\text{Stock of finished goods}}{\text{Average cost of gods sold per day}} =$	
4.	Period of credit taken by customers $= \frac{\text{Average value of debtors}}{\text{Average value of sales per day}} =$	
	Total operating cycles	

ILLUSTRATIONS

Example No. 1

Operating cycle can be calculated in the above manner from the following figures related to company 'X':

Particulars	*Average amount Outstanding Rs.*	*Average value per day (340 days assumed) Rs.*
Raw Material inventory	1,80,000	
Work-in-progress inventory	96,000	
Finished goods inventory	1,20,000	
Debtors	1,50,000	
Creditors	1,00,000	

Purchase of Raw Material			2,500
Cost of Sales			4,000
Sales			5,000
Operating Cycle:			*Days*
1. Period of Raw Material Stock	$\frac{1,80,000}{2500}$	=	72
Less: Credit granted by supplier	$\frac{1,00,000}{2500}$	=	40
			32
2. Period of Production	$\frac{96,000}{4,000}$	=	24
3. Turnover of Finished Goods	$\frac{1,20,000}{4000}$	=	30
4. Credit taken by customers	$\frac{1,50,000}{5000}$	=	30
			116

Operating cycle is long and a number of steps could be taken to shorten this operating cycle. Debtors could be cut by a quicker collection of accounts.

Finished goods could be turned over more rapidly, the level of raw material inventory could be reduced or the production period shortened.

Requirement of working capital over the operating cycle period could be guessed for short-term, medium term as well as long-term. For short term, working capital is required to support a given level of turnover to pay for the goods and services before the cash is received from sales to customers. Effort is made that there remains no idle cash and no shortage of money to erase liquidity within the company's working process. For this purpose sales budget could be linked to the expected operating cycle to know working capital requirement for any given period of time or for each month. Medium term working capital include profit and depreciation provisions. These funds are retained in business and reduced by expenditure on capital replacements and dividend and tax payment. By preparing budget the minimum amount required for medium term working capital can be estimated. The company can work out its working capital needs for different periods through cash budget which is key part of working capital planning. To prepare such a budget operating cycle parameters are of great use as estimation of future sales level, time and amount of funds flowing into business, future expenditure and costs all can be made with least difficulty to help the main target.

Then, operating cycle help in assessing the needs of working capital accurately by determining the relationship between debtors and sales, creditors and sales and inventory and sales. Even requirement of extra working capital can be guessed from such estimate.

Example No. 2

From the following information, you are required to estimate the net working capital:

	Cost per unit (Rs.)
Raw Material	200

Direct Labour	100
Overheads (excluding depreciation)	250
Total Cost	550

Estimated data for the forthcoming period is given as under:

Raw material in stock	average 6 weeks
Work-in-progress (assume 50% completion stage with full material consumption)	average 2 weeks
Finished goods in stock	average 4 weeks
Credit allowed by suppliers	average 4 weeks
Credit allowed to debtors	average 6 weeks
Cash at bank is expected to be	Rs. 75,000
Selling price	Rs. 800 per unit
Output	52,000 units per annum

Assume that production is sustained at an even pace during the 52 weeks of the year. All sales are on credit basis. State any other assumptions that you might have made while computing.

Answer

Computation of Net working Capital

Nature of Asset/Liabilities	*Basis of Calculation*	*Amount (Rs.)*
A. Current Assets		
(i) Raw material stock	Average 6 weeks $\frac{52,000 \times 200 \times 6}{52}$	12,00,000
(ii) Work-in-progress	Average 2 weeks	
(a) Raw Material	$\frac{52,000 \times 200 \times 2}{52}$	4,00,000
(b) Direct labour and overhead (50% completion stage)	$\frac{52,000 \times 175 \times 2}{52}$	3,50,000
(iii) Finished goods stock	Average 4 weeks $\frac{52,000 \times 550 \times 4}{52}$	22,00,000
(iv) Debtors	Average 6 weeks	

	$\frac{52,000 \times 800 \times 6}{52}$	48,00,000
(v) Cash at bank		75,000
		90,25,000
B. Current Liabilities		
(i) Creditors	Average 4 weeks $\frac{52,000 \times 200 \times 4}{52}$	8,00,000
C. Net Working Capital (A-B)		82,25,000

Note: (i) It has been assumed that the material has been introduced at the commencement of the process.

(ii) Lag in payment of overheads is nil.

(iii) There is no depreciation charge.

The company may have a budget or plan to show the expected increase in sales over the next period and by using the relationship may determine sales and the relevant items of current assets and current liabilities. The relationship between sales and funds required as working capital can vary at different stages of economic cycle. Advance knowledge of actual sales is the main determinant of the working capital needs. For example, raw material stocks are partly based on estimates of production level and work in progress and finished goods are based on expected sales. At times of downturning in economic activity, there could be overstocking which is not desirable and a company should adjust this level to business activity.

The above is the management oriented approach of calculating working capital. Banks and financial institutions view the assessment of working capital from the angle as discussed in the following pages. Banks normally provide working capital finance to hold an acceptable level of current assets viz. raw materials and stores, stocks in progress, finished goods and sundry debtors for achieving a pre-determined level of production and sales. The assessment of funds required to be blocked in each of these items of the working capital required by an industry. The requirement of funds, for the various items of current assets is discussed as under:

1. *Raw Material:* Raw material, of any kind is necessarily required by an industrial unit to continue the production process. Different raw material could be procured from different sources may be indigenous or overseas and accordingly different treatment of procurement time is bound to be given. Mode of payment for the raw material may also be different. Thus, affecting the credit requirements of the client, the funds blocked up in procurement and stocking of material will have to be taken into consideration. Total materials including those in transit and for which advance payment is made can normally be expressed in terms of number of months consumption and requirements of funds can be assessed by multiplying the figure by the amount of monthly consumption.

2. *Work in Process:* The time taken by the raw material to be converted into finished product is the period of material processing and all the expenses of the process are involved in it. Therefore, the assessment of funds blocked in the process is made by taking into account the raw material consumption during the processing

period and the expenses incurred during such period i.e. the cost of production for the period of processing.

3. *Finished goods in the next stage:* The funds blocked in finished goods inventories are assessed by estimating the manufacturing cost of product.

4. *Sundry Debtors:* When goods sold is not realised in cash, sundry debtors are generated. The credit period followed by a particular industrial unit in practice is generally the result of industry practices. Investment in accounts receivable remains blocked from the time of sale till the time amount is realised from debtors. The assessment of funds blocked should be on the basis of cost of production of the materials against which bank extends working capital credit.

5. *Expenses:* One month's total expenses, direct or indirect, are provided by way of cushion in assessing the requirement of funds which may include rent, salaries, etc. depending upon the length of operating cycle.

6. *Trade Credit* received on purchases reduces working capital funds requirements and has to be taken into account for correct assessment of funds.

7. *Advances* received alongwith purchase orders for the products also reduce the funds requirements for working capital.

Taking into consideration the above parameters of operating cycle the working capital for a unit can be assessed as under:

			Rs.
1.	Raw material	Month's consumption	100
2.	Stock in process	Week's (cost of production for period of processing)	100
3.	Finished goods	Month's cost of production required to be stocked	100
4.	Sundry debtors	Month's cost of production	100
5.	Expenses	One month's	100
		Total	500
Less: Trade credit on month's purchases		Rs. 100	
Less: Advance payment on Orders received		Rs. 100	200
Working Capital required			300

Banks do not provide the entire amount of Rs. 300 towards working capital. At every stage bank would insist upon the borrower's stake in the form of margin which depends on various factors like saleable quality of product, durability, price fluctuations, market conditions and business environment, etc. Thus the bank at every stage would allow at the pre-determined rate the margin as noted below:

	Rs.	*Permissible Unit*
Raw material	100	*Rs.*
Less: Margin 10%	10	90
Stock in process	100	
Less: Margin 40%	40	60

Finished goods	100	
Less: Margin 25%	25	75
Sundry Debtors (at sale value)	100	
Less: Margin 10%	10	90
Expenses for one month	100	
100% Margin	100	–
Total permissible limit		315

Working capital requirement of the unit	500
Permissible limits (Bank loan)	315
Gap (contribution to be provided by Borrower)	185

Before sanctioning the working capital of Rs. 315, the bank would ensure that borrower is in a position to bring in margin money of Rs. 185 by way of excess current assets over current liabilities based on projected balance sheet.

Quantitative Techniques for Forecasting Working Capital Needs

A company very often faces fluctuations in business operations which affect the levels of current assets and liabilities due to cyclical and seasonal fluctuations. Estimation of future needs of working capital becomes difficult in such situations. But the data collected for past working may establish a trend relationship between the sales per month or per week and the level of working capital. Linear regression model is used to judge the relationship of two variables for estimating the working capital needs for the given amount of working capital needs. The most widely used regression technique employs the method of least squares:

The linear equation technique solve the equation problem as under:

$$y = a + b\,(x)$$

When x = the independent variable i.e. sales
y = the dependent variable i.e. working capital level
a = intercept of the least square line with the vertical axis
b = the slope of the line. With the help of such model, linear equation could be solved.

Working capital = a + b (prior months sales).

Linear regression can be solved in assisting the analyst in making estimates but it must be used with care. A straight line can be fitted to any data, some additional statistical technique would be needed to see how well the regression line actually describes the relationship between four variables. In those events where the relationship is not linear, more sophisticated analytical tools would be needed to express it accurately. The degree of accuracy will depend upon the skill and expertise of the analyst in using the information and making forecasting.

To forecast the working capital requirement for the next period, the following may also be used:

$$C + \frac{O.C.}{\text{Number of working days in the period}} \times C.S.$$

Where, C = Cash balance required
O.C. = Operating cycle
C.S. = Estimated cost of goods sold.

Techniques for Allocation of Working Capital

There are some mathematical techniques like Linear Programming for giving a basis for allocation of funds between individual current assets items from which a company can derive benefit in items when funds are scarce. This technique is not used in uncertain conditions that exist in India today where it is impossible to assess correctly all the variables from which the equation can be developed.

Financing of Working Capital

Sources of financing of working capital differ as per the classification of working capital into permanent working capital and variable working capital.

Sources of permanent working capital are the following:

(a) Owner's funds are the main source. Sale of equity stock or preference stock could provide a permanent working capital to the business with no burden of repayment particularly during short period. These funds can be retained in the business permanently. Permanent working capital provides more strength to the business.

(b) Another source of permanent working capital is bond financing but it has a fixed maturity period and ultimately repayment has to be made. For repayment of this source, company provides sinking funds for retirement of bonds issued for permanent working capital.

(c) Term loan from banks or financial institutions has the same characteristics as the bond financing of permanent working capital.

(d) Short-term borrowing is also a source of working capital finance on permanent basis.

Source of variable working capital: Working capital required for limited period of time may be secured from temporary sources as discussed below:

(a) *Trade Creditors:* Trade credit provide a quite effective source of financing variable working capital for the period falling between the point goods are purchased and the point when payment is made. The longer this period, the more advantageous it becomes for the firm to avoid efforts of seeking finance for holding inventories or receivables.

(b) *Bank loan:* Bank loan is used for variable or temporary working capital. Such loans run from 30 days to several months with renewals being very common. These loans are granted by bank on the goodwill and credit worthiness of the borrower, and collateral may include goods, accounts/notes receivable or

Government obligations or other marketable securities, commodities and equipments.

(c) *Commercial Paper:* It can be defined as a short term money market instrument, issued in the form of promissory notes for a fixed maturity. It will be totally unsecured and will have a maturity period ranging from 90 days to 180 days. It will meet the short term finance requirements of the companies and will be good short term investment for parking temporary surpluses by corporate bodies.

(d) *Depreciation as a source of working capital:* Increase in working capital results form the difference in the amount of depreciation allowance deducted from earnings and new investment made in fixed assets.

Usually, the entire amount deducted towards depreciation on fixed assets is not invested in the acquisition of fixed assets and is saved and utilised in business as working capital. This is also a temporary source of working capital so long as the acquisition of fixed asset is deferred.

(e) *Tax liabilities:* Deferred payment of taxes is also a source of working capital. Taxes are not paid from day-to-day, but estimated liability for taxes is indicated in Balance Sheet. Besides, business organisations collect taxes by way of income tax payable on salaries of staff deducted at source, old age retirement benefits, excise taxes, sales taxes, etc. and retain them for some period in business to be used as working capital.

(f) Other miscellaneous sources are Dealer Deposits, Customer advances etc.

Working Capital – A Policy Decision

In formulating a Firm's Working Capital Policy, an important consideration is the trade-off between profitability and risk. In other words, the level of a firm's Net Working Capital (Current Assets – Current Liabilities) has a bearing on its profitability as well as risk. The term profitability here means profits after expenses. The term risk is defined as the probability that a firm will become technically insolvent so that it will not be able to meet its obligations when they become due for payment.

The risk of becoming technically insolvent is measured using net working capital. It is assumed that the greater the amount of Net Working Capital, the less risky the firm is, and *vice-versa*. The relationship between liquidity, Net Working Capital and risk is such that if either net working capital or liquidity increases, the firm's risk decreases.

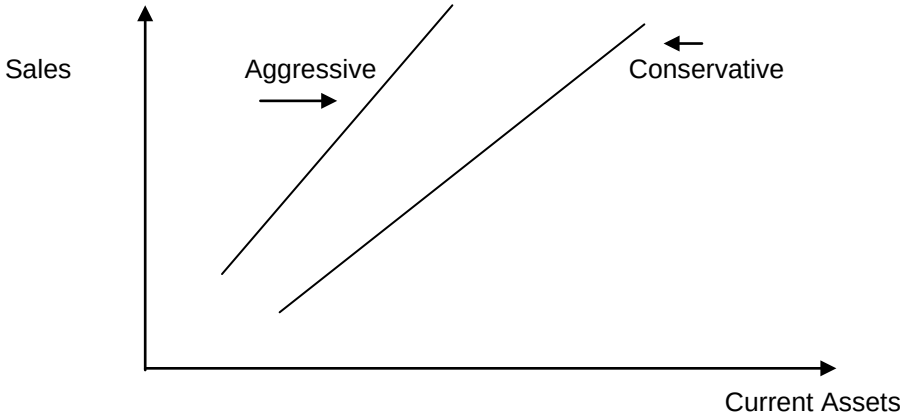
What proportion of current assets should be financed by current liabilities and how much by long term sources will depend, apart from liquidity – profitability trade off, on the risk perception of the management. Two broad policy alternatives, in this respect, are:

(a) A conservative current Asset financing policy: It relies less on short term bank financing and more on long term sources.

No doubt it reduces the risk that the firm will be unable to repay its short term debt periodically, but enhances the cost of financing.

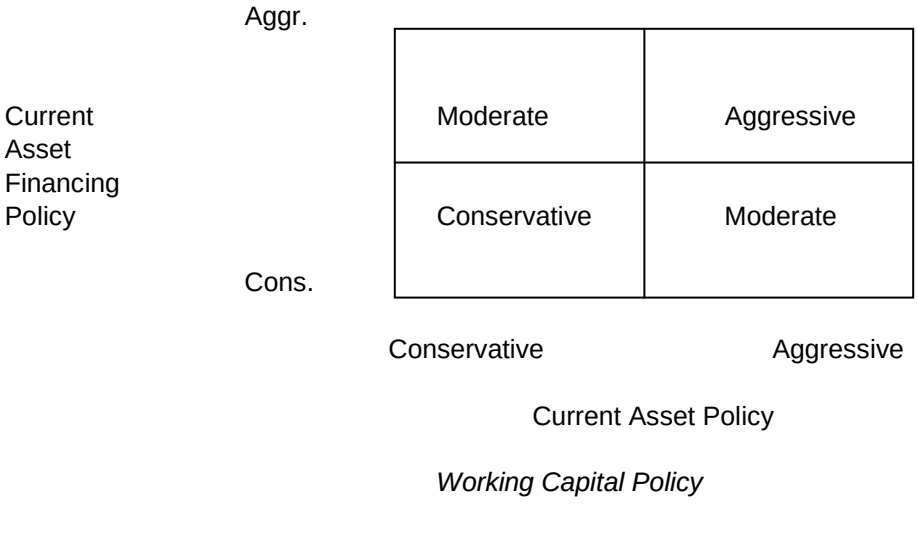
(b) An aggressive current Asset Financing Policy: It relies heavily on short term bank finance and seeks to reduce dependence on long term financing. It exposes the firm to a higher degree of risk, but reduces the average cost of financing thereby resulting in higher profits.

The relationship between current assets and sales under different current asset policies is shown in the following figure:



To explain, an aggressive current asset policy aims at minimising the investment in current assets corresponding to increase in sales thereby exposing the firm to greater risk but at the result of higher expected profitability. On the other hand conservative policy aims at reducing the risk by having higher investment in current assets and thereby depressing the expected profitability. In between these two, lies a moderate current asset policy.

The following figure shows the relationship between current asset policy and current asset financing policy thereby reflecting the overall working capital policy.



Working Capital Policy

Control of Working Capital

The direct approach to working capital control is to develop effective policies for the control of each of the components of working capital. Since deviations occur in actual operations, indirect control techniques are needed by management to reduce its working capital requirements. Control of cash, receivables and inventories be maintained in a synchronized way so that a matching balance in all parameters of working capital could be obtained.

Working Capital Leverage

Working capital leverage may refer to the way in which a company's profitability is affected in part by its working capital management. Profitability of a business enterprise is affected when working capital is varied relative to sales but not in the same proportion. If the flow of funds created by the movements of working capital through the various business processes is interrupted, the turnover of working capital is decreased as is the rate of return on investment. Working capital management should enhance the productivity of the current assets deployed in business. This correlates the working capital with Return-on-Investment (ROI). ROI is product of two factors – assets turnover and profits margin. If either of these ratios can be increased, ROI will be increased to a great degree. DU Pont Chart illustrates this position as under:

If profit margins	= 6%	By increasing	By increasing
and Asset Turnover	= 3 times	profit margin	assets turnover
then ROI	= 18%	by 1%, ROI	by 1, ROI increases
		increases by 3%	by 6%
		i.e. 6 + 1 = 7 x 3 = 21%	6% x 4 = 24

Assets turnover side of ROI computation may also reflect the working capital management.

Current assets reflect the funds position of a company and is known as Gross Working Capital. Working Capital leverage is nothing but current assets leverage which refers to the asset turnover aspect of ROI. This reflects company's degree of efficiency in employing current assets. In other words, the ability of the company to guarantee large volume of sales with small current asset base is a measure of company's operating efficiency. This phenomenon is asset turnover which is a real tool in the hands of finance manager in a company to monitor the employment of fund on a cumulative basis to result into high degree of working capital leverage.

Short-term loans or cash credit raised by the company to meet the requirements of working capital i.e. to finance the current assets, add to the profitability of the company's turnover of current assets in comparison to the cost associated in terms of interest charges on such loans. This is the exact measure of working capital leverage. However, the concept of working capital leverage has not been much in use in academic discussions and its real importance is also to be understood by the business enterprises. To maximise profits, finance managers unanimously view the investment in current assets be kept to the minimum and should be financed from the

funds such as current liabilities or low cost funds.

Techniques for Control of Working Capital

Cash forecast technique can be used for control of funds flowing in and out of business to check surpluses and shortages. Daily, weekly, monthly, cash flow statements are used to regulate flow of funds and arrange for fund shortage and invest surplus cash.

Fund Flow Statement

Fund flow statements are used to find changes in assets over a period of time showing uses of funds and sources of funds. Funds flow represent movement of all assets particularly of current assets because movement in fixed asserts is expected to be small except at times of expansion or diversification.

Ratio Analysis

Ratio Analysis is normally used for working capital control. The following ratios are commonly used:

1. Current Ratio $= \frac{\text{Current Assets}}{\text{Current Liabilities}}$
2. Acid Test Ratio $= \frac{\text{Current Assets} - \text{Inventories}}{\text{Current Liabilities}}$
3. Inventory Turnover $= \frac{\text{Cost of goods sold}}{\text{Average Inventory}}$
4. Current Assets Turnover $= \frac{\text{Annual Sales}}{\text{Current Assets}}$
5. Receivable Turnover $= \frac{\text{Sales}}{\text{Debtors}}$
6. Total Debt to share capital and free reserves.

Besides above, for managing current assets it is advisable to calculate the following ratios also:

1. Quantum of shareholders funds invested in current assets.
2. Quantum of shareholders funds and long-term debts invested in current assets.
3. Relationship between the shareholders and long term funds on one hand and the short term funds on the other pertaining to current assets.

Receivables: Control of bad-debts is an important part of controlling the working capital or the current assets of the company. Credit policy should be followed which may give no rise to bad-debts and expedite collections. Periodical checks should be maintained by classifying debtors as outstandings from 0-30 days, 30-60 days, 60-90 days and 90 and over. Amount due for 60 days or more should be followed seriously and collected.

Factoring: It is a continuing legal relationship between a financial institution (the 'factor') and a business concern (the 'client') selling goods or providing services to trade customers, whereby the factor purchases the client's book debts (accounts receivables) either with or without recourse to the client in default by the trade customers.

It is a financial tool to release the working capital tied up in credit to customers for more profitable use in expanding a client's business. It relieves the client from administrative and sales collection chores so that he can concentrate on production and other important aspects.

The working group by RBI (Vaghul Committee) has recommended that banks as well as private non-bank financial institutions should develop factoring services. It has been widely accepted as a form of financing the working capital requirements in the USA, UK and Europe but has yet to take its roots in India. It will require the development of matching services such as information dissemination network and highly efficient communication facilities. It will thus, help in shortening the operating cycle and thereby reducing the money tied in working capital.

Inventories and stocks: Inventory control devices should be used extensively to minimise cost of holding and carrying inventories of raw material, work-in-progress, finished goods, stocks of spare, etc. to reduce investment in them.

Commonly used techniques for controlling inventories are Economic Order Quantity Analysis and ABC Analysis. With the development of the computers, application of inventory devices has become much easier and business houses should use possible soft and hardware for this purpose.

Banking Norms and Macro Aspect of Working Capital Management

Commercial banks grant working capital advances by way of cash credit limits and are the major suppliers of working capital to trade and industry. In the past, the practices in commercial banks as revealed by the findings of different Study Groups appointed by RBI were as follows:

The current limit was related to the security offered by the clients of banks without assessing financial position of the borrower through cash flow analysis. Short-term advances were not utilised for short-term purposes and defeated their self liquidating objective. In large number of accounts, no credit balance existed nor was the debit balance fully wiped out over a period of years because withdrawals were more than deposits.

To control the tendency of over-financing and the diversion of the banks funds, Daheja Study Group (National Credit Council constituted in 1968 under the Chairmanship of V.T. Daheja) made recommendations for the banking system to finance industry on the basis of a total study of the borrower's operations rather than on security considerations. Further, present as well as future cash credit accounts should be distinguished as between the 'hard core' and the 'short-term components'. The hard core should represent the minimum level of raw materials, finished goods and stores which the industry required to hold in order to maintain a given level of production, and the bank finance should be provided on strong financial basis as term loan and be subjected to regular repayment schedule whereas short-term component

of the account would represent the requirement of funds for temporary purposes i.e. a short term increase in inventories, tax, dividends and bonus payments, etc. the borrowing being adjsuted in a short period out of sales.

Although the above recommendations were implemented but no improvement was noticed in money drain to strong industrial groups by banks and RBI appointed another study group under the chairmanship of Shri P.L. Tandon in August 1975. Tandon committee made certain recommendations *inter alia* comprising of recommendations on norms for inventory and receivables for 15 major industries, new approach to bank lending, style of lending credit, information system and follow up, supervision and control and norms of capital structure. A brief appraisal of the Tandon committee recommendations would prove more enlightening as given below:

(i) *Norms for inventory and receivables* recommended by Tandon Committee for 15 major industries, cover about 50 per cent of industrial advances of banks. These norms were arrived at after examining the trends reflected in the company finance studies conducted by the Reserve Bank of India and detailed discussion with representatives and experts of the industries concerned.

Industry		*Raw materials*	*Finished goods*	*Receivables and Inland Bills Discounts (excluding Foreign Bills Discounting)*
1.	Cotton Textiles	1-1/2 (Bombay and Ahmedabad) 2-1/2 (Bihar, Orissa, West Bengal & Assam) 2 (other areas)	—	2
2.	Synthetic Textiles	1 – 1-1/2	1/2 to 1	1/4
3.	Jute Textiles	2 – 2-1/2	1 for domestic sales 1-1/2 for export	1
4.	Pharmaceuticals	2 – 2-1/2	2	1
5.	Rubber Products	2	1/2	1/2
6.	Fertilizers			
	1. Nitrogeneous Plants	1/2 – 3/4 (near refinery 1 – 1-1/2 (for inland units)	3/4 (where stocks are on plant site) 1-1/2 (where stock are in up-country centres)	1/2 - 1
	2. Phosphatic Plants	2 (for port units)	- do -	- do -

		3 (for inland units)	- do -	- do -
7.	Vanaspati	1	—	1/2
8.	Paper			
	1. Bomboo and Wood	4-8 (in stages Nov. to May and thereafter to bring down)	(i) controlled sales 3/4 (ii) free sales 1/4	1/2 -do-
	2. Chemical	2-1/2		
9.	Light Engineering	3	—	2
10.	Medium Engineering	3	—	2

Notes: 1. Raw materials are expressed as so many months production.

2. Finsihed goods and receivables are expressed as so many months sales.

These figures represent only average levels which should exceed the prescribed norms.

(ii) *Bank lending:* The Committee introduced the concept of working capital gap. This gap arised due to the non-coverage of the current assets by the current liabilities other than bank borrowings. A certain portion of this gap will be filled up by the borrower's own funds and long-term borrowings. The Committee developed three alternatives for working out the maximum permissible level of bank borrowings:

1. 75% of the working capital gap will be financed by the bank i.e.

   Total Current assets
   Less: Current Liabilities other than Bank Borrowings
   = Working Capital Gap.
   Less: 25% of Working Capital gap from long-term sources.

2. Alternatively, the borrower has to provide for a minimum of 25% of the total current assets out of long-term funds and the bank will provide the balance. The total current liabilities inclusive of bank borrowings will not exceed 75% of the current assets:

   Total Current Assets
   Less: 25% of current assets from long-term sources.
   Less: Current liabilities other than Bank borrowings
   = Maximum Bank Borrowing permissible.

3. The third alternative is also the same as the second one noted above except that it excludes the permanent portion of current assets from the total current assets to be financed out of the long-term funds, viz.

   Total Current assets
   Less: Permanent portion of current assets
   Real Current Assets

Less: 25% of Real Current Assets

Less: Current liabilities other than Bank Borrowings

Maximum Bank Borrowing permissible.

Thus, by following the above measures, the excessive borrowings from banks will be gradually eliminated and the funds could be put to more productive purposes.

The above methods may be reduced to equation as under:

1st Method : PBC = 75/100 □WCG

2nd Method : PBC = TCA – [(25/100 □TCA) + OCL]

3rd Method : PBC = TCA – [CRA + 25/100 (TCA – CRA) + OCL]

Where,

PBC stands for Permissible Bank Credit

WCG stands for Working Capital Gap

TCA stands for Total Current Assets

OCL stands for Other Current Liabilities

(i.e. Current Liabilities other than Bank Borrowings)

CRA stands for Amount required to finance Core Assets.

The three alternative methods mentioned above may be illustrated by taking the following illustration of a borrower's financial position, projected at the end of next year.

Illustration

Current Liabilities	*Rs. in lakhs*		*Current Assets*	*Rs. in lakhs*
Creditors for Purchase	100		Raw materials	200
Other Current Liabilities	50	150	Stock-in-process	20
Bank Borrowings including			Finished goods	90
bill discounted with banks		200	Receivable including	
			bills discounted	50
			Other current assets	10
		350		370

Assume core Current Assets are Rs. 95 lakhs.

Solution:

1st Method	*Rs. in lakhs*	*2nd Method*	*Rs. in lakhs*	*3rd Method*	*Rs. in lakhs*
Total Current Assets	370	Total Current Assets	370	Total Current Assets	370
Less: Current Liabilities		*Less:* 25% of Current		*Less:* Core Current Assets	95
other than Bank		Assets from long-term		Real Current Assets	275
borrowings	150	sources	92	*Less:* 25% of above from	
Working Capital gap	220		278	long-term sources	69
Less: 25% of above from		*Less:* Current liabilities			206
Long-term sources	55	other than Bank		*Less:* Current liabilities other	
Maximum Bank borrowing		borrowings	150	than Bank borrowings	150

permissible	165	Maximum Bank			56
Actual borrowing from		Borrowings Permissible	128	Working capital gap	220
bank	200	Working capital gap	220	Maximum Bank borrowing	
Excess borrowings	35	Actual Bank borrowing	200	permissible	56
Current Ratio	1 .17 : 1	Excess borrowings	72	Actual Bank borrowing	200
		Current Ratio	1.33 : 1	Excess borrowings	144
				Current Ratio	1.79 : 1

The above approach of lending is meant to ensure reasonable relationship between current assets and current liabilities. Conventionally a current rate of 2 : 1 is considered satisfactory but in view of constraints the availability of long-term funds in India and lack of alternative sources, the vast majority of borrowers would not be able to comply at present with conventional standard. Accordingly, the study group preferred to take a realistic view in suggesting that current liabilities should not exceed the current assets and as such it is necessary that current ratio should carry a thin margin of safety i.e. it should be slightly over 1.1. The study group also emphasised the importance of the classification of current assets and current liabilities which should be made as per definition in the Companies Act.

The above illustration shows that each successive method is intended to increase progressively the investment of borrowers long-term funds (comprising borrower's own funds and long-term borrowings) to support current assets. The Committee recommended placement of the borrower on the first method within a year and their moving to the second and third methods in stages. Out of three methods Reserve Bank of India accepted first two methods for being put into practice by bank and deferred implementation of third method for the time being pending group work and detailed studies to be undertaken to work out core current assets for various industries. First and second method are not alternative but successive stages through which borrowers will pass. A borrower who reached 1st method will push a head to conform to second method. The borrower who already satisfy the requirement of the second method are not allowed to slip back to the 1st method by increasing their dependence on bank borrowings. This is to say, existing current ratio should not be impaired.

The application of first method which was the stage to be reached with in period of one year, might have required many existing borrowers to repay excess borrowings. In such cases bank were to hold dialogue with the customers to adjust the excess borrowing without causing any hardship to them. If adjustment was difficult, the bank could convert the excess borrowing into Working Capital Term Loan (WCTL) for being amortised over a reasonable period taking into account the borrowers cash accruals and obligations and his capacity to raise additional equity. Period of regularisation was to be agreed to on negotiation basis between banker and borrower at the time of entry into the new system.*

(iii) *Style of credit:* A change in the style of lending has also been suggested by the Committee so as to bifurcate the cash credit into a loan account and demand cash credit instead of treating the entire credit limit as cash credit for a year. This will make the credit less expensive to borrowers. The demand cash credit will meet the seasonal requirements of industry and will be wiped out automatically at the end of the business cycle. This will introduce a better financial discipline in the credit system

* Management of Bank Credit by H.R. Saluja, Himalaya Publishing House, New Delhi, p. 487.

and will generate better financing system in the banking economy with numerous advantages.

(iv) *Information system:* To monitor better credit information system in the banking industry, the committee suggested for the borrower to submit quarterly statements in the prescribed format about its operations, current assets and current liabilities and funds flow statements with monthly stock statements and projected balance sheets and profit and loss account at the end of financial year. The requirement was prescribed for borrower with a working capital limit of a crore of rupees of above.

(v) *Follow up:* The Committee also suggested a close follow up for supervision and control of the use of credit by the banks and change in attitude of the banks from security-oriented lending to production oriented lendings/credit.

(vi) *Norms of Capital Structure:* For examining the capital structure of the company the norms have also been suggested by the committee for monitoring a better equity : debt relationship.

Reserve Bank of India have accepted the above recommendations of the Tandon Committee but found that the gap between sanctioned cash credit limit and its utilisation has remained unanswered. In this context, RBI had appointed in April 1979 a working group under the Chairmanship of Mr. K.B. Chore to look into this gap between the sanctioned limits and their utilisation.

The Chore Committee has, *inter alia*, recommended as follows:

(1) emphasised need for reducing the dependance of large and medium scale units on bank finance for working capital;

(2) to supplant the cash credit system by loans and bills wherever possible, and

(3) to follow simplified information system but with penalties when such information is not forthcoming within the specified limit.

Chore Committee also suggested that the banks should adopt henceforth Method II of the lending recommended by the Tandon Committee so as to enhance the borrowers' contribution towards working capital. The observance of these guidelines will ensure a minimum current ratio of 1.33 : 1. Where the borrowers are not in a position to comply with this, excess borrowings on account of adoption of Method II should be segregated and converted into a working capital term loan (WCTL). This loan should be made repayable in half-yearly instalments over a period not exceeding five years. WCTL may carry a rate of interest higher than the rate applicable on the relative cash credit limit, not exceeding the ceiling with a view to encouraging an early liquidation of WCTL.

It was also suggested that banks should fix separate limits where feasible for peak level and non-peak level requirements with periods where there is a pronounced seasonal trend. This will not apply to agro-based industries but also to certain consumer industries like fans, refrigerators, etc. The borrower should be discouraged from approaching banks frequently for *ad hoc* limits in excess of the sanctioned limits excepting those special circumstances when such requests be considered for short duration with 1 per cent additional interest over normal rate which could be waived in general cases on merits. Sick units may be allowed general

exemptions from the above requirements. The Committee also favoured encouragement be given to bill finance i.e. bill acceptance and bill discounting practices involving banks, buyers and sellers. The Committee suggested some modifications and improvements in the system earlier recommended by the Tandon Committee. The modified system includes that banks should submit half-yearly statements to RBI above credit limits of borrowers with aggregate working capital of Rs. 50 lakhs and above from the banking system.

CHORE COMMITTEE

Reserve Bank of India in 1979 appointed Working Group under the Chairmanship of Shri K.B. Chore to review the operation of the cash credit system with reference to the gap between sanctioned credit limits and the extent o their utilisation.

In the light of the review, the group was to suggest modifications in the system to make the system more amenable to rational management of funds by commercial banks, and/or alternative types of credit facilities, which would ensure greater credit discipline and also enable banks to relate credit limits to increase in output or other productive activities.

The Group in its final report supported the existing system of extending credit, a combination of the three types of lending, viz., cash credit, loan and bill should be retained. However, it acknowledged the need for some directional changes to ensure that wherever possible the use of cash credit would be supplanted by loans and bills. Further, it suggested the introduction of necessary corrective measures to remove the impediments in the use of bill system of finance and also to remove the drawbacks observed in the cash credit system.

MARATHE COMMITEEE

In 1982, it was felt that an independent review of the Credit Authorisation Scheme (CAS) which had been in operation for several years would be useful and accordingly the Reserve Bank of India appointed a Committee referred as “Marathe Committee” in November 1982 to review the working o the Credit Authorisation Scheme. The Committee submitted its report in July 1983.

The Marathe Committee was given terms of reference to examine the Credit Authorisation Scheme from the point of view of its operational aspects stressed that the ‘CAS is not to be looked upon as a mere regulatory measure which is confined to large borrowers. The basic purpose of CAS is to ensure orderly credit management and improve quality of bank lending so that all borrowings, whether large or small, are in conformity with the policies and priorities laid down by the Central Banking Authority. If the CAS scrutiny has to be limited to a certain segment of borrowers, it is because of administrative limitations or convenience, and it should not imply that there are to be different criteria for lending to the borrowers above the cut off point as compared to those who do not come within the purview of the scheme.

KANNAN COMMITTEE

With a view to free the banks from rigidities of the Tandon Committee recommendations in the area of Working Capital Finance and considering the ongoing liberalizations in the financial sector, IBA constituted, following a meeting of the Chief Executives of Selected public sector banks with the Deputy Governor of Reserve Bank of India on 31.8.96, a committee on 'Working Capital Finance' including Assessment of Maximum Permissible Bank Finance (MPBF), headed by K. Kannan, Chairman and Managing Director of the Bank of Baroda.

The Committee examined all the aspects of working capital finance and gave far reaching recommendations on the modalities of assessment of working capital finance in its report submitted to IBA on February 25, 1997. It observed that since commercial banks in India are undergoing a metamorphosis of deregulations and liberalizations, it is imperative that micro-level credit administration should be handled by each bank individually with their own risks-perceptions, risks-analysis and risks-forecastings. The final report of the Committee was submitted to RBI for its consideration in March, 1997. In its final report, the Kannan Committee also pointed that alongwith modification of existing systems of working capital assessment and credit monitoring, certain undermentioned areas require to be given greater attention:

(1) Regular interface with the borrower to have a better understanding of (i) his business/activity; and, (ii) problems/constraints faced by him and the future action plan envisaged;

(2) Periodical obtaining of affidavits from the borrowers, declaring highlights of their assets, liabilities and operating performance (in lieu of subjecting even the high rated/high valued borrowers to several routine inspections/ verifications) in order to bestow faith-oriented, rather than ab initio doubt-oriented, approach in monitoring the credit dispensation.

(3) Periodical exchange of information between/among financing banks/financial institutions to pick-up the alarm signals at the earliest.

(4) Establishing, within, a time bound programme, a "Credit Information Bureau" to provide updated information of existing/new borrowers before taking a credit decision. (Modality of Information Bureau in advanced countries may be taken as a guide for floating an appropriate Credit Information Bureau).

Accordingly, the Kannan Committee recommended that the arithmetical rigidities, imposed by Tandon Committee (and reinforced by Chore Committee) in the form of MPBF-computation, having so far been in vogue, should be given a go-by. The committee also recommended for freedoms to each bank in regard to evolving their own system of working capital finance for a faster credit delivery in order to serve more effectively various segments of borrowers in the Indian economy.

Concurring with recommendations of the Kannan Committee, Reserve Bank of India (vide circular No. IECD No. 23/08.12.01/96 dated 15.04.1997) advised to all the banks, inter-alia, as under:

It has now been decided that the Reserve Bank of India shall withdraw forthwith the prescription in regard to assessment o working capital needs based on the concept of maximum permissible bank finance (MPBF) enunciated by Tandon Working Group. Accordingly, an appropriate system may be evolved by banks for assessing the working capital needs of borrowers within the prudential guidelines and exposure norms already prescribed".

The turnover method, as already prevalent for small borrowers, may continue to be used as a tool of assessment for this segment; since major corporates have adopted cash budgeting as a tool of funds management, banks may follow cash budget system for assessing the working capital finance in respect of large borrowers; there should also be no objection to the individual banks retaining the concept of the present maximum permissible bank finance, with necessary modifications or any system."

Reserve Bank of India further directed that: Working capital credit may henceforth be determined by banks according to their perception of the borrower and the credit needs. Banks should lay down, through their boards, transparent policy and guidelines for credit dispensation in respect of each broad category of economic activity.

CASH MANAGEMENT

By cash management, we mean the management of cash in currency form, bank balances and readily marketable securities. Cash is the most important component of working capital of a firm. It is also the terminal conversion point for other constituents. Each firm holds cash to some extent at any point in time. Source of this cash may be the working capital operating cycle or capital inflows. Similarly the outflow of cash from the cash reservoir of a firm can be either to the operating cycle or for capital repayment.

Motives for holding cash

At the basic level, a firm like individuals, has three motives for holding cash. These are as under:

(a) Transactional motive

(b) Speculative motive

(c) Contingency motive

(a) Transactional Motive

This is the most essential motive for holding cash because cash is the medium through which all the transactions of the firm are carried out. Some examples of transactions of a manufacturing firm are given below:

— Purchase of Capital Goods like plant and machinery

— Purchase of raw material and components

— Payment of rent and wages

— Payment for utilities like water, power and telephone

— Payment for service like freight and courier

These transactions are paid for from the cash pool or cash reservoir which is all the time being supplemented by inflows. These inflows are of the following kinds:

— Capital inflows from promoters' capital and borrowed funds

— Sales proceeds of finished goods

— Capital gains from investments

The size of the cash pool depends upon the overall operations of the firm. Ideally, for transaction purposes, the working capital inflows should be more than the working capital outflows at any point of time. The non-working capital inflows should be utilized for similar outflows such as purchase of fixed assets together with the surplus of working capital inflows.

(b) Speculative Motive

Since cash is the most liquid current asset, it has the maximum potential of value addition to a firm's business. The value addition can come in two forms. First, as the originating and terminal point of the operating cycle, cash is invaluable. But cash has an opportunity cost also and if cash is kept idle, it becomes a liability rather than an asset. Therefore, efficient firms seek to deploy surplus cash in short term investments to get better returns. It is here that the second form of value addition from cash can be had. Since this deployment of cash needs to be done skillfully, not all the firms hold cash for speculative motive. Further the amount of cash held for speculative motive should not cause any strain upon the operating cycle.

(c) Contingency Motive

This motive of holding cash takes into account the element of uncertainty associated with any form of business. The uncertainty can result in prolongation of the working capital operating cycle or even its disruption. It is possible that cost of raw materials or components might go up or the time taken for conversion of raw materials into finished goods might increase. For such contingencies, some amount of cash is kept by every firm.

Level of cash holding

The level of cash holding of a firm depends upon a number of factors. Prominent among these factors are the nature of the firms' business, the extent and reach of the business. The level of cash is measured as a percentage of turnover of the firm.

Nature of the business

If the firm is engaged in cash purchase of raw material from a number of sources, its requirement of cash would be more than that a firm which buys on credit. Also a firm having cash purchase and cash sale would need to maintain more cash balance than a firm which buys on credit and sells on credit. A firm buying in cash and selling on credit is likely to have strained cash flows. On the other hand a firm buying on

credit and selling in cash has comfortable cash balances.

Extent and reach of the business

A multi location firm having a number of large and small branches has more cash requirement than a single location firm. Also the problems associated with moving cash between the branches and maintaining liquidity are much more in a multi location firm.

From the illustration given in the beginning of the unit, we recollect the amount of cash and bank balances maintained by the firm:

(Rs. in crores)

	Firm A		*Firm B*		*Firm C*	
	2004	2005	2004	2005	2004	2005
Income	3031.76	3322.44	10948.86	11353.68	1381.91	1882.61
Cash and Bank Balances	27.95	27.49	522.08	913.16	315.21	1089.34
Cash balance as Percentage of Income	0.92	.082	4.77	8.04	22.81	57.86

As mentioned earlier, Firm A is a large cement manufacturer, Firm B is a FMCG giant and firm C is a leading soft ware company. Out of the above three firms, firm A has been holding the minimum quantum of cash and bank balances as percentage of total income while firm C has the maximum quantum. On the face of it, the first impression that one is likely to get is that firm A is the most efficient user of cash and bank balances while firm C is the most inefficient user. But that would be a hasty conclusion. We have to move further and probe into the status of cash and bank balances *vis-à-vis* other current assets:

Current Assets incl. Loans and Adv.	*Firm A*		*Firm B*		*Firm C*	
	2004	2005	2004	2005	2004	2005
Inventories	312.60	30.12	1182.10	1240.03	0	0
Sundry Debtors	247.63	216.50	264.51	424.78	375.22	395.61
Cash and Bank Balances	27.95	27.49	522.08	913.16	151.74	1098.34
Other Current Assets	12.81	6.02	48.53	50.61	0	0
Loans and Advances	306.29	351.42	744.09	798.19	147.68	129.26
Total Current Assets	907.48	901.55	2761.32	3426.76	674.64	1623.1
Cash & Bank Balance as % of Total current Assets	3.08	3.05	18.90	26.65	22.49	67.66

From the above table we note that Firm a holds just around 3% of its current assets as cash balances, i.e. its operating cycle has an extended and large span requiring conversion into Loans and Advances, Inventories, Sundry Debtors before

re-conversion into cash. Firm B is engaged in manufacture and trading of consumer non-durables having a relatively shorter operating cycle. As such, holding of cash by this firm as a percentage of total current assets is larger. Firm C has 22.49% of the current assets in cash and bank balances in 2004 while the figure has gone up to 67.66% in 2005. The abnormal rise is due to the fact that out of the cash and bank balances of Rs. 1098.34 lacs represented unutilised proceeds of the capital issue made by the firm. Ignoring this figure, the cash and bank balances are Rs. 666.84 lacs, still 56.43% of the current assets. The implication of this is that the firm C, being in the services sector as a software exports, has a short operating cycle. The inventory holding is nil and current assets and generally held either as cash or receivables. So, the level of cash and bank balances viewed per se, is no indicator of the efficiency of cash management. We have to analyse the various components of cash holding to arrive at a more accurate conclusion.

Components of cash and bank balances

Cash and bank balances are held by the firms in three major forms, i.e. cash and cheques on hand, balances with banks and investment in liquid securities.

Cash and Cheques on hand

This is the most liquid and readily accessible component of cash. The cash is held to meet day-to-day payments of small amounts. It is generated from counter cash receipts of the firm, if any, and from cash withdrawals from the bank. The volume of cash on hand maintained by the firm again depends upon the nature of operations of the firm. In case of major portion of the sales being in cash, firm is left with large amounts of end of day cash which needs to be taken care of safely. This entails security and custody arrangements for the cash before it is deposited in the bank. Moreover, since receipt and payment of cash is a primary level transaction which is culminated with the handing over of the cash, special care is required while handling cash.

Cheques on hand are clubbed with cash in a categorization because a cheque is a secondary form of cash and is equivalent to holding cash. The care and precaution required for holding cheques is much less than required for cash because almost all the cheques are “account payee cheques” which can be credited to the account of the firm only. The cheques in hand need to be deposited carefully and expeditiously into the bank in order to get credit to the correct account well in time. Attention also needs to be paid to those cheques which are dishonoured at the time of presentation to the payee banks since the drawer of the cheques has to be contacted for obtaining rectified cheque.

Bank Balances

Bank balances represent the amount held with banks in savings, current or deposit accounts. In the case of firms, balances are not held in savings accounts. A firm has at least one main current account with a bank through which the transactions are carried out. All the excess cash is deposited into this account together with the cheques. Payments to employees, creditors and suppliers are made by way of cheques drawn on this account. Being a current account, no interest is payable to the firm on the balance maintained in this account. Therefore the firm seeks to keep just sufficient balance in the current account for meeting immediate payment

liabilities. After accounting for these liabilities, the surplus is transferred either to an interest bearing deposit account or invested in short term liquid instruments. In case the firm has borrowed funds for working capital, the surplus cash and cheques are credited to those accounts, thereby reducing the liability of the company.

Nature of Bank Balances

On a superficial reading of the Balance sheet of a firm, a large amount held by the company in bank deposits portrays a comfortable and liquid position of finances of the company. It is not always true. Let us take a look at break-up of the bank balances of the firms being studied by us:

(Rs. in crores)

	Firm A		*Firm B*		*Firm C*	
	2004	2005	2004	2005	2004	2005
Bank Balance of which	27.41	26.30	520.61	911.74	151.57	1098.17
Current Accounts	15.15	7.86	147.56	222.9	149.28	275.55
Deposit Accounts	0.59	0.75	373.05	689.45	0.72	820.55
Earmarked Current A/c	1.03	2.32	0.00	0.00	1.57	2.07
Remittances in Transit	10.64	15.36	0	0	0	0

We can note that while firm B has a substantial portion of the cash in deposit accounts, firms A and C have comparatively much larger portion in current accounts. In the case of firm A, it appears that the cash inflows are quickly followed by cash outflows so that it does not have surpluses available for keeping in bank deposits. Firms B and C have comparatively comfortable cash position evidenced by the amounts kept in deposit accounts. It means that the firms have less pressure for cash outflows. Further, firm A has substantial amount outstanding as Remittance in Transit, i.e. remittance sent from other centers and cheques sent under collection. Such remittance need to be translated into bank balances at the earliest or else the firm can not make much use of this cash. There are certain deposits which have been earmarked for a specific purpose, for example margin money for bank guarantees or letters of credit. Such earmarked deposits can not be used for other purposes and to that extent, the cash balances are deemed to have been converted into other assets.

Strategy for effective cash management

The strategy for effective cash management in any firm has a core component of ensuring uninterrupted supply of cash to the operating cycle. This cash is ideally generated from the cycle itself but under certain circumstances infusion of cash from outside the cycle also takes place. Examples of such circumstances are:

(a) when the firm has been newly set up and the cycle has yet to commence;

(b) when due to disruption in the cycle, cash gets stuck in other current assets and outside cash infusion in the form of promoters lenders' contribution is done.

There are three essential elements of a successful cash management strategy:

— Realistic cash forecasting

— Speeding up collections

— Spreading out payments

(1) Realistic cash forecasting

By realistic cash forecasting we mean that a cash forecast for the entire next year should be prepared at its commencement. The cash forecast has two parts—one is the forecast of cash flows from the operating cycle and the second part is the capital flows. The first part originates from the sales forecast for the year while the second part originates from the capital budget. The surplus of cash generated from the operating cycle in called the internal accruals of the firm and it is used to fund the capital outlays together with bank borrowings.

For a realistic cash forecast, the sales projections and capital budget have to be drawn up after extensive deliberations in the management committee of the firm. Such a forecast carries a cushion for normal contingences like sudden spurt or shrinkage in demand for which mid-term modifications in the forecast are made. Involvement of operational level people, both from production and sales areas, is essential for a realistic cash forecast.

(2) Speeding up Collections

After the cash forecast has been prepared, the firm should ensure that in day to day operations cash (including cheques) should be collected speedily. Towards this end, a schedule of receivables should be prepared and kept updated. Before due date of each payment, the debtor should be reminded for it. When the cheques are received on due dates, these should be credited to the bank account expeditiously. For a multi-locational firm, arrangements should be made with the bank for on-line transfer of funds to the main account. Similarly facilities like drop boxes can be provided by firms having a large user base whereby customers can drop their payments in boxes placed at vantage locations.

(3) Spreading out Payments

Simultaneously with speeding up collection, the firm should spread out payments as far as possible. It means that if credit period is available in some payments, it should be utilized fully. Bunching of payments should be avoided. For outstation customers, arrangement can be made with the bank for making at par payment.

Inventory Management

Inventory Management is the second important segment of working capital management Inventory is the second step in the operating cycle wherein cash in converted into various items of the inventory. Inventory has the following major components:

(a) Raw Material
(b) Stores and spares
(c) Work in Process
(d) Finished Goods

(a) Raw Material

Raw Material is the basic material required for manufacture of goods by the firm.

A cotton yarn manufacturing firm would need cotton as the raw material whereas a plastic basket manufacturer would need plastic granules as the raw material. Apart from the major raw material, there are a number of minor raw materials and additives used in the manufacturing process. All these are categorized under the general heading 'raw material'. Raw material can be procured from the domestic market or it can be imported. Raw material generally forms a major portion of the input costs that go into the manufacture of a product. As such it is essential to underscore the vital importance of procurement, storage and use of raw material.

Depending upon the nature of the industry, raw material can be procured seasonally or on regular basis. For agro based industries raw material is available seasonally at the time of harvesting of a particular crop. In such cases the norm is to stock the raw material for a sufficiently long time to ensure that the manufacturing plant does not remain idle even during the lean season, i.e. when the crop of raw material is not available. In other manufacturing industries, the firms usually tie-up with raw material suppliers for supplies to be made on a regular basis. However, even in non-seasonal industries, sharp variations in prices of the raw material can occur due to changes in the demand-supply equation. As such the manufactures, who can anticipate these changes, tend to built up or scale down the stock position of the raw materials.

(b) Stores and Spares

Stores and spares are those components of the inventory which perform a supportive function. Examples of stores and spares are lubricating oils, nuts and bolts, extra sets of components which are susceptible to breakdown during the manufacturing process, Dyes, Moulds and Tools etc.

In comparison to the raw material, stores and spares form a more permanent element of the inventory. Yet these are not classified as fixed assets because turnover of these items is involved in the manufacturing process, although at a slower rate. Criticality of the stores and spares for the operating cycle depends upon the particular nature of the stores item. If an item is not easily available the firm would maintain sufficient stock of it to ward off any possible interruption in its supply.

(c) Work in process

By the term 'work-in-process' we refer to the semi-finished stage of the final product. The extent and duration of work-in-process in a manufacturing organization depends upon the nature of products. If a firm manufactures capital goods machinery like generator sets and turbines etc., a significant portion of the inventory would invariably be held in the form of work-in-process as the manufacturing time for each item is quite large and the raw material, i.e. steel undergoes a number of stages of transformation till the final product emerges. Similarly in all process industries, the work-in-process is a key element of the inventory. Also, certain industries catering to the fashion segment need to keep a large amount of inventory in the semi-finished stage. This is because taste and fashion pertaining to the appearance of the finished product change rapidly. Depending upon the requirement, such units can bring about the changes in the semi-finished product.

In case of trading firms and the service industry, the work-in-process is practically non-existent as also is the raw material. However certain service industries

like computer services or management advisory services treat the unfinished projects and assignments as work-in-process.

(d) Finished Goods

Finished goods are those components of the inventory that have undergone the complete process of transformation from the raw material stage and are now ready for supply to the market. Finished goods carry all the value addition that has gone into the production process. Also, the probability of successful sales depends to a large measure on the quality of the finished goods. Added to it is the fear that non-disposal of the finished goods in time would entail monetary and obsolescence costs to the manufacturer or trader. Hence the level and period of holding of finished goods is extremely important.

Extent and Quantum of Inventory Management

Let us take a look at the extent and quantum of inventory in real life examples taken up for consideration by us for working capital management.

(Rs. in crores)

	Firm A		*Firm B*		*Firm C*	
	2004	*2005*	*2004*	*2005*	*2004*	*2005*
Total Current Assets of which	907.48	901.55	2761.32	3426.78	674.64	1623.21
Inventories	312.8	300.12	1182.10	1424.04	0	0
Sundry Debtors	247.63	216.50	264.51	424.78	375.22	395.61
Cash and Bank Balance	27.95	27.49	522.08	913.16	151.75	1098.34
Other Current Assets	12.51	60.2	48.53	50.61	0	0
Loans and advances	306.29	351.42	744.08	798.19	147.68	129.26
Inventory as % of Total current assets	33.75	33.29	42.80	36.19	0	0

Firm A, being in the current manufacturing sector has over 30% of the current assets held in the form of inventories, while firm B, being in the FMCG manufacturing and trading sector has over 35% of the current assets in the inventory form. Firm C, in the software export segment has obviously zero inventory holding.

If we consider further details and analyze the break up of the inventory into its various components, the following picture emerges:

Firm A

Following is the composition of various components of inventory for 2004 and 2005:

	2004	*% to Total*	*2005*	*% to Total*
Limestone, gypsum and other Raw Material	41.76	13.35	45.34	15.11

Coal, Bags, Stores and Spares	128.88	41.20	121.65	40.53
Loose Plant and Tools	1.46	0.47	1.40	0.47
Stock-in Trade and Finished Goods	62.02	19.83	61.12	20.37
Work-in-Progress	78.68	25.15	70.61	23.52
Total inventory	312.80	100.00	300.12	100.00

Being in the process industry, a large portion (80%) of inventory is held in the form of raw material, stores and spares and work in progress while only 20% is held as finished goods.

Firm B

	2004	*% to Total*	*2005*	*% to Total*
Raw Material	462.45	39.12	510.14	41.14
Stores and spare	94.82	8.02	105.06	8.47
Work in progress	49.28	4.17	47.72	3.85
Finished Goods	575.55	48.69	577.11	46.54
Total Inventory	1182.10	100.00	1240.03	100.00

Firm B is in the manufacture and trading of FMCG items. This activity has a comparatively shorter operating cycle. Hence around 90% of the inventory is held in the form of raw materials and finished goods.

Valuation of Inventory

Valuation of cash as a current asset poses no problem since cash (including bank balances) is valued at face value. Cash held in foreign currency poses some valuation problems due to daily changes in the value of the domestic currency *vis-à-vis* the foreign currencies.

However, valuation of the inventory is not that easy. All the components of the inventory are in a constant state of flux as raw material is getting converted into finished goods. Each firm has its own accounting policy regarding valuation of the inventory. The accounting policies of firms A and B are being discussed below:

Firm A

(i) Raw materials, stock-in-trade and work-in-progress are valued at cost or net realizable value whichever is lower. Coal, packing materials and stores and spares are valued at cost.

(ii) Cost is determined on a weighted average basis.

The firm is following the weighted average basis of cost determination, i.e. average cost is calculated based on the weights assigned to each lot of purchase

or manufacture. This cost is then compared to the realizable value as assessed by the management. Lower of the two is taken as the value for valuation of the inventory.

Firm B

Inventories are valued at the lower of cost, computed on a weighted average basis and the estimated net realizable value, after providing for cost of obsolescence and other anticipated losses, wherever considered necessary. Finished goods and work-in-progress include costs of conversion and other costs incurred in bringing the inventories to their present location and condition.

Firm C

Since the firm C does not carry any inventory, being in the service industry, it does not have an inventory policy.

Strategy for Inventory Management

A successful strategy for inventory management has at its core the objective of holding the optimum level of inventory at the lowest cost.

The cost of holding inventory has the following three elements:

(i) Carrying Cost

This is the cost of keeping or maintaining the inventory in a usable condition. This includes the storage costs, i.e. the cost of storing the inventory in rented promises or the opportunity cost of storing in own premises + the wage cost of personnel assigned to storing and securing it + cost of utilities and insurance + cost of financing.

Inventory carrying cost is directly proportional to the level of inventory assuming that the loading of carrying cost of done pro rata to the space occupied. Thus if inventory level rises, its carrying cost also rises.

(ii) Ordering Cost

It is the cost associated with placing each individual order for supply of raw materials, stores, packing materials etc. If these items are procured in small lots, then the ordering cost per unit of inventory would be more and vice versa.

(iii) Stock-out Cost

It is the cost associated with procuring an inventory item, which has gone out of stock and is needed for immediate supply. This cost includes the reduction of profit and costs accruing due to disruption in the operating cycle.

How cost of inventory can be lowered:

Cost of inventory can be lowered by–

- Entering into long term arrangements for supply of raw materials at market driven prices.
- Arranging for direct supply of raw material at manufacturing locations.

— Promoting ex-factory sales of the finished goods.

— Availing quantity discounts and spot payment discounts if the carrying cost and financing cost is less than the discounts.

— Apart from these general steps, a technique called ABC analysis is also used for monitoring inventory costs.

ABC Analysis

This system is based on the assumption that in view of the scarcity of managerial time and efforts, more attention should be paid to those items which account for a larger chunk of the value of consumption rather than the quantity of consumption. Let us take an example of a firm having three major components of raw material:

Component	*Units Consumed*	*% to total*	*Value per unit*	*Total Value (Lacs)*	*%*
A	5000	45.45	1000	50.00	22.93
B	4000	36.36	1200	48.00	22.00
C	2000	18.18	6000	120.00	55.05
	11000	100.00		218.00	100.00

Thus the cost of raw material C which accounts for 55% of the total consumption value should be given priority over item A although the number of units consumed of the letter is much more than former.

Managing the Inventory Level

Inventory level can be managed by adopting the Economic Order Quantity (EOQ) model. This model determines the order size that will minimize the total inventory cost. According to this model, three parameters are fixed for each item of the inventory:

(1) Minimum level of that inventory to be kept after accounting for usage rate of that item and time lag in procuring that item and contingences.

(2) The level at which next order for the item must be placed to avoid possibility of a stock-out.

(3) The quantity of the item for which the re-order must be placed.

In addition to the determination of above parameters, the EOQ model is based on the following assumptions:

— The total usage of that particular item for a given period is known with certainty and the usage rate is even throughout the period.

— There is no time gap between placing an order and receiving supply.

— The cost per order of an item is constant and the cost of carrying inventory is also fixed and is given as a percentage of the average value of inventory.

— There are only two costs associated with the inventory and these are the cost of ordering and the cost of carrying the inventory.

Given the above assumptions, the optimum or economic order quantity is represented as:

$$EOQ = \sqrt{\frac{2AB}{C}}$$

Where A = Total annual requirement for the item

B = Ordering cost per order of that item

C = Carrying cost per unit per annum.

Receivables Management

Receivables are near the terminating point of the operating cycle. When raw material has been converted into finished goods, the final product is sold by the firm. Some of the sales are done on spot basis while the remaining sales are made on credit. The extent of credit sales varies from industry to industry and within an industry. Period of credit depends upon the position of the firm in the industry. If the firm has a monopoly position, period of credit would be very low. If the industry consists of a large number of players in keen competition with each other, the period of credit would tend to be fairly long. Also, during periods of demand recession, even a firm in monopoly situation might be forced to extend credit in order to promote sales.

Receivables are generally referred to by the name of “Sundry Debtors” in the books of account, Strictly speaking Sundry Debtors refer to receivables created in the course of operation of the working capital cycle, i.e. those persons which owe payment to the firm for goods supplied or services rendered. Thus sundry debtors represent an intermediate stage between reconversion of finished goods into cash. So long as the sundry debtors persist, the firm is strained of cash. So, logically the firm seeks to minimize the level of sundry debtors.

The period of credit allowed to debtors also depends upon the industry practice. This period of credit has two components. First component is a small period of week to ten days which is normally allowed in all industries and no interest is charged on the amount due. The second component is the larger one, length of which varies from industry to industry and interest is usually charged for this period. In the alternative, the firm may charge full invoice value for payment made after the credit period and allow discount for spot payments.

The existence of debtors in the books of a firm is a routine and normal situation. Only a firm with a commanding market share or the one operating in a situation of acute mismatch between demand and supply can afford to dictate terms of sale and receive full invoice value in advance. Otherwise, the firm has to maintain a balance between promoting sales and maintaining the level of receivables within manageable limits.

Apart from the Sundry Debtors, cash flow of the firm is also affected by Loans and Advances made to suppliers, subsidiaries and others. These advances are not exactly working capital advances but nevertheless these are treated as current assets because these are assumed to be recoverable or converted into inventory, fixed assets or investments within one year.

We shall revert back to our sample firms and examine the level of Sundry Debtors and loans and Advances *vis-à-vis* the level of operations.

Firm A

Sundry Debtors

	2004	*2005*
1. Sundry Debtors (Secured and Considered Good)		
(a) Over six months	0.82	0.59
(b) Others	15.46	12.01
	16.28	12.60
2. Sundry Debtors (Unsecured)		
(a) Over six months		
(i) Sale of Products and Services		
Considered Good	46.59	33.65
Considered Doubtful	—	11.92
	46.59	45.57
(ii) Railway, Insurance and Other claims (includes Rs. 55.32 Crore due from Central/State Govt.)	65.46	62.82
	112.05	108.39
Less: provision made for bad Doubtful Debts	—	11.92
	112.05	96.47
(b) Others (Considered Goods)		
(i) Sales of Products and services (includes Rs. 20.87 Crores due from Subsidiaries – previous year Rs. 10.19 crores)	109.70	100.96
(ii) Railways, Insurance and other claims (includes Rs. NIL cores due from Central/Statement Government Previous Year Rs. 0.01 Crore	9.60	6.45
	119.30	107.43
Total (a + b)	231.35	203.90

Loans and Advances

1.	Advances against Capital expenditure	20.57	26.95
2.	Balances with Excise, Customs and Port Trust Authorities	51.99	41.95
3.	Sundry Advances and Deposits	208.79	222.24
4.	Advance Payment against taxes	14.47	46.94
5.	Loans and Advances to Subsidiary Companies	10.47	13.37
	Total Loans and Advances	**306.39**	**351.42**

Firm B

Sundry Debtors (Unsecured)

Considered Good	*2004*	*2005*
Over 6 months old	7.67	7.82
Others	256.84	416.97
Total	264.51	424.79
Considered Doubtful	*2004*	*2005*
Over 6 months old	36.02	36.64
Others	0.85	1.49
Total	36.87	38.13
Less: Provision for Doubtful Debts	36.87	38.13
	264.51	424.79.

Loans and Advances

Advances/Loans to subsidiaries		
Considered Good	76.85	74384
Considered Doubtful	5.57	3.00
	82.42	77.84
Less: Provision for doubtful advances	5.57	3.00
	76.85	74.84
Advances recoverable in cash or in kind or for value to be received	629.47	677.61
Considered Doubtful	33.01	56.76
	662.48	734.37
Less: Provision for Doubtful Advances	33.01	56.76
	629.47	677.61
Deposits with customs, port trust, excise etc.	37.77	45.73
Total Loans and Advances	744.09	798.18

Firm C

Sundry Debtors (Unsecured)

	Considered Good	*2004*	*2005*
(a)	Over Six months old	24.14	9.75
(b)	Other debts	351.08	358.86
		375.22	395.61
	Considered Doubtful	12.63	49.69

		387085	445.30
	Less: Provision for doubtful Debts	12.63	49.69
		375.22	395.61

Loans and Advances

Secured – Loans	0.70	0.37
Unsecured – Advances Recoverable in cash or in kind or for value to be received	108.98	66.87
Considered Doubtful	4.49	6.82
Interest Accrued in Deposits	0.01	6.47
	141.40	111.54
Less: provision for doubtful advances	4.49	6.82
Total Loans and Advances	136.91	104.72

How do firms ensure realisations?

Timely realisation of receivables is an important element of working capital management. Practices in this respect vary from firm to firm. Most of the firms dissuade credit sales to first time customers and gradually allow credit after development of relationship. While giving credit, some firms obtain post dated cheques from their clients. In other cases, firms have special staff earmarked for recovery efforts. The key elements here are the opportunity cost of funds blocked in receivables and the net expenses of maintaining recovery infrastructure. Expenses of maintaining recovery infrastructure include the costs associated with recovering the amount from debtors. If the funds realised from receivables can yield better return than the interest recovered from debtors, then the firm would be better off by promoting cash sales.

Desirable Level of receivables

Let us now try to find out whether there is a desirable level of receivables for a firm in relation to its turnover:

Rs. in crores

	A		*B*		*C*	
	2004	*2005*	*2004*	*2005*	*2004*	*2005*
1 Sundry Debtors	247.63	216.50	264.51	424.78	470.76	464.10
2 Loans and Advances	306.29	351.42	744.09	798.19	136.91	104.73

3 Sales/Services	3031.76	3322.44	10603.79	10971.90	1381.91	1882.61
4 (1) as % of (3)	8.17	6.52	2.49	3.87	34.08	24.65
5 (2) as % of (3)	10.10	10.57	7.02	7.27	9.91	5.56

Obviously firm B has adopted a tight and conservative policy towards debtors. It is recovering its receivables quickly. Similarly the outgo on loans and advances is not disproportionate as compared to sales. One reasons for this is that the firm B has undertaken a qualitative analysis of loans and advances and treated some of these as doubtful. Such doubtful advances, including surprisingly, loans and advances to subsidiary companies have been charged to the Profit and Loss Account as part of prudent accounting practice. Similar treatment has been accorded to sundry debtors as well.

In the case of firm C, the sundry debtors are a fairly high percentage of total sales and rightly so, because the firm has no inventory and most of the working capital is locked in receivables only. The loans and advances are, however at around 6–10% of sales.

It is difficult to prescribe a reasonable level for loans and advances for any firm because of the percentage of sundry debtors to sales varies widely among these firms. In case of firm A sundry debtors are between 6 to 8% of sales while loans and advances are around 10% of sales. The loans and advances consist of various types of deposits, pre payments and advances etc. Not all loans and advances are meant to be converted into cash. That is why loans and advances, although considered as current assets, are not treated part of the working capital. In fact some of the advances get converted into either capital expenditure or investments. For example advances for supply of capital goods would ultimately get shaped into fixed assets. Advances towards share application money or as loans to subsidiary are converted into investments. Similarly pre-paid taxes & duties are ultimately treated as expenses. In the case of firm B, the sundry debtors are just around 3–4% of sales while loans and advances are around 7% of sales.

If a firm is buying raw material or traded goods on credit, then ideally the level of such creditors should be more than the level of debtors at any point of time. Benchmarking of the receivable level can also be done against historical industry trends. To guard against the receivables rising beyond tolerable levels, firms usually treat all advances and debts over six months old as doubtful cases and, if needed, charge such amounts to the profit and loss account.

Other issues involved in the management of working capital

Apart from the discussion of the nature of various components of working capital, we need to consider various other aspects of this intricate system of financial management. These aspects undertake a finer and more microscopic analysis of the components in order to strengthen control over the current assets on one hand and to improve the productivity of working capital on the other. Some of the relevant issues are described as under:

(a) The concept of net working capital

Net working capital is the term used to denote the difference of current assets and current liabilities. Traditionally it has been assumed that the current assets of a firm should be more than adequate to meet the current liabilities. In other words, the current ratio, i.e. the ratio of current assets to current liabilities should be more than one. The rationale behind this assumption is that the firm should at all times be in a position to maintain liquidity. By definition, current assets are treated as those assets which are capable of quick conversion into cash and secondly, the time period for conversion into cash is usually small but not more than one year in any case. Carrying the argument further, one can postulate that the older the current asset gets, the lesser are its chances of easy conversion into cash. So, in order to maintain the quality of its current assets, the firm seeks to reduce their holding period. Simultaneously, the firm tries to prolong the time period available for payment of its current liabilities by building up the level of inventory through trade finance and using bank borrowing against inventory and debtors. The result of this exercise is that the net working capital of the firm turns negative and its current ratio becomes less than one.

On the face of it the concept of negative net working capital appears to be fraught with unfavorable consequences for the firm. In such a situation, if the firm is required to meet its current obligations all at once, it might not have adequate liquidity available and as a result, it could default on its obligations. This could happen in a situation where the cash has moved out of the operating cycle to long term uses like creation of fixed assets or towards non-productive investments in other firms. But if the firm has, as part of its conscious working capital management policy, kept the level of current assets to the minimum and deployed the surplus cash in non-working capital, yet liquid investments, then it can afford to function with a net working capital that is negative.

Hence so long as a firm does not default on payment of its current liabilities, the fact that it has a negative net working capital need not be a cause for concern. This may not always be true as most of the organisatons with whom we deal may like to see over current assets more than current liabilities. Example of such organisations could be banks who provide short-term credit or suppliers of raw material who sell on credit to us.

(b) The myth of adequate current assets

Aligned to the first issue is the myth of adequate current asset. Traditionally, it has been believed that liquidity is proportional to the level of current assets. A firm having a high current ratio is treated as favorably placed as regards payment of its current liabilities. This is myth since the holding of current assets is always in proportion to the turnover. If level of current assets is rising disproportionately to the turnover, then notwithstanding the high current ratio, the situation has the following implications:

- The age of current assets is increasing which tells upon their quality. As the current assets, particularly inventory and receivables, get older the chances of their easy and complete conversion into cash recede. Once this happens, there is every possibility of the operating cycle cracking.
- The firm is paying a huge cost for the higher build up of current assets. This cost consists of

(a) The amount spent towards raw materials and intermediate inputs

(b) The cost incurred towards storing and maintaining the inventory.

(c) The interest cost for obtaining finance against these current assets

(d) The cost of obsolescence associated with holding inventory for longer periods and

(e) The cost of expected default on receivables as reflected in charge to Profit and loss account towards bad debts.

(c) Does the balance sheet give a true picture of current assets?

We have restricted the discussion of current assets to the position obtained as on a particular date. This position may not be representative of the state of affairs prevailing on a day to day basis throughout the year. In order to even out the effects of daily variation in the level of current assets, it is advisable to take average of weekly, monthly or quarterly holding depending upon the nature of the industry and turnover of the assets. The position at the end of a day is a static position which is not representative of the entire year. By taking period averages some amount of dynamism is brought into the picture.

The second point to be noted is that an industry might have seasonal peaks or troughs of working capital requirement. For example agro based industry like fruit processing unit would need to stock more raw material during the peak season when the crop has been harvested than during the lean season. In such cases different norms have to be applied for peak season and non peak season holding of current assets for judging the reasonability of their holding.

We find, therefore that the high level of current assets is nothing but a fiction when we seek to realize the current assets. It may happen that the inventory carried by the firm may consist of obsolete items, packing materials, finished goods which have been rejected by buyers and items like dies and tools which are more fixed than current in character. Prudence would advise that the firm should get rid of these current assets as early as possible.

On the other hand, the current liabilities are more ascertainable and less fictions. The payment of these liabilities, if not possible from the operating cycle, has to be arranged from long term sources of funds which results in a mismatch that is not conducive to financial health of the firm.

(d) The various forms of cash holding

Cash is considered to be the most liquid of current assets. It is held either as cash balances with the firms or in bank accounts. There are two ways of holding bank balances – first as current accounts through which the day to day transactions of the firm are carried out and secondly as fixed deposits in which balances are held for a specified twice period. Current account balances are most liquid. Fixed account balances are convertible into cash by adjustment downwards of the rate of interest even before maturity. Hence even fixed deposit balances should be treated at par as regards liquidity. But there is a catch here. Quite a few fixed deposits are not held perse, but as margin money deposits for availment of facilities like letters of credit and guarantee from banks. To the extent of such margin money deposits, the liquidity

of bank balances of the firm is impaired.

Cash balances are also held as un availed portion of the working capital facilities granted by the banks. All such balances earn money for the firm in terms of the interest that is saved on unavailed portion. Yet the money remains available to the firm almost on call. Such balances are most suitable to a firm for enhancement of liquidity provide the firm has the policy of availing bank finance for its working capital requirements.

These firms maintain just enough balance in their current accounts and transfer the surplus immediately to the borrower accounts for saving interest thereon. In most such cases, even the routine transactions are carried out through the borrowal accounts, thus precluding the need for maintaining current accounts even.

Taking this analogy even further, we can visualize a situation where the firm has healthy cash flows to such an extent that it does not rely on external borrowings for its working capital requirements. Now the firm has huge amount of cash available for deployment for short time period, say 2 to 15 days. There are no bank schemes for normally for fixed deposits less than 15 days. Therefore, these companies deploy the funds in the money market schemes of mutual funds and liquid securities such investments are classified as non current assets although these are current in nature. Reason is that such deployment is not treated as part of manufacturing or trading process.

(e) Accounting policies of firms for working capital management

The pattern of working capital management of a firm is determined to a large extent by its accounting policies regarding sales, receivables inventories and payables. These policies establish the level of working capital of the firm. Le us examine the accounting policies of our representative firms A, B, and C:

Accounting policies of Firm A

1. Sales

(i) Sales are counted on dispatch of products and includes cost of self-consumption of goods produced.

(ii) Income from works contract, consultancy and other services rendered is, accounted for on ‘percentage of completion’ basis.

(iii) Revenue on real estate development is recognized on completion of contract.

(iv) Lease rental income is accounted as per terms of lease.

2. Accounting for claims and subsidies

(i) Claims receivable are accounted at the time of lodgment depending on the certainty of receipt and claims payable are accounted at the time of acceptance.

(ii) Claims raised by the Government authorities regarding taxes and duties, which are disputed by the company, are accounted based on the merits of each claim.

(iii) Subsidy receivable against an expense is deducted from such expense and subsidy/grant receivable against a fixed asset is deducted from the cost of the relevant fixed assets.

(iv) Investment subsidy not specifically related to a fixed asset is credited to capital reserve and retained till the requisite conditions are fulfilled.

3. Inventories

(i) Raw materials, stock-in-trade and work-in-progress are valued at cost or net realizable value whichever is lower.

(ii) Cost is determined on a weighted average basis.

(iii) Expenditure incurred on mobilization and creation of facilities in respect of incomplete contracts is carried forward and written off in proportion to work done.

4. Receivables

(i) Sundry debtors are classified into two categories, secured and unsecured.

(ii) Secured debts are backed by agreements, documents and physical security. All these debts are considered good unless default occurs. Further classification of these debts is done as over six months old and less than six months old.

(iii) Unsecured debts are divided into these over six months old and less than six month old. The former category contains a sub-classification of doubtful debts which is charged to provision made for bad and doubtful debts.

Accounting policies of firm B

1. Revenue recognition

(i) Sales are recognized when goods are supplied and are recorded net of trade discounts, rebates, sales tax and excise duties but include, whenever applicable export incentives such as duty drawbacks and premiums or sales of import licences.

(ii) Income from property development activity is recognized under the completed contract method and in terms of arrangements with developers, whenever applicable.

2. Inventories

(i) Inventories are valued at the lower of cost, computed on a weighted average basis, and estimated net realizable value, after providing for cost of obsolescence and other anticipated losses, wherever considered necessary.

(ii) Finished goods and works-in-process include costs of conversion and other costs incurred in bringing the inventories to their present location and condition.

3. Sundry Debtors and loans and advances

Sundry debtors and loans and advances are stated after making adequate provisions for doubtful advances.

Accounting policies of firm C

1. *Revenue recognition*

Revenue from professional services consists primarily of revenue earned from services performed on a “time and material basis”. The related revenue is recognized as and when the services are performed.

2. The company also performs time bound fixed price engagements, under which revenue is recognized using the percentage of completes method of accounting, unless work completed cannot be reasonably estimated.
3. Amounts received or billed in advance of services performed are recorded as unearned revenue. Unbilled revenue, included in debtors, represents amounts recognized based on services performed in advance of billing in accordance with contract terms.

Comments on accounting polities

We note that all the firms have adopted realistic and conservative polities for valuation of the current assets. These policies help in correct assessment of net working capital as the current liabilities are also appropriately stated and the picture one obtains is more amenable to rigorous analysis.

LESSON ROUND-UP

- Gross Working Capital is the total of all current assets. Networking capital is the difference between current assets and current liabilities.
- Permanent Working Capital is that amount of funds required to produce goods and services necessary to satisfy demand at its lowest point.
- Various factors such as nature of firm's activities, industrial health of the country, availability of material, ease or tightness of money markets affect the working capital.
- Factors which influence cash balance include credit position of the company, status of receivables and inventory accounts, nature of business enterprise and management's attitude towards risk.
- The amount of time needed for inventories to travel through the various process directly affect the amount of investment. The investment in inventories is guided by minimization of costs and management's ability to predict the forces that may cause disruption in the follow of inventories like strikes or shifts in demand for the product.
- Factors influencing investment in receivables are mainly the cost and time values of funds.
- The operating cycle is the length of time between the company's outlay on raw materials, wages and other expenditures and the inflow of cash from the sale of the goods.
- In deciding company's working capital policy, an important consideration is trade-off between profitability and risk.
- Working capital leverage may refer to the way in which a company's profitability is affected in part by its working capital management.
- Funds flow represent movement of all assets particularly of current assets because of movement in fixed assets is expected to be small except at times of expansion or diversification.
- Cash management means management of cash in currency form, bank balance and reality marketable securities.
- As John Maynard Keynes put, these are three possible motivates for holding cash, such as transaction motive, precautionary motives and speculative motive.
- Inventory management has at its core the objective of holding the optimum level of inventory at the lowest cost.

- There are various technical tools used in inventory management such as ABC analysis, Economic Order Quantity (EOQ) and inventory turnover analysis.
- ABC analysis is based on paid to those item which account for a larger value of consumption rather than the quantity of consumption.
- EOQ determines the order size that will minimize the total inventory cost

$$EOQ = \sqrt{\frac{2AB}{C}}$$

SELF-TEST QUESTIONS

1. What do you understand by working capital? What are its components?
2. "Working Capital Management is nothing more than deciding about level, structure and financing of current assets". Comment.
3. How would you assess the working capital requirements for seasonal industry in which you have been appointed as Finance Manager? Illustrate your answer with the example.
4. What are the norms for working capital management to be observed in sick industries? How would you control the liquidity of resources to avoid sickness in industrial unit facing shortage of cash resources?
5. Write short note on banking norms and macro aspects of working capital management keeping in view the recommendations of the Tandon Committee and Chrore Committee.
6. What is the significance of working capital for a firm?
7. Briefly describe main constituents of working capital?
8. Why does the operating cycle determine the extent of working capital?
9. Describe the principles of effective cash management.
10. What are the main components of inventory?
11. Why should receivables be managed?
12. Write short notes on the following:
    (i) Working Capital Leverage.
    (ii) Financing of working capital.
    (iii) Techniques for control of working capital.

Suggested Readings:

(1) Working Capital Management — Text and Cases — *V.K. Bhalla*, Anmol Publications Pvt. Ltd.
(2) The Financial Management — Basic Aspects of Financial Administration — *Jerome B. Cohen & Sidney M. Robbins*
(3) Financial Hand Books—*Jules I. Bogan*
(4) Management of Company Finance — *J.M. Samuel and F.M. Wilkes*
(5) Financial Decision Making — *John J. Hampton;* Prentice Hall of India, New Delhi
(6) Industrial Sickness — *S.N. Bidani & P.K. Mite*

(7) Bank Finance for Industry — *S.N. Bidani & P.K. Mitra*
(8) Management of Indian Financial Institutions — *R.M. Srivastava*
(9) Financial Management Theory & Practice — *Prasanna Chandra*
(10) Annual Report of Associated Cement Company Limited
(11) Annual report of Hindustan Lever Limited
(12) Annual Report of Satyam Computer Services Ltd.

STUDY VII

SECURITY ANALYSIS

LEARNING OBJECTIVES

The object of the study is to enable the students to understand:

- Concept of Investment and Security Analysis
- Nature of the Financial System
- Security Analysis and Portfolio Management
- Fundamental Analysis
- Industry and Economic Analysis
- Technical Analysis
- Efficient – Market Theory
- Portfolio Management
- Portfolio Analysis
- Risk in Investment situation
- Markowitz Model
- Sharp Index Model
- Capital Asset Pricing Model

THE CONCEPT OF SECURITY ANALYSIS

By the term Security Analysis we mean analysis of various attributes of a security with a view to determine its value for investment decisions. Here security is understood to be a debt or equity instrument issued by a firm in lieu of the funds raised by it to meet its long term and short term requirements. In this arrangement the firm is a seeker of funds whereas the persons that subscribe to the securities are the providers of funds. The providers part with their money in anticipation of getting a return on their investment. This leads us to discussion of the term 'investment' in some detail.

WHAT IS INVESTMENT

Investment may be defined as a conscious act on the part of a person that involves deployment of money in securities issued by firms with a view to obtain a target rate of return over a specified period of time.

It is a conscious activity in that the investor is expected to be aware of the various avenues of investment available in the market. He makes a comparison of the returns available from each avenue, the element of risk involved in it and then makes the

investment decision that he perceives to be the best having regard to the time frame of the investment and his own risk profile.

In reality however, the level of consciousness or awareness on behalf of the investor is not always perfect. Hence all the investment decisions end up being sub-optimal leading to a persistent effort on the point of the investor to locate alternate avenues of investment that would provide optimal return. This tendency is aided by the fact that fresh investment opportunities keep on appearing in the market with the emergence of new seekers of funds. This is how the cycle of investment moves on.

Investment differs from speculation. Speculation also involves deployment of funds but it is not backed by a conscious analysis of pros and cons. Mostly it is a spur of the moment activity that is promoted and supported by half-baked information and rumours. Speculative deployment of funds is generally prevalent in the secondary equity market. What attracts people to speculation is a rate of return that is abnormally higher than the prevailing market rates. The balancing of risk and return nevertheless operates in speculative activity also and as such the risk element in speculation is very high.

Investment differs from gambling and betting also. Both gambling and betting are games of chance return in which is dependent upon a particular event happening. Here also, there is no place for research-based activity. The returns in gambling are high and known to the parties in advance. The high level of returns provides the incentive for deployment of funds. The risk element in gambling or betting is very high and is known in advance to the players.

For the purpose of our discussion we shall stick to the definition only and consider various avenues available in the Indian context. We shall, therefore, describe the term securities generally and discuss the prevalent options available in the Indian Securities market.

WHAT ARE SECURITIES

Securities may be defined as instruments issued by seekers of funds in the investment market to the providers of funds in lieu of funds.

These instruments *prima facie* provide evidence of ownership to the holder of the instrument. The owner is entitled to receive all the benefits due on the instrument and to retrieve his investment at the time of redemption. Securities can broadly be divided into two categories – Debt Securities and Equity Securities. However, Section 2(h) of Securities Contract (Regulation) Act, 1956, defines securities as under:

Securities *include*—

(i) shares, scrips, stocks, bonds, debentures, debenture stock or other marketable securities of a like nature in or of any incorporated company or body corporate.

(ia) derivative.

(ib) units or any other instrument issued by any collective investment scheme to the Investors in such schemes.

(ic) security receipt as defined in clause (zg) of Section 2 of the Securitisation

and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002.

(id) units or any other such instrument issued to the investors under any mutual fund scheme.

(ie) any certificate or instrument (by whatever name called) issued to an investor by any issuer being a special purpose distinct entity which possesses any debt or receivable including mortgage debt, assigned to such entity and acknowledging beneficial interest of such investor in such debt or receivable, including mortgage debt, as the case may be.

(ii) government securities.

(iia) such other instruments as may be declared by the Central Government to be securities and,

(iii) rights or interests in securities.

NATURE OF THE FINANCIAL SYSTEM

From the discussion that we had in the first three sections, it is clear that investment is a conscious act of deployment of money in securities issued by firms. In this conscious act, the person which makes the investment is called a provider of funds and the entity which issues the securities is called a user of funds. The funds are being provided by individuals, and to some extent by companies, non-corporate organizations and even governments. The funds are used by governments, companies and non-corporate organizations but seldom by individuals. The interplay of use and provision of funds takes place within the overall ambit of the financial system.

Every financial system has two types of financial markets, i.e. the places where the funds change hands between the providers and users of funds. The first type is the un-oganized market which is devoid of any regulatory control and codification. In this market, no formal securities are issued in lieu of funds and the transactions take place outside the ambit of the taxation system also. The providers of funds in the unorganized financial market are private financiers and moneylenders while the users of funds are individuals and small enterprises.

The second type of financial market is the organized financial market. This market has more or less a codified system of operation in place with fairly extensive regulatory control. The organized financial market can further be sub-divided into two categories depending upon the presence of intermediaries or otherwise in the market.

The intermediated financial market consists of a layer of intermediaries between providers and users of funds. These intermediaries collect the funds from the providers and pass it on to the users after a mark-up in the return. These intermediaries are usually the banks and financial institutions whose primary objective is to deal in money. They raise funds from the investor - mainly individuals and corporate bodies – by issuing debt securities like fixed deposit receipts. For investors or the fund providers, these banks and financial institutions are the users of funds and they are not directly concerned with the end use of the funds. The intermediaries, in turn, become the providers of funds for users like Govt., corporate bodies and individuals.

In the intermediated financial market, the returns to investors are usually fixed and assured owning to the intermediaries and also due to deposit insurance cover available to small investors. The instruments used in the market are debt instruments carrying comparatively lower rates of interests. Part of the investment in these instruments is more of a compulsive saving of retail depositors than a conscious investment decision. Another portion of these funds consists of savings account balances of individuals and current account balances of business enterprises, which are subject to withdrawal on call and hence carry zero or very low rate or interest.

In the intermediated financial market, the investment transaction is usually a one-to-one transaction, i.e. the securities issued in lieu of the investment are redeemed by the investor only and are not tradeable or transferable. This type of market is thus a "Primary market" only. Trading of the securities takes places in a "Secondary Market" where a number of agencies are available for facilitation of the trading.

We have noted that the users of funds in the intermediated market are mostly banks and financial institutions. In an emerging economy set-up like that of India, the government has largely controlled these entities. Regulatory agency for licencing of these institutions is the Central Bank (Reserve Bank of India in case of India) which also keeps a formal or informal control over the rate of return available to the investors through the Bank Rate mechanism. Day-to-day functioning of the institutions is supervised by their respective Boards which are assisted by professional management teams. Financial health of these institutions is monitored by the Central Bank. This is an important requirement for smooth functioning of this market. These intermediaries do not use the funds themselves. They rather deploy the funds for lending to agriculture, industry and trade. The flow of funds, which has started from the investors, ends with the ultimate users of agriculture, industry and trade. For the reverse flow of the funds, it is essential that the quality of disbursement by the lenders be controlled. In case of any mismatch between outward and reverse flow of funds, the banks and institutions are unable to honour their commitment for redemption of the securities. This results in impairment of quality of the securities issued by them and increase in the risk of default. A side effect of this is the increase in the rate of interest offered by these institutions on the securities due to enhancement of the risk component. Thus we have a situation where the rate of return is more but the risk of default is also more. The increase in rate of return is not necessary in the best interest of the investor. This situation magnifies when the borrowing institution falls into a trap of high interest rates for attracting more funds for payment of past liabilities. For the protection of interests of investors, the credit rating agencies have been established which rate the debt instruments offered by the institutions.

We have so far discussed the lending of intermediaries to agriculture, industry and trade and noted that this lending is fraught with risk. Banks and institutions avoid this risk by lending to the government in the form of subscribing to Govt. Securities. In a deficit economy like that of India Government is a perennial borrower in the financial market. For the funds borrowed by it, it issues government securities of various tenures. These securities are considered safest investment as they do not carry any default risk. With the default risk being zero, the rate of interest or return on these investments is very low. This rate is in fact the floor rate that sets the tone for the overall interest rate structure in the organized component of the economy. Banks and institutions are obliged to deploy some portion of their liabilities, i.e. the deposits

mobilized by them in government securities in order to maintain their statutory liquidity ratio. These investments provide them a safe haven. Hence, during times of slack demand for credit, funds are invested in government securities well in excess of the statutory requirements for ensuing safety of funds. This action, although resulting in squeeze upon profit margins of the intermediaries, yet is an ingenious way of inducing smooth reverse flow of funds in the intermediated financial system.

Apart from banks and financial institutions, there is another class of intermediaries, which has emerged on the scene of late. This class consists of the mutual funds which pool the investments of individuals and deploy the same into various options available in the market. The nature of mutual funds investments is such that it can be called a projection of individual investments. In this sense, the mutual funds are a part of the dis-intermediated system of the financial market.

From the above discussion, the following attributes of the intermediated financial market have emerged:

- It is a three-tier system with investor at the first tier, the intermediary at the second and the ultimate end user of the funds at the third tier.
- There is no interaction between the investor and the ultimate end user. The intermediary has one-to-one relationship with the investor on the one hand and a similar relationship with the end user on the other.
- Being one-to-one relationship, these contracts are under normal circumstances not transferable or assignable. This results in poor liquidity for these contracts.
- To ensure that the funds invested by the investor are retrieved back timely, the institution has to lend these funds to the end users under contracts having similar maturity or else there will be a mismatch between the tenure of funds borrowed and funds deployed.
- The funds are raised mostly in the form of debt securities. These securities, barring government securities, are not tradeable. It has two consequences. First, there is hardly any secondary market for these instruments and secondly whatever small volumes are there in the market are devoid of extraordinary price fluctuations. The price changes are driven by movements in the interest rate structure.

The above attributes present a picture of a narrow, truncated market. The market is large in size because is feeds on a large volume of compulsive savings of the community. Yet it lacks depth since it is devoid of secondary activity. On the contrary, the second component of the financial market, the dis-intermediated market presents a picture in contrast which we shall presently analyze.

The dis-intermediated market, as the name suggests is a market in which there are no intermediaries. The interface between the providers of funds and the users of funds is direct. The providers give the funds to the users in lieu of securities. The users of the funds are mostly corporate bodies and to some extent government and individuals. Providers of funds are mostly individuals followed by corporate bodies and Govt. to some extent. The securities issued are a mix of debt and equity with the latter being more predominant. Equity instruments, as we know are indicative of part

ownership of the enterprise. The tenure of equity holding is almost perennial in nature. The return on equity investments is not restricted to annual returns in the shape of dividends but rather is unlimited depending upon earning potential of the enterprise. Alongside, the risk potential of investment in equity instruments is also very large. The investor, as the provider of funds, has to rely upon his intuitive judgment of the investment backed by whatever research based information he can lay his hands on in making the investment decision. Since the intuitive judgment is a subjective affair, the quality of appraisal of the investment opportunity is not rigorous and scientific. The perspective of the investor always tends to get vitiated by all sorts of rumours and misinformation. The end result is that the returns obtained from equity investments are offer far less than the expected returns. Nevertheless, equity investment has a charm or glamour of its own because of the secondary market opportunities that it offers.

We saw that the transactions in the intermediated market are one-to-one transactions with no opportunities for exit for the investor midway during the tenure of investment tenure. In the disintermediated market, the investor who buys the security from the end user in the first place through a primary market offering, can part with the security in the secondary market. He does not know the buyer of those securities nor does the buyer know him. So, it is not a one-to-one transaction. The end user of the funds comes into the picture if the security issued is a debt security, as the end-user has to redeem the security at the end of tenure of investment. Otherwise, in the case of equity securities, the end user, having raised the funds, is not obliged to keep track of the holders of equity securities except at the time of distribution of corporate benefits like dividends and bonus. The holder of the securities can exit in the secondary market at the available price. It is the existence of secondary market in equity securities that lends it the glamour. The secondary market is a regulated mechanism for facilitating transactions in securities.

Another feature of the disintermediated market is that it is always “on tap”. At any point in time n-number of securities are available for sale and purchase through the secondary market at market driven prices. These prices differ from the offer prices or the prices at which the securities were first offered in the primary market. The investor can make his judgment about the expected returns that could be available from the security if purchased at the present marked driven prices. The price level of securities has the potential of changing on monthly, weekly, daily or even hourly basis. It is this potential that builds up excitement in the secondary market.

We have noted that in the disintermediated market, the investor has to analyze securities which have potential of indicative return but no assured return. This market can be a trap for the unwary investor and he can part with his investment to unscrupulous users of funds. Hence the disintermediated market needs to be regulated in a stringent manner for protection of the interests of investors.

The disintermediated market shall hereinafter be referred to by us as the capital market segment of the Financial Market. Capital Market is the most important component of the Financial Market since it is indicative of the economic prosperity and well being of the economy. Capital market is the place where the debt and equity securities are issued by users of funds to the providers. These securities are then traded in the secondary market.

Thus, two main sub-divisions of the capital market are primary capital market and secondary capital market. In the primary market, users of funds, i.e. companies place their debt and equity securities through an initial offering to public at large or a rights offering to existing members or stockholders. This placement is made through a prospectus or a letter of offer. In the whole process of floatation of the offering, the following intermediaries or facilitators are involved besides the issuer and the investors:

- Advisors to the Issue
- Lead managers to the Issue
- Underwriters and Brokers to the Issue
- Bankers to the Issue
- Registrars to the Issue

These entities are not intermediaries in the sense in which banks or financial institutions were the intermediaries in the first kind of financial system discussed by us. In the capital market, these intermediaries do not have any fund based involvement. Rather they provide their services in bringing together investor and the issuer.

Advisors to the issue advise the company on capital structure, size of the issue, overall market scenario and timing of the issue etc. Lead Managers to the Issue prepare the offer document, complete the due diligence about the issuer and file the offer document with SEBI. Other regulatory agencies involved with the Primary offering are the Stock Exchanges and the Registrar of Companies. They also vet the offer document and provide their comments. The lead managers are also involved in marketing of the offer in which the Underwriters to the Issue and Brokers to the Issue are also associated. Bankers to the Issue and Registrar to the Issue are involved in the post marketing stage, also called the processing stages. After the Issue has been processed, the Lead Managers, the Registrars and the Stock Exchange are associated for allotment of securities and subsequent listing of the securities at the stock exchange.

Security Analysis and Portfolio Management

Security analysis is closely linked with portfolio management. The main objective of security analysis is to appraise are intrinsic value of security. As already started, there are two basic approaches which are made in the direction viz. (1) Fundamental approach, and (2) Technical approach. There is third approach known as Efficient Capital Market Theory for assessing market price of a security.

(1) *The Fundamental Approach:* The Fundamental approach suggests that every stock has an intrinsic value which should be equal to the present value of the future stream of income from that stock discounted at an appropriate risk related rate of interest. Estimate of real worth of a stock is made by considering the earnings potential of firm which depends upon investment environment and factors relating to specific industry, competitiveness, quality of management, operational efficiency, profitability, capital structure and dividend policy. Thus, security analysis is done to evaluate the current market value of particular security with the intrinsic or theoretical value. Decisions about buying and selling an individual security depends upon the

conferred relative value. Since this approach is based on relevant facts, it gives true estimate of the value of a security and it is widely use in estimation of security prices.

(2) *Technical Approach:* The other technique of security analysis is know as Technical Approach. The basic assumption of this approach is that the price of a stock depends on supply and demand in the market place and has little relationship with its intrinsic value. All financial date and market information of a given security is reflected in the market price of a security. Therefore, an attempt is made through charts to identify price movement patterns which predict future movement of the security. The main tools used by technical analysis are: (1) The Dow Jones theory which asserts that stock prices demonstrate a pattern over four to five years and these patterns are mirrored by indices of stock prices. The theory employs two Dow Jones averages – the industrial average and the transportation average. If industrial average is rising, then transport average should also rise. Simultaneous price movement is the maid prediction which may show bullish as well as bearish results. (2) Chart Patterns are used along with Dow Jones Theory to predict the market movements. Various types of charts are used for this purpose.

(3) *Efficient Capital Market Theory:* The theory is familiarly known as "Efficient Capital Market Hypothesis: (ECMH). It is based on the assumption that in efficient capital markets prices of traded securities always fully reflect all publicly available information concerning those securities. For market efficiency there are three essential conditions:

(1) all available information is cost free to all market participants,

(2) no transaction costs, and

(3) all investors similarly view the implications of available information on current prices and distribution of future prices of each security.

It has been empirically proved that stock prices behave randomly under the above conditions. These conditions have been rendered unrealistic in the light of the actual experience because there is not only transaction cost involved but brokers have their own information base made available by processing compute fed date. Moreover, information is not costless and all investors do not take similar views.

Research studies devoted to test the ECMH are put into three categories i.e.

(a) the week form theory,

(b) the semi-strong form, and

(c) the strong form.

(a) *The Weak Form theory:* This theory states that current security prices fully reflect information available in the market regarding historical events of the company. Study of the historical sequence of prices, can neither assist the investment analysts or investors to abnormally enhance their investment return nor improve their ability to select stocks. It means that knowledge of past patterns of stock prices does not aid investors to make a better choice. Random Walk Theory is the offshoot of this test. The theory states that stock prices exhibit a random behaviour.

Random walk Hypothesis: The Hypothesis presupposes that stock prices move

randomly. No sure prediction can be made of future movement of stock prices on the basis of given prices at the end of one period. There is no relationship between today's price and tomorrow's price. Price movement is a random. The various statistical tests conducted in U.K. and U.S.A. on stock price have proved that the "extent of dependence between successive price changes is negligible".

(b) *Semi-strong form of Efficient Market Hypothesis:* This hypothesis holds that security prices adjust rapidly to all publicly available information such as functional statements and reports and investment advisory reports, etc. All publicly available information, whether good or bad is fully reflected in security prices. The buyers and sellers will raise the price as soon as a favourable price of information is made available to the public; opposite will happen in case of unfavourable piece of information. The reaction is almost instantaneous, thus, printing to the greater efficiency of securities market. It is to be noted that the semi-strong form of efficient market hypothesis includes that week form of efficient market hypothesis also because internal market information is a part of all publicly available information.

(c) *The Strong Form Test of the inside information and the Efficiency of the Market:* This test is concerned with whether two sets of individuals – one having inside information about the company and the other uninformed could generate random effect in price movement. The strong form holds that the prices reflect all information that is known. It contemplates that even the corporate officials cannot benefit from the inside information of the company. The market is not only efficient but also perfect. It is to be noted that it includes both the weak form and semi-strong form of efficient market hypothesis. The findings are that very few and negligible people are in such a privileged position to have inside information and may make above-average gains but they do not affect the normal functioning of the market.

Efficient Market Hypothesis has put to challenge the fundamental and technical analysts to the extent that random walk model is valid description of reality and the work of charists is of no real significance is stock price analysis. In practice, it has been observed that markets are not fully efficient in the semi-strong or strong sense. Inefficiencies and imperfections of certain kinds have been observed in the studies conducted so far to test the efficiency of the market. Thus, the scope of earning higher returns exists by using original, unconventional and innovative techniques of analysis. Also, the availability of inside information and its rational interpretation can lead to strategies for deriving superior returns.

Fundamental Analysis

The investor seeks to arrive at the real value or the intrinsic value of a security through the process of security analysis. This value is arrived at by using a number of tools of financial analysis and it approximates the level at which the demand and supply of stock of the security would be in equilibrium leading to stability of prices. Price of the security below and above this level would tend to be unstable. The real value or intrinsic value is valid for a given set of conditions. These conditionalities include the national and international economic situation, industry specific and company specific circumstances. The first three conditionalities are viewed from a macro perspective in order to even out the effect of minor happenings. The last conditionality is observed at the micro level because at this level, even relatively smaller happenings can disturb the demand supply equilibrium.

What is this real value of a security and how does it differ from the face value or market value? We know that face value of the security is the denominating value. It is also called the nominal value. When we say that authorized share capital of a company is Rs. 200 lac divided into 20 lac shares of Rs. 10 each, we mean that the face value or the nominal value of the share is Rs. 10/- each.

At the time of the public offering the shares might be issued at par with the face value or at a premium. The issue of shares as a premium to the face value is *prima facie* evidence that the intrinsic value is much more than the face value. Let us assume that the shares of Rs. 10/- each are issued at Rs. 30/- each. The issuer is charging a premium of Rs. 20/- for the intrinsic value equalization. The investors' perception about the justifiability of the premium gets reflected in the level of subscription to the offer. If the premium is considered justified and reasonable, the initial offer would be readily accepted or else the response would be negative. The issuer normally charges premium for the following attributes.

— Long years of establishment and profitable track record.

— Leadership position in the market.

— Potential for continued growth in the future.

— Existence of free reserves with the issuer which makes the book value higher than the face value.

Let us clarify the concept of book value a little further. Assuming that a company has been incorporated with an authorized capital of 2 crore shares of Rs. 10/- each and the company operates profitably for three years, the broad financial position of the company shall be as under:

(Rs. In lacs)

Item	*Year 1*	*Year 2*	*Year 3*
Income	600	1200	2400
Expenditure	800	1000	1600
Profit/Loss	(200)	200	800
Equity Capital	2000	2000	2000
Free Reserves	– 200	0	800
Face Value/share	10	10	10
Book Value/share (Share capital + free reserves)	9	10	14

Book value of the share of the company became less than face value at the end of the first year due to the loss incurred by it. The book value was equal to the face value at the end of the second year due to recoupment of the loss. At the end of the third year the book value become Rs. 14/- due to building up of reserves. If, after the end of the third year the issuer wishes to come up with an offering of additional shares, the offer price will not be less than Rs. 14/-.

In actual market conditions does the book value always track the market value?

To verify this, let us look at the 30 members companies of the BSE Sensex (Hypothetical names and figures). Each company is a leading and representative company of an industry group:

Sl. No.	*Name of the Company*	*Face Value Per Share*	*Book Value*	*Market Value (As on 30 September)*
1	2	3	4	5
1	HL Ltd.	1	13.8	168.70
2	RI Ltd.	10	136.3	250.50
3	IT Ltd.	5	314.3	3411.30
4	ITB Ltd.	10	175.8	349.80
5	SBI	10	299.3	229.70
6	RP Ltd.	10	20.4	22.60
7	RL Ltd.	10	138.2	562.60
8	ICICI Ltd.	10	101.9	144.85
9	MTGL Ltd.	10	151.2	109.50
10	SC Ltd.	2	61.4	210.70
11	RLD Ltd.	5	190.5	821.15
12	HCT Ltd.	2	60.5	205.90
13	HPC Ltd.	10	173.8	172.45
14	CIP Ltd.	10	152.8	946.35
15	NES Ltd.	10	27.5	565.85
16	HH Ltd.	2	34.3	248.75
17	TISC Ltd.	10	93.6	116.50
18	TELC Ltd.	10	77.1	129.15
19	T&L Ltd.	10	133.0	167.00
20	BA Ltd.	10	283.2	380.05
21	BHL Ltd.	10	182.6	160.15
22	HIND Ltd.	10	621.5	522.10
23	ZTE Ltd.	1	99.2	57.50
24	BSS Ltd.	10	194.3	216.20
25	GRA Ltd.	10	295.3	309.00
26	GSIM Ltd.	10	75.3	367.15
27	GLX Ltd.	10	155.14	163.00
28	ASC Ltd.	10	171.17	138.15
29	CAS Ltd.	10	32.1	189.80
30	CIG Ltd.	10	18.2	131.20

We note that the market value is not equal to the book value for shares of any of

the leading companies of the country. In fact, there is wide divergence between these two. The divergence is mostly on the upper side except in some cases. We can conclude, therefore, that book value is not a perfect indicator of the intrinsic value of a security. At best it can be an indicator of the floor value or base value below which the market value in normal circumstances should not slide. Reason for not restricting ourselves to the book value as an indicator of the intrinsic value is not far to seek. Book value is a historic indicator. It depicts what the company has earned and saved in the past. It does not reflect the future earning potential of the company.

Having considered that the book value is not an appropriate measure for ascertaining the real or intrinsic value of a security, let us take up a more rigourous process of evaluating securities called fudamental analysis.

Fundamental analysis is a three level systematic process that analyse the overall external and internal environment of the company before placing a value on its shares. The three levels at which the analysis is carried out are the following:

(a) Analysis of the economy

(b) Industry Level Analysis

(c) Company Analysis

We shall describe the analytical process at all these levels in greater details hereunder:

Analysis of the economy

Performance of a company is intimately related to the overall economic environment of the country because demand for products and services of the company would under normal circumstances be directly related to growth of the country's economy. If the country has an improving GDP growth rate, controlled inflation and increasing investment activity then chances are that the valuation of securities shall be liberal. The capital market is said to be in a bullish phase with share values shooting up across the board. As the economy is growing, almost every industry is expected to do well.

On the other hand, if the GDP growth rate slackens, inflation is out of control and investment activity is stagmant or declining, the performance of industries is expected to slow down. Under such circumstances, valuation of securities tends to be conservative. The capital market enters a bearish phase and share values decline across to board.

Industry Level Analysis

Industry level analysis focuses on a particular industry rather than on the broader economy. In this analysis, the main parameters to be looked at are the composition of the industry, its criticality *vis-à-vis* the national economy, its position along the industrial life cycle, entry and exit barriers. All these factors have a bearing upon the performance of the company.

Industry is a combination or group of units whose end products and services are similar. Having a common market, the participants in the industry group face similar problems and opportunities. To the extent that an industry loses or gains from certain

happenings, the performance of the participants is sure to be similarly impacted. These happenings may be technological changes, shifts in consumer preferences, availability of substitutes etc. These changes also drive the life cycle of the industry.

The industry life cycle or the industry growth cycle can be divided into three major stages-pioneering stage, expansion stage and stagnation stage. The pioneering stage is related to sunrise status of the industry. It is the stage when technological development takes places. The products have been newly introduced in the market and they gain ready acceptance. The pioneering units in the industry make extraordinary profits and thus attract competition. As competition increases profitability in the industry comes under strain and less efficient firms are forced out of the market. At the end of the pioneering stage, selected leading companies remain in the industry.

In the expansion stage of the growth cycle the demand for the products increases but at a lower rate. There is less volatility in prices and production. Capital is easily available in plenty for these units. Due to retention of profits, internal accruals increase.

At the stagnation stage, the growth rate initially slows down, then stagnates and ultimately turns negative. There is no product innovation. External capital is hard to come by. Even the internal capital takes flight. This stage of the industry is most valuable during times of slow down in national economy.

Technical Analysis

In the fundamental analysis, share prices are predicted on the basis of a three stage analysis. After the analysis has been completed, the deciding factors that emerge are the financial performance indicators of the company. However, in actual practice, it has been observed that share values do not traverse the path indicated by fundamental analysis. It often happens that a share having sound fundamentals refuses to rise in value and vice cersa. To study such behaviour of share values, an alternative approach called Technical Analysis has been used by anlysts. It is used in conjunction with fundamental analysis and not as its substitute.

Technical analysis assumes that market prices of securities are determined by the demand-supply equilibrium. The shifts in this equilibrium give rise to certain patterns which have a tendecy to repeat themseves over a period of time. An analyst who is familiar with these patterns can predict the future behaviour of stock prices by noticing the formation of these patterns.

It is a science of predicting the share price movements from the past data about share price movements. These predictions are indicative and do not provide irrefutable declarations about future trends. In this type of analysis, no weightage is given to intangible items like investors' attitude, market sentiment, optimism, pessimism etc.

Technical analysis is based on the following assumptions:

- The inter-play of demand and supply determines the market value of shares.
- Supply and demand are governed by various factors – both rational and irrational.
- Stock values tend to move in trends that persist for a reasonable time.

— These trends change as a result of change in demand-supply equilibrium.
— Shifts in demand and supply can be detected in charts of market action.
— Chart patterns tend to repeat themselves and this repetition can be used to forecast future price movements.
— Markets behave in a random style.
— Markets discount every future event that has a bearing upon share values.

Dow Jones Theory

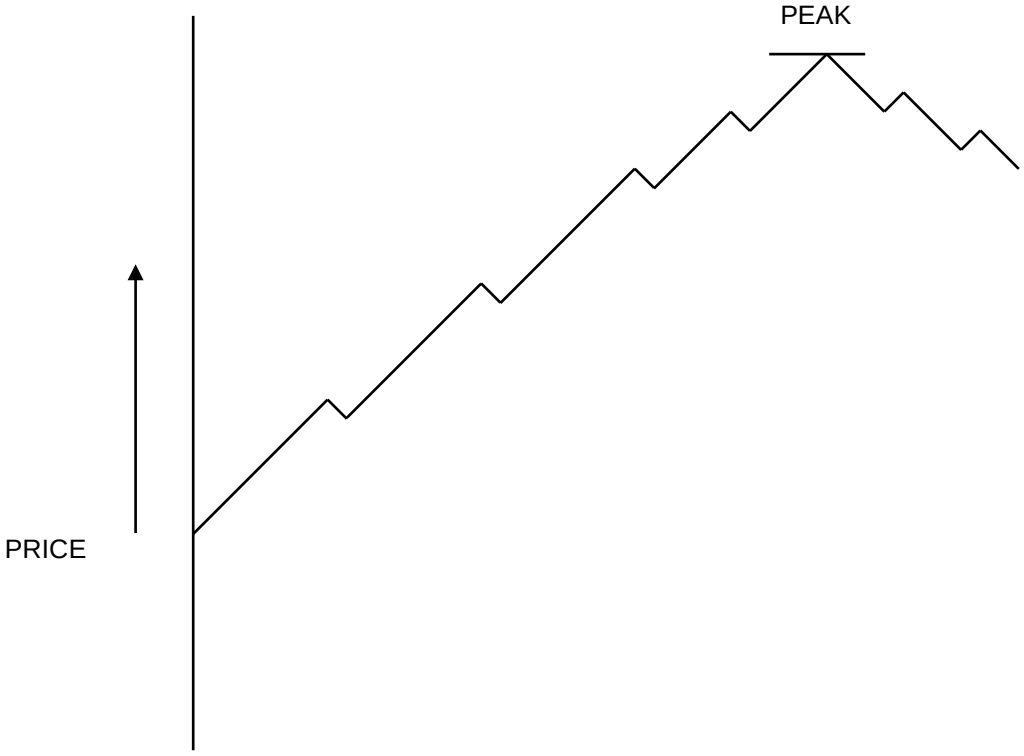
It is one of the earliest theories of technical analysis. The theory was formulated by Charles h. Dow of Dow jones & Co. who was the first editor of Wall street Journal of USA. According to this theory, share prices demonstrate a pattern over four to five years.

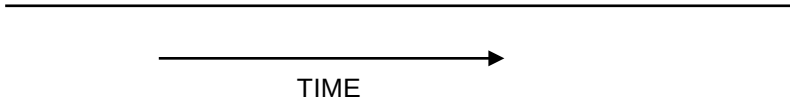
These patterns can be divided into primary, secondary and minor trends.

The primary trend lasts from one to three years. Over this period, the markets exhibit definite upward or downward movement which is punctuated by shorter spans of trend reversal in the opposite directions. The trend reversal is called the secondary trend. Primary trend is indicative of the overall pattern of movement.

If the primary trend is upward, it is called a bullish phase of the market. If the primary trend is downwards, it is called a bearish phase. Illustrations of bullish phase and bearish phase are given below:

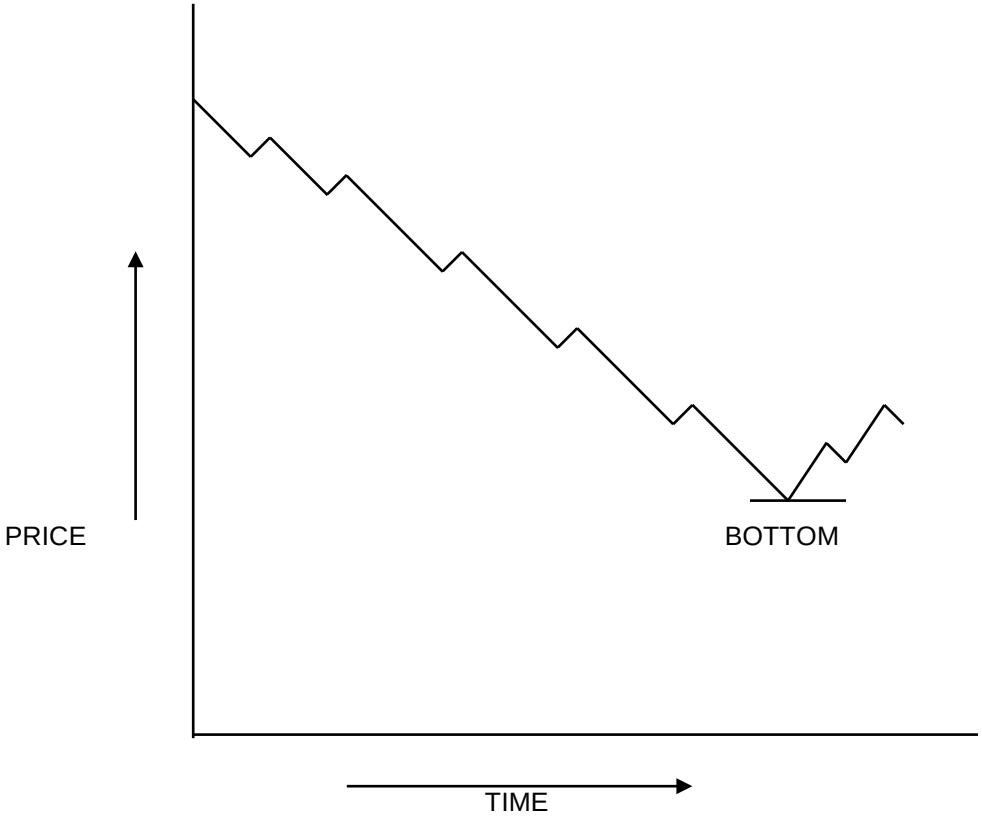
GRAPH OF BULLISH PHASE





In a bullish phase, after each peak, there is a fall but the subsequent rise is higher than the previous one. The prices reach higher level with each rise. After the peak has been reached, the primary trend now turns to a bearish phase.

GRAPH OF A BEARISH PHASE



In a bearish phase, the overall trend is that of decline in share values. After each fall, there is slight rise but the subsequent fall is even sharper. The secondary trend reversals last for one to three months.

Minor trends are changes occurring every day within a narrow range. These trends are not decisive of any major movement.

Tools of Technical Analysis

Technical analysts use two major types of tools for their analysis. These are the

charts and the indicators.

Technical charts—These are the plottings of prices and trading volumes on charts. The purpose of reading and analysing these charts is to determine the demand-supply equation at various levels and thus to predict the direction and extent of future movement of the prices. The charts are not infallible but because of their repeated accuracy, they have come to be accepted. In all the charts, a correlation exists between market price action and the volume of trading when the price increase is accompanied by a surge in trading volumes, it is a sure sign of strength. On the other hand, when the decline in share prices is accompanied by increased volumes, it is indicative of beginning of bearish trend.

There are three ways to construct a chart. These are the Line Chart, Bar Chart and Point & Figure Chart.

Line Chart—In a Line Chart, the closing prices of successive time periods are connected by straight lines and the intra-period highs and lows of stock prices are ignored. This type of chart is useful for making broad analysis over a longer period of time.

Bar Chart—These charts portray intra-period high, low and closing values on a single verticle line designated for each time period. The vertical dimensions of the line represent price. The horizontal axis of the chart indicates the complete time period of analysis. Bar charts focus on time, volume and price.

Point and Figure Chart—In this type of charts, emphasis is laid on charting price changes only and time and volume elements are ignored. The first step in drawing a figure and point chart is to put an X in the appropriate price column of a graph. Successive price increases are added vertically upwards in the same column as long as the uptrend continues. Once the price drops, the figures are moved to another column and Os are entered in downward series till the downward trend is reversed.

Patterns created by charts

Once the charts have been constructed, analysts seek to locate certain indicators/patterns in the charts. The common patterns are being described below:

Support and resistance levels

A support level indicates the bottom which the share values are unable to pierce. After rising time and again, the share price dips to a particular level and then starts rising again. At this level, the share gets buying support. A resistance level is that level after which the share price refuses to move up in repeated efforts. At this level, selling emerges. Support and resistance levels are valid for a particular time period. Once these levels are breached, beginning of a new bull or bear phase is signaled.

Heads and Shoulders configuration

In this type of chart configuration, a formation similar to heads and shoulders is created wherein the neckline acts as the resistance or support line. As the head and shoulder top is formed, a resistance level appears at the top of the head. The volumes start declining near the head top and reversal sets in. The volumes become heavy again and shrink near the neckline where another reversal of trend begins.

Limitations of charts

Interpretation of charts is prone to subjective analysis. This factor is a major cause of often contradictory analysis being derived from the same charts. Also the changes in charts are quite frequent in the short term perspective leading to a host of buy and sell recommendations which are not in the best interest of the investor. Another disadvantage is that decisions are made on the basis of chart alone and other factors are ignored.

Technical Indicators

Apart from the charts, technical analysts use a number of indicators generated from prices of stocks to finalise their recommendations. These indicators are often used in conjunction with charts. Some of the important indicators are the Advance Decline Ratio, the Market Breadth Index and Moving Averages.

Advance-Decline Ratio

It is the ratio of the number of stocks that increase to the number of stocks that have declined. If the ratio is more than one, the trend is assumed to be bullish. If the ratio starts declining, a change of trend is signaled.

Market Breadth Index

This index is a variation of the Advance-Decline Ratio. This index is computed by taking the difference between the number of stocks rising and the number of stocks falling. If during a month, 400 out of 1000 stocks in the market have risen and 300 have declined while 300 have remained unchanged, then market breadth would be calculated as = 2(400−300)/300. The figure of each time period is added to the previous period. If market breadth is increasing along with rise in stock indices, it confirms the bullish trend and vice cersa.

Moving Averages

A moving average is the average of share values of a set of consecutive number of days. If we have to calculate 50 days moving average, we calculate the average for days 1—50. Then on day 51, we add the value of day 51 and deduct the value of day 1 and so on . Similarly, moving averages for 100 days, 200 days and 300 days can be calculated. Moving averages provide a benchmark for future valuation. If share value is below the moving average, it has scope for appreciation. If the value is above the moving average, the upside is limited in the near term.

Alternative approaches to valuation − Random Walk Theory

In the Fundamental Analysis, factors such as economic influences, industry factors and particular company information are considered to form a judgement on share value. On the other hand, price and volume information is analysed in Technical Analysis to predict the future course of share values. There is another approach which negates both Fundamental and Technical analyses.

According to this theory, share prices will rise and fall on the whims and fancies of manipulative individuals. As such, the movement in share values is absolutely random and there is no need to study the trends and movements prior to making investment decisions. No sure prediction can be made for further movement or trend of share prices based on the given prices as at a particular moment.

The Random Walk Theory has found acceptance in many quarters because both Fundamental and Technical Analysis are not considered infallible anymore. One of the advantages of this theory is that one is not bothered about good or bad judgement as shares are picked up without preference or evaluation. It is easier for believers in this theory to invest with confidence. The second advantage is that there is no risk of being ill informed while making a choice as as no information is sought or concealed.

Efficient – Market Theory

Efficient Market Hypothesis accords supremacy to market forces. A market is treated as efficient when all known information is immediately discounted by all investors and reflected in share proces. In such a situation, the only price changes that occur are those resulting from new information. Since new information is generated on a random basis, the subsequent price changes also happen on a random basis. Major requirements for an efficient securities market are:

- Prices must be efficient so that new inventions and better products will cause a firms' securities prices to rise and motivate investors to buy the stocks.
- Information must be discussed freely and quickly across the nations so that all investors can react to the new information.
- Transaction costs such as brokerage on sale and purchase of securities are ignored.
- Taxes are assumed to have no noticeable effect on investment policy.
- Every investor has similar access to investible funds at the same terms and conditions.
- Investors are rational and make investments in the securities providing maximum yield.

The efficient-market theory is considered as having three forms, viz. Weak Form, Semi-strong Form and the Strong Form.

Weak Form Theory – This theory is an extension of the random walk theory. According to it, the current stock values fully reflect all the historical information. If this form is assumed to be correct, then both Fundamental and Technical Analysis lose their relevance.

Semi-strong Form Theory – This form says that the current share valuation is a reflection of historical information plus publicly available knowledge about the company. It maintains that as soon as the information becomes publicly available, it is absorbed and reflected in current prices. An analyst and an investor are similarly placed in so far as making use of the information is concerned. Thus an analyst can not obtain better returns than an ordinary investor.

Strong Form Theory – According to this form, not only is the publicly available information useless to the analyst or the investor, but all information is useless. No information, whether public or inside information can be used to earn better returns than the market.

PORTFOLIO MANAGEMENT

Portfolio management refers to managing efficiently the investment in the

securities by professionals for both small investors and corporate investors who may not have the time and skills to arrive at sound investment decisions. The process of portfolio management basically is closely/directly linked with process of decision making, the correctness of which cannot be ensured in all cases. It has become a specialised field which requires proper planning and continuous review as it is never static in character and goes on fluctuating depending on change in credit policy and investment conditions in the country. Some of the broad objectives of portfolio management are listed as under:

Safety of fund

Safety of fund is the primary objective of portfolio management. While making investment decisions pertaining to securities, it is a must for investors/portfolio managers to ensure that their investment is safe and it will return with appreciation in value.

Liquidity

Investors are very much interested in the liquidity aspect of securities in the portfolio. An investor shall make investment in those securities which can be encashed without any difficulty or involvement of time to meet urgent need for funds.

Reasonable Return

Reasonable return on securities is another important aspect of portfolio management. A sound investor or portfolio manager before making investment would like to judge the interest/dividend paying capacity/rate of the companies in which investment opportunities exist. The investor is very much concerned with the appreciation in value of securities because it will ultimately determine the profitability of his investment. (Capital gains plus dividends/interest together determine the return on investment).

Minimum Risk

The portfolio investments are subject to certain unforseen risks and it is the judgement and intelligence of the portfolio manager to reduce this element of risk to minimum. Practically, portfolio managers achieve this objective ofminimising risk by effective investment planning and perodical review of the market situation and economic environment affecting the financial market.

PORTFOLIO ANALYSIS

While discussing Security Analysis, we had restricted our discussion to the behavior of value of individual equity securities. Portfolio Analysis seeks to analyze the pattern of returns emanating from a portfolio of securities, i.e. a number of securities that absorb a proportion of total amount of investment. The expected return on a portfolio is the weighted average of the expected returns on the individual securities in the portfolio.

$$\sum(R_p) = \sum_{i=1}^{n} w_i E(R_i)$$

Where,

$E(R_p)$ = Expected return on the portfolio
w_i = Weight of security *i* in the portfolio
$E(R_i)$ = Expected return on security *i*
n = Number of securities in the portfolio.

The risk of an individual security is measured by the variance or standard deviation of its return. The risk of a portfolio is measured by the variance or standard deviation of its return.

The risk of portfolio consisting of two securities is given by the following formula:

$$\sigma_p^2 = w_1^2\sigma_1^2 + w_2^2\sigma_2^2 + 2w_1w_2P_{12}\sigma_1\sigma_2$$

Where,

σ_p^2 = Variance of the portfolio return
w_1 = Weight of security 1 in the portfolio
w_2 = Weight of security 2 in the portfolio
σ_1^2 = Variance of return on security 1
σ_2^2 = Variance of return on security 2
$P_{12}\sigma_1\sigma_2$ = Covariance of return on securities 1 and 2

The variance and standard deviation of the return of n security portfolio are:

Variance = $\sigma_p^2 = \sum\Sigma w_i w_j p_{ij}\sigma_i\sigma_j$

Standard deviation = $\sigma_p = \left[\sum\Sigma w_i w_j p_{ij}\sigma_i\sigma_j\right]^{1/2}$

w_i = proportion of portfolio value invested in security *i*

w_j = proportion of portfolio value invested in security *j*

p_{ij} = coefficient of correlation between returns on securities *i* and *j*

σ_i = standard deviation of the return on security *i*

σ_j = standard deviation of the return on security *j*

We shall clarify the concept of Portfolio with the help of following illustration:

An investor A has an investible amount of Rs. 1,00,000/-. He invests the amount in equity securities of two Forms X and Y on a random basis and is able to get the following returns after a holding period of one year.

Security	*Amt. Invested*	*% total*	*Annual Returns*	*% Returns*
X	40000	40	6000	15
Y	60000	60	24000	40

Total	100000	100	30000	30

While reviewing the returns after one year, he finds that security has yielded a return of 40 p.a. and he would have been better off by investing the entire sum of Rs. 1,00,000/- in security Y. So, he liquidates his holding in security X and puts the entire sum in security Y for the next year, hoping for a return 50% of after another year, he finds that security Y has yielded a return of 25% while securities X has yielded returns of 40%. Thus the investor has not been able to maximize his return by holding the entire investment in one security only.

The above illustration indicates that it is better to spread out or diversify the investment in order to minimize the risk associated with investment in single securities. This fact is the essence of Portfolio Analysis.

Portfolio is a collection of securities belonging to a diverse set of industries. Management of a portfolio is considered to be a specialised activity because of the time and effort involved in tracking of each component of the portfolio. Portfolio management is a relatively new concept in security analysis. It gained prominence after World War II when it was realised that the instability of the securities market had put at stake fortunes of individuals, companies and governments. It was then discovered that investing in a basket of stocks maximised profits while minimising risks.

Portfolio management refers to the management of portfolio for others by professional investment managers or portfolio managers. The relationship between an investor and his portfolio manager is of highly interactive nature. All the transactions are done in the investors name by the manager under a power of attorney.

The main functions of a portfolio manager are advisory functions and research based functions.

In the advisory role, advice is given to the client on new investments, review of existing investments, identification of objectives, recommending high yielding securities etc. Under research based activities, market and economic surveys are conducted, financial analysis is done, study of stock market and the industry is done and decision is taken about the type of portfolio.

Risk in investment situation

We have seen in the above illustration that investment in securities X and Y has been fraught with risk because the return on investment has varied from one year to the other and obviously from any expected rate of return also that might have been fixed.

Risk means that the return on investment would be less than the expected rate. Risk is a combination of possibilities because of which actual returns can be different or greatly different from expected returns. Thus risk can be high or low. In case we want to quantify how high or how low the risk in investment is going to be, we have to intimate the probability of various outcomes and their deviation from expected outcome.

Continuing with the above illustration, we note that the investor expects a return of 50% on Security Y. There are various probabilities of return being different from 50%. We assume the following events:

Event	*Probability*	*Return %*	*Prob. × Return*	*Deviation*	*Prob. × Deviation*	*Prob. x Absolute Deviation*
1	*2*	*3*	*4 = (2 x 3)*	*5 = (3-50)*		
A	0.10	–10.00	–1.00	–60.00	–6.00	6.00
B	0.20	10.00	+ 2.00	–40.00	–4.00	4.00
C	0.50	60.00	+ 30.00	+ 10.00	6.00	6.00
D	0.20	40.00	+ 8.00	–10.00	–4.00	4.00

Average Absolute Deviation = 20.0

Thus the deviation of 20 points from the expected return can take place. A security having deviation of 10 points would be less risky and another security having deviation of 30 points would be more risky than security Z.

In the above calculation, we find that deviation of probable return from the expected return has negative values also. To overcome this problem, we square the deviation value and arrive at the weighted average squared deviation which is called the variance. The square root of the variance is called the Standard Deviation which is a better analytical measure of the risk.

Event	*Probability*	*Deviation*	*Deviation Squared*	*Prob. × Deviation Squared*
a	0.10	–60.00	3600.00	360.00
b	0.20	–40.00	1600.00	320.00
c	0.50	+ 10.00	100.00	50.00
d	0.20	–10.00	100.00	20.00

Variance = 750

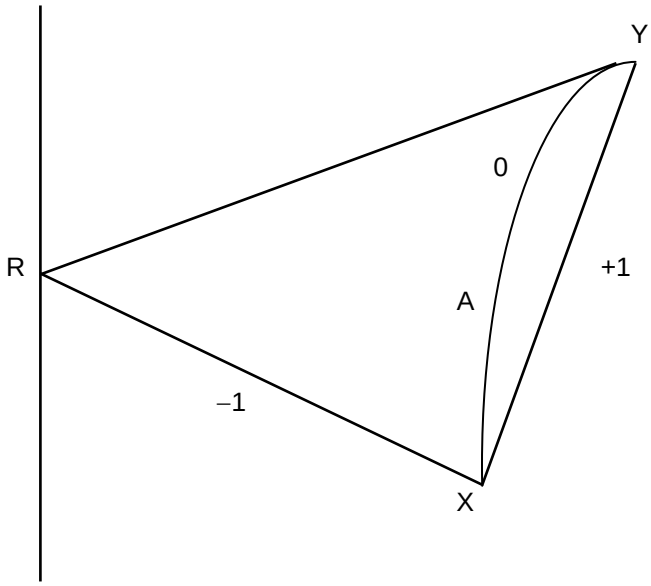
Standard Deviation = Square Root of Variance = 27.38

The standard deviation is a measure of the deviation or variation or change of the problem return from the expected return. Standard deviation also quantifies riskiness of the investment.

We have seen that security Y has a standard deviation of 27.38. Similarly securities X would also have its measures of standard deviations. An investor would tend to spread out his investment among securities having the least standard deviation so as to minimize risk.

In a portfolio having number of securities, the total risk of the portfolio is arrived at by calculating the variance of each individual security and co-variance or correlation co-efficient of each security with other securities.

Graphic illustration of the correlation between two securities is shown as under.



Line XY represent various combinations of X and Y. Point X has 100% holding of X and point Y has 100% holding of Y. The coefficient of correlation along XY is +1. It means that 100% holding of X is least risky and 100% holding of Y is most risky.

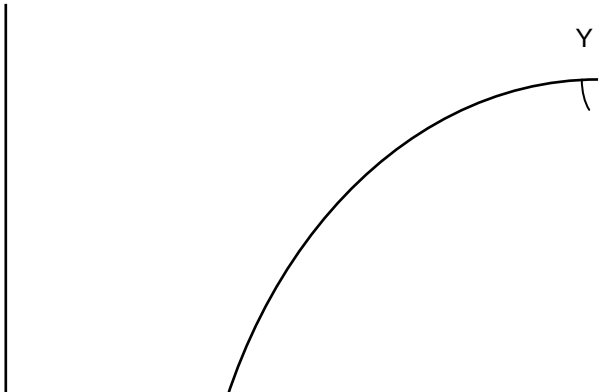
Segment XAY has zero correlation and line XR has –1 coefficient of correlation.

MARKOWITZ MODEL

Dr. Harry M. Markowitz is credited with developing the first modern portfolio analysis model. It provides a theoretical framework for analysis of risk-return choices. The concept of efficient portfolios has been enunciated in this model A portfolio is efficient when it yields highest return for a particular level of risk or minimizes risk for a specified level of expected return.

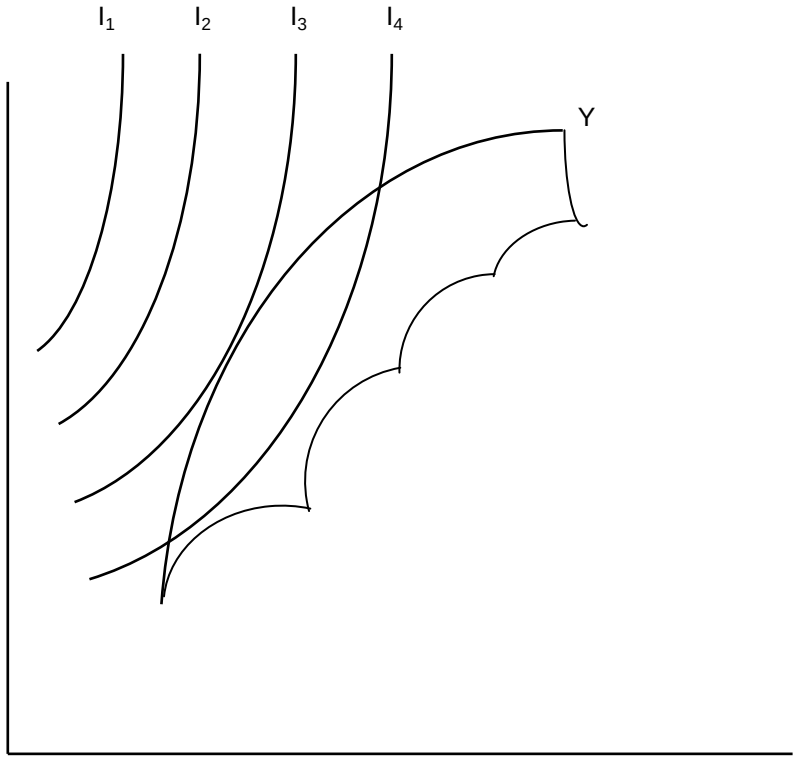
The Markowitz model makes the following assumptions regarding investor behaviour:

- Investors consider each investment alternative as being represented by a probability distribution of expected returns over some holding period.
- Investors maximize one period expected utility and possess utility curve, which demonstrates diminishing marginal utility of wealth.
- Individuals estimate risk on the basis of variability of expected returns.
- Investors base decisions solely on expected return and variance of returns only.
- At a given risk level, higher returns are preferred to lower returns. Similarly for a given level of expected returns, investors prefer less risk to more risk.



Standard Deviation

In the above graphic presentation, arc XY is the efficient frontier. All points on this arc provide a superior combination of risk and return to other combinations with the shaded area, which represent attemptable portfolios. Each portfolio has its own combination of risk and return. Investor's final choice out of the range depends on his taste.



X

The investor has four indifference curves.

I, to I_4 . I, provides greatest satisfaction but since the efficient range touches only I_3 is the maximum that can be achieved.

Limitation of Markowitz Model

The Markowitz approach requires several inputs for portfolio analysis. These are expected return of the securities, variances of their return and co variances. Calculation of efficient portfolios is easy when the number of securities in the portfolio is two or three. As the number of securities in the portfolio increases, which indeed is the case in real life situations, the amount of calculations required to be done becomes enormous. Further, in the real world, portfolio analysts do not keep track of correlations between stocks of diverse industries. As such, correlating a security to a common index is much more convenient than correlating to a large number of individuals securities.

Secondly, the assumption that correlation in the values of two securities depends on the characteristics of these two securities alone is not valid. In fact movement in value of securities is affected by a variety of other factors. A stock index is more representative benchmark that incorporates the general economic conditions more authentically.

Sharpe Index Model

William Sharpe introduced a model in which return on a security is correlated to an index of securities or an index or an economic indicator like GDP or prices. Comparison with indices like Don Jones, Nifty or Nasdaq etc. is more relevant.

According to the Sharpe single index model the return for each security can be given by the following equation:

$$R = \alpha + \beta I + e$$

Where R = Expected return on a security
α = Alpha Coefficient
β = Beta Coefficient
I = Expected Return an index
E = Error term with a mean of zero and a constant standard deviation.

Alpha Coefficient refers to the value of Y in the equation $Y = \alpha + \beta x$ when $X = 0$. Beta Coefficient is the slope of the regression line and is a measure of the changes in value of the security relative to changes in values of the index.

A beta of +1.0 means that a 10% change in index value would result in a 10% change in the same direction in the security value. A beta of 0.5 means that a 10% change in index value would result in 5% change in the security value. A beta of 1.0

means that the returns on the security are inversely related.

The equation given above can also be rearranged as shown below:

$$R = \beta I + \alpha + e$$

Here the component βI is the market related or systematic component of the return. The other component represents the unsystematic component. As is assumed to be near zero the unsystematic return is given by alpha only.

Extending our original illustration further, we estimate the probabilities of return in respect of each security. Then we calculate the variance and standard deviation for the securities as well as the portfolio:

Event	*Probability*	*Returns*	*Returns*	*Returns Portfolio*	*Prob. X Deviation Squared*
		3 X	*4 Y*	*(.4 x 3) + (.6 + 4)*	
A	0.10	–10	–10	–4 – 6 = –10	360.00
B	0.20	25	10	10 + 6 = 16	320.00
C	0.50	20	60	8 + 36 = 44	50.00
D	0.20	10	40	4 + 24 = 28	20.00

If the variance and standard deviation of securities X and Y as also of the Portfolio are calculated, we have the following:

	X	Y	Z
Expected Return	15	50	36
Variance of Return	100	750	336
S. D. of Returns	10	27.38	18

The co-variance and correlation co-efficient are calculated between two or more securities to indicate the similarity or dissimilarity of behavior of returns. Let us take the examples of securities X and Y.

Event	*Probability*	*Deviation of Return for X*	*Deviation of Return for Y*	*Product of Deviation*	*Prob. X Product*
a	0.10	–25	–60	1500.00	150.00
b	0.20	10	–40	–400.00	–80
c	0.50	5	40	50.00	25.00
d	0.20	–10	–10	50.00	10.00

Covariance = 10

$$\text{Correlation Coefficient} = \frac{\text{Covariance}}{\text{Standard Deviation of} \times \text{Multiplied by SD of Y}}$$

$$= \frac{200}{20 \times 27.38}$$

$$= 0.365$$

The value of correlation coefficient varies between –1 and +1. If the value is −1, then returns in the two securities are negatively correlated. If the value is O, there is no correlation and in case the value is +1, the return are positively correlated.

In order to reduce portfolio risk, securities having low or negative covariance should be chosen.

Capital Asset Pricing Model

The CAPM developed by William F Sharpe, John Linter and Jan Mossin establishes a linear relationship between the required rate of return of a security and its beta. Beta, as we know is the non-diversifiable risk in a portfolio. A portfolio's standard deviation is a good indicator of its risk. Thus if adding a stock to a portfolio increases its standard deviation, the stock adds to the risk of the portfolio. This risk is the un-diversified risk that can not be eliminated. Beta measures the relative risk associated with any individual portfolio as measured in relation to the risk of the market portfolio.

$$\text{Beta} = \frac{\text{Non-diversifiable risk of asset or portfolio}}{\text{Risk of market portfolio}}$$

Thus Beta is a measure of the non-diversifiable or systematic risk of an asset relative to that of the market portfolio. A beta of 1 indicates an asset of average risk. If beta is more than 1, then the stock is riskier than the market. On the other hand, if beta is less than one, market is riskier.

Mathematically, the equation of CAPM is given as under:

$$Rs\ (s) = Rf + b\ (Rm-Rf)$$

Where Rs = Expected return on the security
Rf = Risk Free return
Rm = Return from the market portfolio
B = Beta

The CAPM is based on a list of critical assumptions:

- Investors are risk averse and use the expected rate of return and standard deviation of return as appropriate measures of risk and return for their portfolio.
- Investors make their investments decisions based on a single period horizon which is the immediate next time period.
- Transaction costs are either absent or so low that these can be ignored.

— Assets can be bought and sold in any desired unit.

— The investor is limited by his wealth and the price of the asset only.

— Taxes do not affect the choice of buying assets.

— All individuals assume that they can buy the assets at the going market price and they all agree on the nature of the return and risk associated with each investment.

In the CAPM, the expected rate of return is equal to the required rate of return because the market is in equilibrium. The risk-less rate can be earned by investing in instruments like treasury bills. In addition to the risk free rate, investors also expect a premium over and above the risk free rate to compensate them for investing in risky assets since they are risk averse. Thus the required rate of return for the investors becomes equal to the sum of Risk-free rate and the risk premium.

The risk premium can be calculated as the product of Beta and market risk premium, i.e. difference between expected rate of return and risk-free rate of return.

LESSON ROUND-UP

- Investment may be defined as a conscious act on the part of a person that involves deployment of money in securities issued by firms with a view to obtain a target rate of return over a specified period of time.
- Investment is conscious act of deployment of money in securities issued by firms. Speculation also involves deployment of funds but is not backed by a conscious analysis of pros and cons.
- The main objective of security analysis is to appraise are intrinsic value of security.
- The Fundamental approach suggests that every stock has an intrinsic value which should be equal to the present value of the future stream of income from that stock discounted at an appropriate risk related rate of interest.
- Technical approach suggests that the price of a stock depends on supply and demand in the market place and has little relationship with its intrinsic value.
- Efficient Capital Market Hypothesis (ECMH) is based on the assumption that in efficient capital markets prices of traded securities always fully reflect all publicly available information concerning those securities.
- Performance of a company is intimately related to the overall economic environment of the country because demand for products and services of the company would under normal circumstances be directly related to growth of the country's economy.
- Industry level analysis focuses on a particular industry rather than on the broader economy.
- Down Jones theory shows that share prices demonstrate a pattern over four to five years and these patterns can be divided into primary, secondary and minor trends.
- Charts and Indicators are two major tools of Technical Analysis.
- Portfolio management refers to managing efficiently the investment in the

securities by professionals for both small investors and corporate investors who may not have the time and skills to arrive at sound investment decisions.

- Portfolio Analysis seeks to analyze the pattern of return emanating from a portfolio of securities.
- Risk means that the return on investment would be less than the expected rate. Risk is a combination of possibilities because of which actual returns can be slightly different or greatly different from expected returns.
- As per Markowitz Model, a portfolio is efficient when it yields highest return for a particular level of risk or minimizes risk for a specified level of expected return.
- According to Sharpe Index Model, return on a security is correlated to an index of securities or an index or an economic indicator like GDP or prices and the return for each security can be given by:

  $R = \beta I + \alpha + e$
- Capital Asset Pricing Model provides that if adding a stock to a portfolio increases its standard deviation, the stock adds to the risk of the portfolio. This risk is the un-diversified risk that can not be eliminated.

$$\text{Beta} = \frac{\text{Non - diversifiable risk of asset or portfolio}}{\text{Risk of market portfolio}}$$

SELF-TEST QUESTIONS

1. What is security analysis? Why do we need to carry it out?
2. Describe the nature of Indian Financial System.
3. What are the various techniques of security analysis?
4. Describe some techniques of Technical analysis.
5. Describe the Sharpe Index approach of Portfolio analysis.
6. Write a short note on expected return on a portfolio.

Suggested Readings:

(1) Portfolio Theory and Investment Management—*R. Dobbins & S.F. Witt*.

(2) Fundamentals of Financial Management — *James C. Van Horne*; Prentice Hall of India Pvt. Ltd., New Delhi.

(3) Investment Management—*Sinha, Hemlatha & Balkrishnan*; (IFMR) Madras.

(4) Finance Environment & Decisions—*George A. Christy Peyton Foster Roden*

(5) Specialised Financial Institutions—*Indian Investment Centre, New Delhi*.

(6) Financial Decision Making—*National Council of Applied Economic Research, New Delhi*.

(7) Financial Decision Making—*John J. Hampton*; Prentice Hall of India Pvt. Ltd., New Delhi.

(8) Financial Hand Book—*Joles I. Bogen*

(9) Management of Company Finance—*Samuel and Wilkies*; (Nelson 1982) Chap. 7.

(10) Investment Management; — *V.K. Bhalla*, S. Chand and Compnay Ltd., Ram Nagar, New Delhi.

(11) Financial Management—Theory and Practice—*Prasanna Chandra*; Tata McGraw Hill Company Limited, New Delhi.

(12) A Manual of Merchant Banking (Practice & Procedures)—*J.C. Verma;* Bharat Law House Pvt. Ltd., New Delhi.

(13) Investment Analysis and Portfolio Management—*Prasanna Chandra;* Tata McGraw Hill Publishing Company Limited, New Delhi.

STUDY VIII

FINANCIAL SERVICES

LEARNING OBJECTIVES

The object of the study is to enable the student to understand:

- Evolution process of Financial Services Industry
- Anatomy of Financial Services Sector
- Regulation of Financial Services Sector
- Merchant Bankers
- Mutual Funds
- Venture Capital Funds
- Loan Syndication
- Credit Rating
- Factoring Services
- Lease and Hire Purchase
- Real Estate Financing
- Real Estate Mortgages
- Depository Services
- Depository System in India

EVOLUTION PROCESS OF FINANCIAL SERVICES INDUSTRY

Role of Service Sector in Economic Development

It is now regarded as an ordinary insight into the process of economic development of nations that structural changes and economic growth are linked in two way relationship. Indeed, the process of economic development itself can be said to proceed along three main phases of structural evolution. In the first of these, the pro-industrial phase, agriculture provides the dominate means of livelihood. With the emergence of industrialisation a significant shift from the land occurs in order to man the new factories which in turn leads to a growth in urbanisation, as towns and cities develop around the centres of production. As the economies grow further, the focus of economic activities again shifts, this time with a relative decline in the importance of the secondary or manufacturing sector in line with corresponding increase in the importance of the services sector.

The Place of Financial Services Sector

As noted above the path of economic development exhibits a discernible trend movement from the production of goods to the provision of services. And the financial services field is in the forefront of this evolving trend. The hastened pace with which

financial sector reforms are being carried out the world over is a standing testimoney of the crucial role that this sector has to play in both the developed and the lesser developed economies.

Evolution of Financial Services Sector

While a developed financial system is a *sine quo non* for economic development via capital formation, it may be seen that the level of economic development too determines the efficacy of the financial system in effective capital formation. Indeed the development of the financial system in any economy may be discussed with reference to the following three situations: (a) Rudimentary Finance, (b) Direct finance, and (c) Indirect finance. The financial organisation in Rudimentary finance is characterized by the absence of any financial instruments of the saving-deficit units of their own which they can issue and attract savings. Direct finance represents an improvement over rudimentary finance in that the obstacles to procurement of finance by the saving-deficit-units are overcome by the introduction of financial assets/ instruments, other than money so that investment in physical assets would not be conditioned by the amount of savings of an economic unit. To meet the investment requirements it can issue financial assets in the form of 'primary' security or 'direct loan'. However, the limitation here is that in case investment requirements are large not only would it be difficult to locate saving-surplus units but also would it mean the inconvenience of negotiation of multiple loans. Indirect finance does away with this problem by transforming direct claims/primary securities into secondary securities via what is known as *'financial intermediation'*. Intermediate as they are between the ultimate borrowers and lenders they transform funds in such a way as to make them more attractive to the either party.

Spread of the equity cult saw the dawn of the era of *'dis-intermediation'* with both the borrowers and the lenders preferring a direct access to each other at the securities market. The need for investors protection brought about an era of re-intermediation with re-institutionalisation of personal savings via mutual funds and unit trusts.

The process of evolution of the financial system outlined above traces its development from one stand point i.e. provision of finance for accelerated economic development. More noteworthy is the shift of focus of the financial system from more intermediation to the provision of specific service packages for both commercial and personal financial needs. This shift marks the change from functional orientation to customer-orientation. Indeed the financial needs of both the personal and corporate clients have become so specialised and varied that it is not difficult to conceive emerging financial institutions as the departmental stores of financial services, a trend which has been aptly captured in the term 'financial conglomeration'.

Anatomy of Financial Services Sector

Financial services industry encompasses a considerable range and depth of activities and includes not only the traditional financial intermediaries such as commercial banks, insurance companies, mutual funds and unit trusts etc. but also the special purpose financial institutions or development banks, regulatory bodies and divisions and affiliates of non-financial firms which provide financial services such as loan, accepting deposits, transferring funds etc. In essence, it involves any service

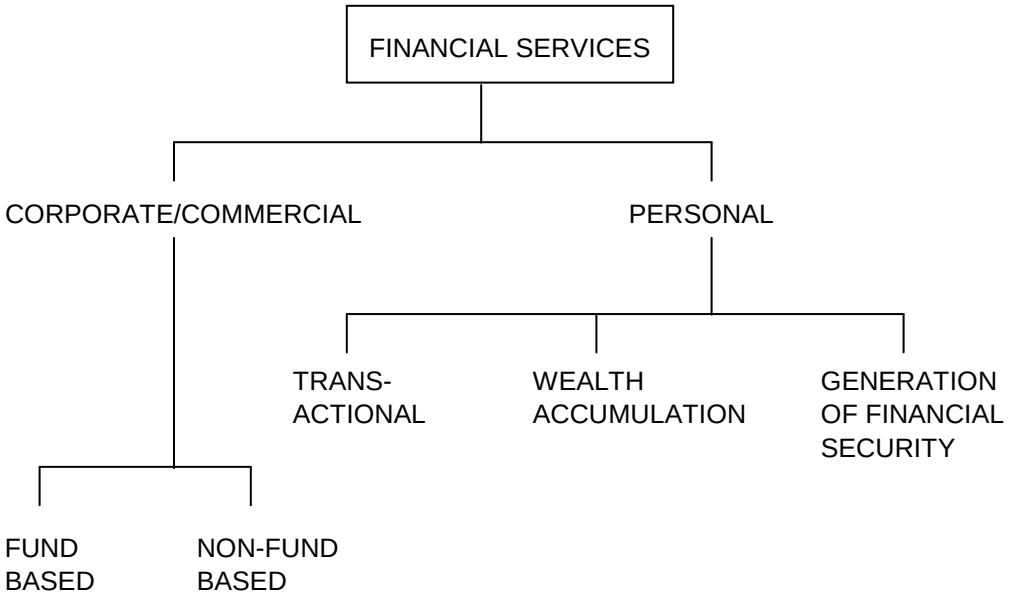
industry dealing in transactions of money based services and products.

Thus, while the major players of the financial services industry comprise of the financial intermediaries and institutions, what is new is their customer-orientation as manifested in provision of a wide spectra of services to commercial and personal finance segments. An illustrative, and by no means exhaustive, list of financial services would include: acceptances, brokerage, credit cards, credit information, credit rating, deposit acceptance, deposit insurance and other insurance, discounting and re-discounting, factoring, financial and performance guarantees, funds transfer, credit, hire purchase and instalment credit, leasing, loan syndicating, managing capital issues, merchant banking, portfolio management, refinancing, safe deposit vaults, stock holding, technical and economic consultancy, underwriting etc. The chart below illustrates the various financial services across the two major market segments, viz., the corporate/commercial financial services and the personal financial services:

Personal Financial Services

The personal financial services industry offers three basic, generic products and service benefits to individual savers, borrowers and investors:

1. Transactional products and services.



2. Wealth accumulation products and services.
3. Products and services generating financial security.

Transactional products and services range from bank cheque-book accounts through standing orders, direct debits and automatic teller machine (ATM) facilities to the provision of branded credit cards offering the facility of payment and housing and consumer loan. Wealth accumulation products and services revolve around savings which are represented by a diverse range of savings and deposit accounts, units,

investment in corporate securities etc.

Generation of financial security centre around pension/providend funds, insurance etc.

Corporate Financial Services

The financial needs of the Corporate/Commercial sectors are so varied, complex and large that these put a great demand on financial industry's expertise in effectively meeting them. Their needs may include:

(a) the need for money in short term, medium term and long term;

(b) the need to earn a return on money held in short term, medium term and long term;

(c) the need to move money domestically as well as internationally;

(d) the need to manage trading as well as non-trading risks;

(e) the need for information;

(f) the need for advice or expertise.

Speaking in terms of project-life cycle, financial services industry provide a variety of standardised as well as custom made products right from the 'drawing board' stage to its completion and further growth via internal expansion as well, as through acquisitions, merger and amalgamation. Most of the services needed by the corporate clients come under the umbrella of what is known as the English term 'merchant banking' as its American equivalent 'investment banking'. It may be noted here that merchant bankers are neither 'creator' of credit as are the Commercial banks nor are they 'purveyors' of credit as are Development banks; rather they offer a package of services ancillary to the promotion and development of the industrial projects which include corporate counselling, project advisory services, corporate restructuring, financial engineering, managing mergers/amalgamations and takeovers, managing the public issues, loan syndication, investment advisory services, funds management and portfolio management, acceptance credit and bill discounting etc. All these services are in a nature as to cater to the needs outlined above, but direct lending is not the concern of merchant bankers.

Thus, largely the corporate financial services sector retains its non-fund character. Its funds-based activities, however, include, leasing, hire-purchase, factoring, venture capital financing etc.

Regulation of the Financial Services Sector

The financial services sector until recently the world over has been regulated by a plethora of legislation. As the winds of liberalization are sweeping the real sectors of economies, de-regulation of this sector is also underway. Hence, the freeing of interest/exchange rates, increased competition among the providers of the financial services viz. freer entry, de-regulated capital markets etc. However, the approach followed in regard to financial liberalization the world over has been much more cautious than a policy of free rein. While it is being seen that the impediments and road block, towards the development of an efficient and vibrant financial sector are removed, it is also being increasingly recognized that some type of discipline is

necessary to varied interests of the different players at the financial services market place. Indirectly, it would be more appropriate to summarize the process of financial sector liberalization in terms of 're-regulation' rather than describing it as 'de-regulation'. Thus, 'prudential norms' rather than 'inhibitive control' is the watch word as far as regulation of this sector is concerned. It is in this spirit that the apparent contradiction between real-sector liberalisation and financial re-regulation should be viewed. Thus, a watch-dog body over the financial service sector is of prime necessity even in the wider context of de-regulation and liberalisation.

Merchant Bankers

Mobilisation of funds from the capital market by way of public issues/offers for sale of equity shares, preference shares, debentures, bonds and other innovative instruments is a task which almost all corporate enterprises find it difficult to manage on their own. Indeed the task is so complex and so specialised that the companies almost invariably contract out. Further, the success of public issues of capital is so crucial for corporate existence and image that by sheer necessity corporate clients look up to the financial services sector, especially the merchant bankers. Procurement of funds is not the end objective for which corporate efforts have to be hausted, principle of management by exception too suggests that corporate efforts and experience be utilised for the achievement of the objectives of the enterprise.

Narsimham Committee has considerable potential for the operation of merchant banks in the framework of deregulated industrial economy.

As far as new issue management in India is concerned, during the first half of the 1990s, the managing agents for a particular corporate house or group used to manage public issues and raise capital from the market with the help of stock brokers. With the abolition of managing agency system, the financial services sector has taken upon itself the task of providing public issues related services to its corporate clients. Merchant banking services started by National and Grindlays Bank in 1967, followed by first National City Bank in 1970 and State Bank of India in 1972 offering specialised new issue management. Subsequent period, too, witnessed substantial growth in public limited companies providing range of services. Besides, involvement of large number of agencies requiring co-ordinated approach and supervision, close competition for funds in capital market, increasing consciousness for public interest to protect investors and consequent stringency of legislation etc. necessitated for merchant bankers a definite role in management of public issues. Even in a de-regulated environment management of capital issues requires appointment of SEBI registered Merchant Bankers.

Broadly, the various services offered by merchant bankers include: corporate counselling; project Counselling and pre-investment studies; capital re-structuring; credit syndication and project finance; issue management and underwriting; portfolio management; non-resident investment counselling and management; acceptance credit and bill-discounting; advising on mergers, amalgamations and take-overs, arranging off-shore finance; fixed deposit brokering; and relief to sick industries.

Thus merchant bankers undertake the following activities:

(a) Managing of public issue of securities;

(b) Underwriting connected with the aforesaid public issue management

business;

(c) Managing/Advising on international offerings of debt/equity i.e. GDR, ADR, bonds and other instruments;

(d) Private placement of securities;

(e) Primary or satellite dealership of government securities;

(f) Corporate advisory services related to securities market including takeovers, acquisition and disinvestment;

(g) Stock broking;

(h) Advisory services for projects;

(i) Syndication of rupee term loans;

(j) International financial advisory services.

The Merchant banks were subject to two type of authority:

(i) SEBI sought to authorise and regulate all merchant banks on issue of capital and portfolio management.

(ii) RBI supervised those merchant banks which were subsidiaries or affiliates of commercial banks. If the merchant banks wants to raise deposits they would have to be subject to the guidelines of RBI.

The activities of the merchant bankers in the Indian capital market are regulated by SEBI (Merchant Bankers) Rules, 1992 and SEBI (Merchant Bankers) Regulations, 1992. While the rules were notified by the Central Government in exercise of the powers conferred by Section 29 of SEBI Act, 1992, the regulations were notified by SEBI in exercise of the powers conferred by Section 30 of SEBI Act, 1992 after approval of the Central Government.

Mutual Funds

Mutual funds are the institutions which provide small investors with avenues of investment in the capital market. Small investors generally do not have adequate time, knowledge, experience and resources for directly accessing the capital market and as such, they can rely on an investment intermediary which undertakes judicious investment decision and provides the consequential benefit of professional expertise.

The gross mobilization of resources by all mutual funds during 2006-07 stood at Rs. 19,38,493 crore compared to Rs. 10,98,149 crore during the previous year – an increase of 76.5 per cent over the year. Redemption also rose by 76.4 per cent to Rs. 18,44,508 crore in 2006-07 from Rs. 10,45,370 crore in 2005-06. The net mobilization of resources by all mutual funds stood at Rs. 93,985 crore in 2006-07 was the highest ever in a single year. Reflecting large mobilization of resources, the assets under management by all mutual funds increased to Rs. 3,26,292 crore at the end of March 2007 from Rs. 2,31,862 crore a year ago.

There were 755 mutual fund schemes as on March 31, 2007, of which, 450 were income/debt oriented schemes, 267 were growth/equity oriented schemes and the remaining 38 were balanced schemes. Investment objective-wise classification shows dominance of the open-ended schemes in India. As on March 31, 2007, 485 schemes were open-ended and 270 schemes were close-ended. The number of close ended schemes rose substantially from 47 in 2004-05 to 129 in 2005-06 and

further to 270 in 2006-07.

Advantages of Mutual Funds

The advantages of investing in a Mutual Fund are:

1. *Professional Management:* Investors avail the services of experienced and skilled professionals who are backed by a dedicated investment research team which analyses the performance and prospects of companies and selects suitable investments to achieve the objectives of the scheme.

2. *Diversification:* Mutual Funds invest in a number of companies across a broad cross-section of industries and sectors. This diversification reduces the risk because seldom do all stocks decline at the same time and in the same proportion. Investors achieve this diversification through a Mutual Fund with far less money than one can do on his own.

3. *Convenient Administration:* Investing in a Mutual Fund reduces paper work and helps investors to avoid many problems such as bad deliveries, delayed payments and unnecessary follow up with brokers and companies. Mutual Funds save investors time and make investing easy and convenient.

4. *Return Potential:* Over a medium to long term, Mutual Fund have the potential to provide a higher return as they invest in a diversified basket of selected securities.

5. *Low Costs:* Mutual Funds are a relatively less expensive way to invest compared to directly investing in the capital markets because the benefits of scale in brokerage, custodial and other fees translate into lower costs for investors.

6. *Liquidity:* In open ended schemes investors can get their money back promptly at net asset value related prices from the Mutual Fund itself. With close-ended schemes, investors can sell their units on a stock exchange at the prevailing market price or avail of the facility of direct repurchase at NAV related prices which some close ended and interval schemes offer periodically.

7. *Transparency:* Investors get regular information on the value of their investment in addition to disclosure on the specific investments made by scheme, the proportion invested in each class of assets and the fund manager's investment strategy and outlook.

Mutual funds are generally are of two types:

(i) *Open ended mutual funds:* An open ended mutual fund is a fund with a non-fixed number of outstanding shares, that stands ready at any time to redeem shares on demand. The fund itself buys back the shares surrendered and is ready to sell new shares. Generally the transaction takes place at the net asset value which is calculated on a periodical basis. The net asset value (Net Asset Value per share of the funds is total net assets after liabilities divided by the total number of share outstanding on a given day) of the mutual fund rises or falls as a result of the performance of securities in the portfolio at the stock exchanges.

(ii) *Close ended funds:* It is the fund where mutual fund management sells a

limited number of shares and does not stand ready to redeem them. The shares of such mutual funds are traded in the secondary markets. The requirement for listing is laid down to grant liquidity to the investors who have invested with the Mutual Fund. Therefore, close-ended funds are more like equity shares. Besides this, there are other types of mutual funds also to meet the investment needs of several groups of investors. Some of them include the following:

(a) *Income Oriented Fund:* The fund primarily offer fixed income to investors. Naturally enough, the main securities in which investments are made by such funds are the fixed income yielding ones like bonds and debentures.

(b) *Growth Oriented Funds:* These funds offer growth potentialities associated with investment in capital market namely: (i) high source of income by way of dividend and (ii) rapid capital appreciation, both from holding of good quality scrips. These funds, with a view to satisfying the growth needs of investors, primarily concentrate on the low risk and high yielding spectrum of equity scrips of the corporate sector.

(c) *Hybrid Funds:* These funds cater to both the investment needs of the prospective investors - namely fixed income as well as growth orientation. Therefore, investment targets of these mutual funds are a judicious mix of both the fixed income securities like bonds and debentures and also sound equity scrips. In fact, these funds utilise the concept of balanced investment management and are, thus, known as balanced funds.

(d) *High Growth Funds:* As the nomenclature depicts, these funds primarily invest in high risk and high return volatile securities in the market and induce the investors with a high degree of capital appreciation. Aggressive investors willing to take excessive risks are the normal target group of such funds.

(e) *Money Market Funds:* These funds invest in short-term debt securities in the money market like certificates of deposits, commercial papers, government treasury bills etc. Owing to their large size, the funds normally get a higher yield on such short term investments than an individual investor.

(f) *Tax Saving Schemes:* These schemes offer tax rebates to the investors under tax laws as prescribed from time to time. This is made possible because the Government offers tax incentive for investment in specified avenues. For example, Equity Linked Saving Schemes (ELSS) and pensions schemes.

(g) *Special Schemes:* This category includes index schemes that attempt to replicate the performance of particular index such as the BSE Sensex or the NSE-50 or industry specific schemes (which invest in specific industries) or sectoral schemes (which invest exclusively in segment such as ‘A Group shares or initial public offering).

(h) *Real Estate Funds*: These are close ended mutual funds which invest predominantly in real estate and properties.

(i) *Off-shore Funds:* Such funds invest in securities of foreign companies with RBI permission.

(j) *Leverage Funds*: Such funds, also known as borrowed funds, increase the size and value of portfolio and offer benefits to members from out of the excess of gains over cost of borrowed funds. They tend to indulge in speculative trading and risky investments.

(k) *Hedge Funds*: They employ their funds for speculative trading, i.e. for buying shares whose prices are likely to rise and for selling shares whose prices are likely to dip.

(l) *Fund of Funds*: They invest only in units of other mutual funds. Such funds do not operate at present in India.

(m) *New Direction Funds*: They invest in companies engaged in scientific and technological research such as birth control, anti-pollution, oceanography etc.

(n) *Exchange Trade Funds (ETFs)* are a new variety of mutual funds that first became available in 1993. ETFs have from rapidly and now hold nearly $80 billion in assets. ETFs are sometimes described as mere “tax efficient” than traditional equity mutual funds, since in recent years, some large ETFs have made smaller distribution of realized and taxable capital gains than most mutual funds.

Bottom up Investing: This is an investment strategy which considers the fundamental factors driving individual stock performance before considering the economic prospectus which affect the industry and within which the company operates.

Top down Investing: This is an investment strategy which first takes a view on the economy and then looks at the industry scenario to assess the potential performance of a company. This is opposite to Bottom up Technique.

(iii) *Equity funds* are considered aggressive in so far as higher capitalisation is sought. Investors should have a long term orientation, since companies shares give fluctuating dividends and offer benefits only in the long run through rights issue, bonus issue etc.

(iv) *Balanced funds* are considered moderate since investors seek growth and stability but with moderate risk. Such funds invest both in bonds and blue chip shares. While bonds give stable interest income, the share dividends will be fluctuated though in the long run, they may give larger benefits. The exact balance between the two asset classes namely - shares and bonds depends on the fund managers ability to take risk and his priority for return. The normal ratio between stocks and bonds is 55:45 but if the fund manager is aggressive he could choose a larger equity component.

(v) *Income funds* are regarded as conservative since investors want regular income and can not wait for more than short to medium term.

(vi) *Money market funds* are regarded as high liquidity oriented as investors attach more value for safety and liquidity.

(vii) *Sector funds* invest only in shares of companies belonging to a specific industry. These funds perform well so long as the industry or the sector is in the upswing, but the risk could be high, if the industry or the sector goes down.

Index fund schemes are ideal for investors who are satisfied with a return

approximately equal to that of an index. Sectoral fund schemes are ideal for investors who have already decided to invest in particular sector or segment.

Venture Capital

Venture Capital may be defined as a form of equity financing which is specially designed for funding high risk and high reward projects. It is direct investment in securities of new and unseasoned enterprises by way of private placement. It plays an important role not only in financing high technology projects but also helps to turn research and development into commercial production. Venture capital is also involved in fostering growth and development. In the West, especially, much of this capital is put behind established technology and expanding business or used to help in evolution of new management teams. The resources of venture capital in the west are mainly subscribed to by private sector pension funds, insurance companies and banks who are willing to devote a portion of their premium income and funds to the venture capital area. The amount of money put up by government bodies in this area is very small.

Venture capital is the capital that is invested in equity or debt securities (with equity conversion terms) of young unseasoned companies promoted by technocrats who attempt to break new path. It is a source of finance for new or relatively new, high risk, high profit potential products as the projects belong to untried segments or technologies. It is difficult for the promoters to obtain finance from conventional sources. The venture capitalists step-in to fill this gap. The venture capitalists are knowledgeable and sophisticated investors who come forward to face higher risks with the calculated hope of making much higher gains when the new projects succeed. They work on the theory that the greater the risk, the greater will be the profit. The success of a venture capital project depends on the care with which the projects are evaluated and selected for investment and the trust in the capabilities of the promoters in making a successs of their projects. Venture capitalists take faster decisions in appraising projects and releasing funds than Banks and FIs.

A Venture Capital Fund (VCF) thus strives to provide entrepreneurs with the support they need to create up-scalable business with sustainable growth, while providing their contributors with outstanding returns on investment, for the higher risks they assume.

Venture Capital Fund generally provides following services:

— Finance new and rapidly growing companies
— Typically knowledge-based, sustainable, up scaleable companies
— Purchase equity/quasi-equity securities
— Assist in the development of new products or services
— Add value to the company through active participation
— Take higher risks with the expectation of higher rewards
— Have a long-term orientation.

In India, venture capital scheme is of recent origin. In recent years, the moves to deregulate both industries and financial markets, coupled with the countrys' weak infrastructure and strong domestic market, have made this country ideal for formation of venture capital industry as a provider of development and risk capital prior to

listing.

The Government of India has issued guidelines from time to time for venture capital companies to encourage new technocrats. Under revised guidelines, dated 20.9.1995 the Government has allowed overseas venture capital investment in India with a view to augment the availability of venture capital in the country. Also, SEBI has issued SEBI (Venture Capital Funds) Regulations, 1996 and Foreign Venture Capital Investment Regulations, 2000.

Venture capital fund in the country was first started by IFCI. It sponsored the Risk Capital Foundation way back in 1975. This has since been converted into a company known as Risk Capital and Technology Corporation Ltd. with effect from 12.1.1988.

Venture capital funds have been promoted in India by both the private and public sector. Some of the examples are:

Private Sector

- India Investment Fund (ANZ Grindlays Bank)
- Credit Capital Venture Fund (India) Ltd.
- 20th Century Venture Capital Corporation Ltd.
- Indus Venture Capital Fund.

Public Sector

- Technology Development and Information Company of India Ltd. (TDICI promoted by ICICI)
- Industrial Development Bank of India (IDBI) Venture Capital Fund Division
- Risk Capital and Technology Finance Corporation (RCTC)
- Canfina Venture Capital Fund Division.

State Financial Institutions

- Gujarat Venture Finance Ltd.
- APIDC Venture Capital Ltd. (Promoted by Andhra Pradesh Industrial Development and Investment Corporation).

The ANZ Grindlays Bank raised resources from non-resident Indians through the India Investment Fund to concentrate on direct subscription to equity capital of companies going public. However, in the strictest of terms subscription to equity under such circumstances is virtually the last round of financing any project. This is in direct contrast to the greenfield investments, as the concept of Venture Finance is understood in the country. Venture financing in India is considered as financing of ventures preferably from the idea stage itself.

The instruments used for venture financing can broadly be categorised into:

- *Equity Share Capital:* Venture Capital firms take ownership position but there stake does not exceeds 49%. The venture capitalist holds the investment made for a prescribed minimum period. At the end of the period, it can divest

its holdings either through sale of its holdings to the promoter at a mutually agreed price or through offer of sale in the secondary markets.

- ☐— *Conditional Loan:* The conditional loan either carries a low or no interest. In case no interest is charged, the loan carries a charge linked to the level of sale generated by the project on commercialisation.
- ☐— *Income Notes:* Income notes are a combination of conventional and conditional loans.

The financing mix for each project is determined on the basis of such factors as the type of company (new or existing), contribution being made by promoters, the debt-equity ratio, the nature of the project being undertaken by the company and its project potential.

The problem areas facing the industry are:

- ☐— There is insufficient understanding of venture capital as a commercial activity;
- ☐— The support to the venture capital industry, by the government is inadequate;
- ☐— The exit options available to the venture capitalist are limited;
- ☐— Market limitations hinder the growth of venture capital industry; and
- ☐— The inadequacy of the legal framework for venture capital industry.

The industries in which operational funds have been deployed include medical applied research, electronic equipment for defence application, chemicals, foods and chemicals technology, software, biotechnology, drugs, cement, picture tubes, watches and dry docks etc.

Loan Syndication

It has been seen that the merchant bankers are neither creators of credit like commercial banks nor are they purveyors of credit like development banks. What they do is that they arrange/procure finance on request for the projects that come up for counselling. That is, in sequence of merchant banking services arrangement of finance comes next to project counselling. Otherwise too, after having decided the project to be undertaken, its implementation as a pre-requisite would require arrangement of funds that would involve,

(a) assessing the quantum and nature of funds required;

(b) locating the various sources of finance;

(c) approaching these sources with loan application forms and complying with other formalities etc.

Estimating capital requirements

Quantum of funds required to get the project going would depend upon an estimation of the cost of different items of expenditure particularly with reference to the following elements of cost:

(i) preliminary expenses covering cost of promotion, incorporation etc.;

(ii) cost of fixed assets covering acquisition of land, construction of building,

roads, railway siding, procurement of plant and equipment, furniture and fixtures or other miscellaneous fixed assets;

(iii) cost of current assets, particularly inventory, receivables etc.

(iv) cost of acquiring know-how covering expenses incurred on foreign or Indian technicians, training of personnel in India and abroad etc.;

(v) basis for provision of contingencies and margin money requirements for working capital;

(vi) cost of financing, brokerage, underwriting etc.;

(vii) any other element of cost likely to be incurred.

Some of the items like preliminary expenses etc. may not be relevant for established concern requiring funds for expansion, modernisation or diversification in which case costs of restructuring the business may become relevant.

It would always be advisable to compare these cost estimates with reference to similar concern in the same industry and in the same geographical area, of some size and scale of operation etc. Further, provision may also be made for likely escalation/inflation and the 'tolerance limits' for under/over estimation may also be provided for.

Other than estimating the quantum of funds required for financing the project an important aspect to be considered is to identify the nature of funds required, i.e. whether funds are going to be in the nature of venture capital, bridge loan, special purpose loan such as loans under special schemes for rehabilitation, modernisation, diversification expansion etc., concessional loans such as backward area finance etc. Likewise, besides determining the target capital structure, there would be a need to separately address to the requirements of short-term, medium-term and long-term finances.

Locating the various sources of finances

The choice for sources of fund would depend upon the quantum of funds required as well as nature thereof. For example, there are special schemes of development finance institutions for modernisation, expansion etc. in which case choice of sources of finance will be limited except making applications to the specified institutions under the designated schemes. Generally however, it would be better to survey the various sources of finance from two angles viz. (a) the period for which the funds are required, (b) nature of stake.

Sources of short-term funds are commercial banks, trade credit, public deposits, discount and finance houses etc.

Medium-term funds are provided on loan basis by,

(i) State Financial Corporations;

(ii) Commercial banks;

(iii) All Indian Finance Institutions through special schemes pertaining the equipment credit, suppliers' credit, buyers' credit, bill discounting, instalment credit, public deposits etc.

Where funds are needed for a period of more than five years, such finance is

termed as long-term finance. Owned funds are provided by promoters and public. Borrowed funds may be procured from all India and State level financial institutions. Long term funds may also be borrowed from international financing institutions where loan-syndication services can play an important role. While public offers of company's securities is beyond the purview of this financial service, loan syndication does cover private placement of debentures with investment institutions on behalf of the corporate issuer.

Loan Application

This is an important aspect of loan syndication which would include preparation of loan application, filing and following up the loan application with the financial institution and arranging the disbursal of the same. Adequate care has to be taken particularly with regard to the compliance of what are known as 'covenants' or the terms and conditions stipulated in the letter of intent/sanction, particularly with regard to security, conversion option etc. Other than these, the company has to ensure the compliance of the provisions of the Companies Act, especially those pertaining to powers of the company to borrow and other relevant legislations to be entitled for obtaining the disbursement of the amount of loan.

Syndication for working capital requirements

Here too, the services provided include not only the assessment of working capital requirements of the project but also the nature of advances provided by the commercial banks. For example, bank borrowings may comprise of two broad categories viz.,

(i) fund based advances consisting of cash credit facility, bill finance, overdraft facility, demand loan; and

(ii) non fund facilities consisting of letter of credit, letter of guarantee etc.

Here the merchant bankers will have to make necessary arrangements with regard to 'consortium finance' in cases where working capital requirements are very large. They are also required to ensure proper co-ordination between banks (especially the lead bank) and financial institutions in case a joint application for term loans and working capital finance is being furnished.

Credit Rating

Introduction

Credit worthiness both in terms of ability and willingness to honour one's financial commitment/responsibilities, has always been an important consideration in the loanable funds market. In direct finance the onus of appraisal falls upon the individual lenders whereas in indirect finance, financial intermediaries undertake this responsibility. However, in an era where recourse to capital market has virtually become inevitable with the companies competing with each other to attract not only local investors but global investors, the need for a financial service engaged in grading the instruments, issuers and the countries of origin merits hardly any exaggeration. It is in this context that credit rating financial services need to be understood:

A prospective investor would naturally like an assessment of risk involved in his

investment for enabling a proper evaluation of the risk-return trade-off. Factors such as lack of time, lack of knowledge of the process of security analysis, lack of quality information to rely on etc. further underline the need for an agency which would provide an unbiased judgement of risks underlying the investment proposal at hand. Moreover, capital markets the worldover are fraught with the dangers of the misdeeds of fly-by-night operators eroding not only their money but more importantly their faith in the operation of the corporate system.

The Concept: As is clear from the nomenclature of the term itself, credit rating refers to the rating (or assessment and gradation) of creditor-ship securities or debt-instruments, particularly with regard to the probability of timely discharge of payment of interest and repayment of principal obligations. The following description of credit rating as given by a few well-known rating agencies would further substantiate its meaning.

> "Rating are designed exclusively for the purpose of grading bonds according to their investment qualities. (Moody's Investor Services; 1984)"
>
> "Corporate or Municipal debt rating is a current assessment of the credit worthiness of an obliger with respect to specific obligations (Standard and Poor, 1984)"
>
> "A corporate credit rating provides lenders with a simple system of gradation by which the relevant capacities of companies to make timely repayment of interest and principal on a particular type of debt can be noted. (Australian Ratings, 1984)."

One may note that the above descriptions associate credit rating with gradation of debt securities. However, credit rating spans other instruments as well, through procedures adopted thereunder are particularly amenable to an appraisal of fixed income bearing securities (thus including preference shares). Further, it may involve customer as well as borrower rating. Figure 1 depicts to various types of credit ratings. That are usually done.

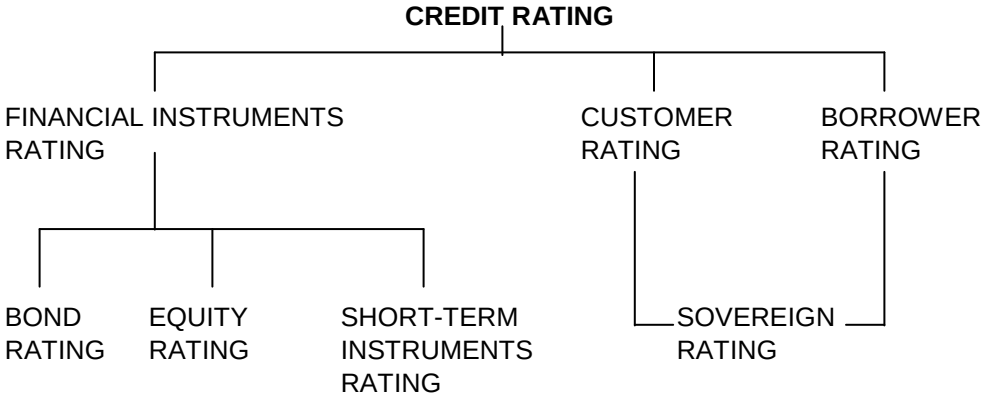


Figure 1: Types of Credit Rating

Bond rating includes evaluation and gradation of bonds or debt securities based by a corporate government or quasi government body, such as rating of debentures,

public sector bonds, municipal bonds etc. Equity rating refers to the rating of equity shares issued by a company. Short-term instruments rating refers to an appraisal of the investment worth of short-term debt instruments such as commercial papers. Customer rating involves an assessment of the credit worthiness of a customer to whom the credit scales are to be made. Borrower rating requires the determination of financial integrity of a borrower. If the customer or the borrower is a country, the evaluation of credit/investment worth of such a country is referred to as sovereign rating. Sovereign rating is also implicit in assessing the investment worth of global issues of capital by the corporate entitles/institutional funds.

Gradation of the instruments/customers/borrowers is demarcated using alphabetical/numeric/both symbols. For example, Standard and Poor's corporate and municipal debt rating definitions are as follows: AAA (Triple A), AA (Double A) for High Investment Grades; A, BBB (Triple B) for Investment Grades; BB (Double B), B, CCC (Triple C), CC for Speculative Grades, and D for in Default grades. The ratings from AA to CCC may be modified by the addition of a plus or minus sign to show relative standing within the major rating categories.

The Objectives. Credit rating aims to (i) provide superior information to the investors at a low cost; (ii) provide a sound basis for proper risk-return structure; (iii) subject borrowers to a healthy discipline, and (iv) assist in the framing of public policy guidelines on institutional investment. Thus, credit rating financial services represent an exercise in faith building for the development of a healthy financial system.

The Approaches to Credit Rating: As a technique for independent examination of the investment worth of financial securities as an input to investment decision-making, the process of credit rating usually involves use of one or more of (i) implicit judgemental approach; (ii) explicit judgemental approaches and (iii) statistical approach. While implicit judgemental follows ('beauty-contest' approach wherein a broad range of factors concerning promoter, project, environment and instrument characteristics are considered 'generally', explicit judgemental approach involves identification and measurement of the factors critical to an objective assessment of the credit/investment worthier of an instrument with a view to arriving at a numerical credit score or index. Statistical approach involves, assignment of weights to each of the factors and obtaining the overall credit rating score with a view to doing away with personal bias inherent in both explicit and implicit judgement.

CRISIL (Credit Rating Information Services of India Ltd.)

The Credit Rating Information Services of India Limited (CRISIL) set up in 1987 by ICICI, UTI, GIC and LIC heralded the era of credit rating in India. CRISIL commenced its operations in January 1988 and released its first rating in March 1988. The CRISIL has rated various instruments including bonds, non-convertible debentures, convertible debentures, debenture portion of equity-linked debentures, fixed deposits, preference shares, and commercial papers.

CRISIL assigns ratings after an assessment of a host of factors that could affect the credit worthiness of the borrowing company. The ratings are based on current information provided to CRISIL by the borrowing company or obtained by CRISIL from sources it considers reliable. Key factors considered are business analysis,

financial analysis, management evaluation and fundamental analysis.

ICRA (Investment Information and Credit Rating Agency of India Ltd.)

ICRA was floated by IFCI with other leading investment institutions commercial banks and other financial services companies. ICRA is engaged in Credit Assessment and General Assessment besides the usual debt-rating services. ICRA undertakes credit assessment of companies/undertakings intending to use the same for obtaining specific line of assistance from Commercial Banks, Financial/Investment Institutions, Factoring Companies and Financial Service Companies. The assessment indicates the broad opinion of ICRA as to the relative degree of capability of the company/Undertaking to repay the interest and principal as per the terms of the contract.

ICRA provides services of General Assessment at the request of Banks/Potential users of such General Assessment Reports. This service is likely to be useful for other non-banking, non-financial agencies for the purpose of merger, amalgamation, acquisition, joint venture, collaboration and factoring of debts etc.

CARE (Credit Analysis and Research Ltd.)

It is a third credit rating agency in India promoted in 1993 by IDBI jointly with Canara Bank, UTI, private sector banks and financial services companies. It started its operation in October, 1993. CARE basically offers following three type of services:

(i) *Credit Rating Services:* It provides credit rating of all types of debt instruments both short-term and long-term.

(ii) *Information Services:* It also plans to make available information on any company, industry or sector required by a business enterprise. CARE hopes this service will, in course of time, meet a clearly emerging need in the context of the liberalisation and deregulation of the capital market and the financial services industry.

(iii) *Equity Research Services:* This will involve extensive study of the shares listed and to be listed in the major stock exchanges, and identification of the potential winners and loser among them on the basis of the fundamentals affecting the industry market share, management capabilities, international competitiveness and other relevant factors.

Some of the major beneficiaries of CARE services, are investors, issuers of debt instruments, financial intermediaries, business parties, regulators etc.

CARE also undertakes Credit Analysis Rating of the company without reference to any particular instrument.

Rating is a search for long-term fundamentals and the probabilities for changes in the fundamentals. The analytical framework for CAREs rating methodology is divided into two interdependent segments. The first deals with operational characteristics and the second with financial characteristics. Besides quantitative and objective factors, qualitative aspects like assessment of management capabilities play a very important role in arriving at the rating for an instrument.

Fitch India

Fitch India is a 100% subsidiary of the Fitch Group. It is the only international

rating agency with a presence on the ground in India. Fitch India analysts have access to Fitch International's large global information network. Interacting with other areas of Fitch Ratings, such as the Sovereign, Structured Finance, Public Finance groups, enhances our analysts' insights into a global marketplace that is vast and evolving. We arrive at rating decisions in committees comprising senior management from Fitch International as well as sectoral specialists from Fitch India. This collaboration ensures a more comprehensive assessment as it profiles an entity's strategic initiatives, competitive position, financial performance and the overall dynamics of the industry in which it operates.

Fitch Ratings provides an opinion on the ability of an entity or of a securities issue to meet financial commitments, such as interest, preferred dividends, or repayment of principal, on a timely basis. These credit ratings apply to a variety of entities and issues, including but not limited to sovereigns, governments, structured financings, and corporations; debt, preferred/preference stock, bank loans, and counterparties; as well as the financial strength of insurance companies and financial guarantors.

Factoring Services

Introduction

Management of receivables has been one of the major aspects of working capital management besides cash and inventory management. As the accounts receivable amount to the blocking of the firm's funds, the need for an outlet to impart these liquidity is obvious. Other than the lag between the date of sale and the date of receipt of dues, collection of receivables involves a cost of inconvenience associated with tapping every individual debtor. Thus, if the firm could contract out the collection of accounts receivable it would be saved from many things such as administration of sales ledger, collection of debt and the management of associated risk of bad-debts etc.

Factoring is a type of financial service which involves an outright sale of the receivables of a firm to a financial institution called the factor which specialises in the management of trade credit. Under a typical factoring arrangement, a factor collects the accounts on the due dates, effects payments to the firm on these dates (irrespective of whether the customers have paid or not) and also assumes the credit risks associated with the collection of the accounts. As such factoring is nothing but a substitute for in-house management of receivables. A factor not only enables a firm to get rid of the work involved in handling the credit and collection of receivables, but also in placing its sales *in effect* on cash basis.

Origin

Factoring has a long and fascinating history and the word factor has its etymological origin in the Latin word "Facere" which means to make or do, i.e. to get things done. During 15^{th} and 16^{th} centuries, factors were appointed by manufacturers in England, France and Spain in order to arrange for sales and distribution of then goods in the colonies in the New World. The first credit factors in modern times were textile agents in the eighteenth century. Thus, the earlier factors used to provide services under marketing, distribution, administration and finance. From 1920s however the factors began to specialise in performing the credit and collection

function for their clients.

Definition and functions

"Factoring may be defined as a relationship between the financial institution or banker ('factor') and a business concern (the 'supplier') selling goods or providing services to trade customers (the customer) whereby the factor purchases book debts with or without recourse ('with a recourse' means that in the event of bad debts factor can approach the 'supplier') to the supplier and in relationship thereto controls the credit extended to the customers and administers the sales ledger of the supplier."

Though the purchase of book debts is fundamental to the functioning of factoring, there are a number of functions associated with this unique financial services. A proper appreciation of these functions would enable one to distinguish it from the other sources of finance against receivables. They are:

- ☐ — assumption of credit and collection function;
- ☐ — credit protection;
- ☐ — encashing of receivables;
- ☐ — collateral functions such as:
  - (a) loans on inventory,
  - (b) loans on fixed assets, other security and on open credit,
  - (c) advisory services to clients.

Factoring vs. Accounts Receivable Loans

Accounts receivable loan is simply a loan secured by a firm's accounts receivable by way of hypothecation or assignment of such receivables with the power to collect the debts under a power of attorney. In case of factoring however, there is an outright sale of receivables. Thus in case of the former, the bank may debit client's account for 'handling charges' if the debt turns out to be bad as against non-recourse factoring.

Factoring vs. Bill Discounting

Under a bill discounting arrangement, the drawer undertakes the responsibility of collecting the bills and remitting the proceeds to the financing agency, whereas under factoring agreement, the factor collects client's bills. Moreover, bill discounting is always with recourse whereas factoring can be either with recourse or without recourse. The finance house discounting bills does not offer any non-financial services unlike a factor which finances and manages the receivables of a client.

Mechanics of factoring

Factoring offers a very flexible mode of cash generation against receivables. Once a line of credit is established, availability of cash is directly geared to sales so that as sales increase so does the availability of finance. The dynamics of factoring comprises of the sequence of events outlined in figure.

(1) Seller (client) negotiates with the factor for establishing factoring relationship.

(2) Seller requests credit check on buyer (client).

(3) Factor checks credit credentials and approves buyer. For each approved buyer a credit limit and period of credit are fixed.

(4) Seller sells goods to buyer.

(5) Seller sends invoice to factor. The invoice is accounted in the buyers account in the factor's sales ledger.

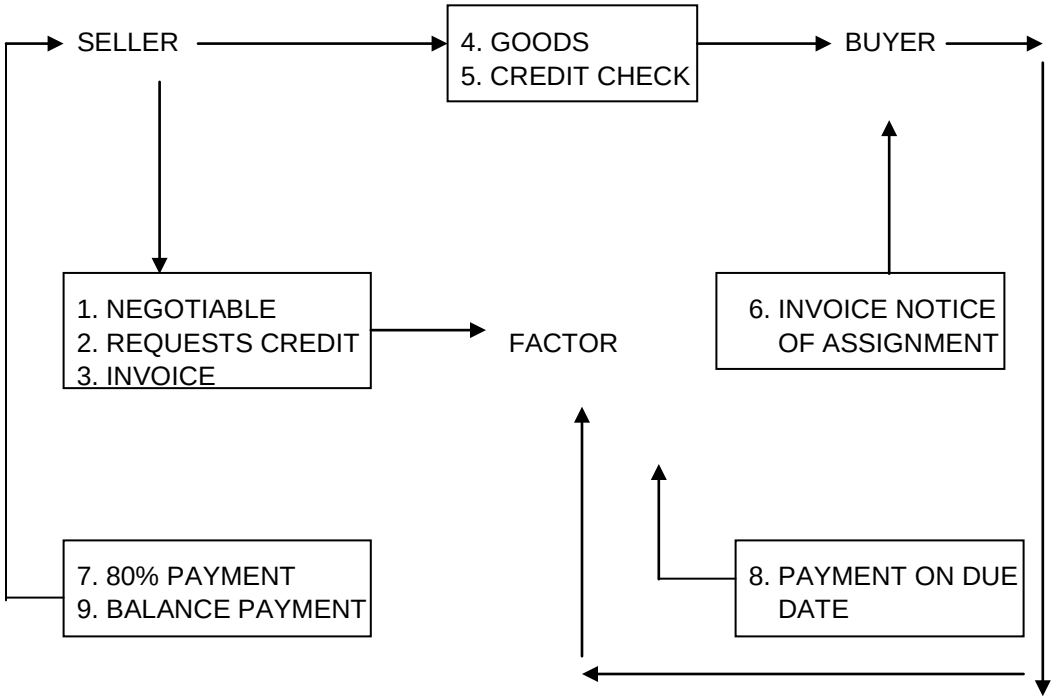


Figure: Mechanics of Factoring

Source: Ranjani Chari, 1991, Factoring in India, M.Phil, Dissertation, Delhi University.

(6) Factor sends copy of the invoice to buyer.

(7) Factor advices the amount to which seller is entitled after retaining a margin, say 20%, the residual amount paid later.

(8) On expiry of the agreed credit period, buyer makes payment of invoice to the factor.

(9) Factor pays the residual amount to seller.

Types of Factoring: Factoring services may be rendered to cover domestic as well as international sales. The various services offered by factors for domestic sales

are of six types whose essential characteristics are outlined in Table 1.

TABLE 1: Types of Factoring Services

Type of Factoring	*Type of Functions*					
	Avail-ability of Finance	*Pro-tection* against bad debts*	*Credit Advice*	*Sales Ledger Adminis - tration*	*Collec-tion*	*Disclo-sure Custo-mers*
Full Source (Non-Recourse)	Yes	Yes	Yes	Yes	Yes	Yes
Recourse Factoring	Yes	□—	Yes	Yes	Yes	Yes
Agency Factoring	Yes	Possible	□□—	No	No	Yes
Bulk Factoring	Yes	Possible	□□—	No	No	Yes
Invoice** Discounting	Yes	Possible	No	No	No	No
Undisclosed Factoring	Yes	Possible	No	No	No	No

***** Any form which includes this element may be referred to as 'non-recourse factoring'

****** Also referred to as confidential or non-notification factoring.

Source: Ranjani Chari-opcit. P. 28.

Leases and Hire Purchase

Introduction

Leasing and Hire Purchase are twin activities of non-banking finance companies. While in essence both those terms connote the idea whereby one party obtains the use of an asset, of course for a rental, without owning it, the distinguishing feature is that a contract of hire-purchase includes our option to purchase the underlying asset. However, the objective here is to present leasing as an important type of financial service.

The concept

The words 'leases', 'leasing' and 'lease financing' have different connotations. The word 'leases' is usually taken to refer to mean the object of leasing agreement. 'Leasing' is taken to mean the business of leasing, while lease financing is a term more for those who take assets on lease rather than those who give because it's a mode of financing only for the former.

In fact, lease is a special type of transaction-contractual arrangement under which the owner of the asset (movable or immovable property) allows its exclusive use by another party (lessee) over a certain period of time for some consideration (rentals). This definition gives rise to some of the important aspects of a lease:

(a) *Parties to lease:* There are two parties to a lease: the lessor and the lessee. In a special type of lease called leveraged lease, there is a third party – the financier. The financier is one who provides the whole or part of the finance needed for acquiring the asset. He is a banker to the lessor and has no privity with the lessee.

(b) *The Asset:* The subject-matter of lease is a tangible article/object, movable as well as immovable.

(c) *Term of lease:* Also called, the lease period, term of lease is the period for which the agreement of lease shall be in operation. It is necessary to have a certain period of lease and mere a general lease, i.e. a lease without a specified term is void. There cannot be a lease at will, but cancellation of lease by following a specific procedure may be provided for in the lease agreement. On the expiry of the lease period, the property reverts back to the lessor.

(d) *The rentals:* The rentals are the periodic (usually monthly) payments that form the consideration for the lease transaction. These rentals are towards the cost of the asset and in addition a reward for (i) allowing the use of the asset without paying the full purchase price, i.e. granting credit in effect (ii) partial bearing of obsolescence risk (iii) other administrative, legal expenses associated with a lease transaction. Further, in case of immovable property there may be a lump sum payment legally known as 'premium'.

Types of Leases

In literature it is usual to distinguish two types of lease categories viz., operating lease and finance lease. The classification is based on the extent to which the risks and rewards incidental to the ownership of the leased asset lie with the lessor or the lessee as may be seen from figure.

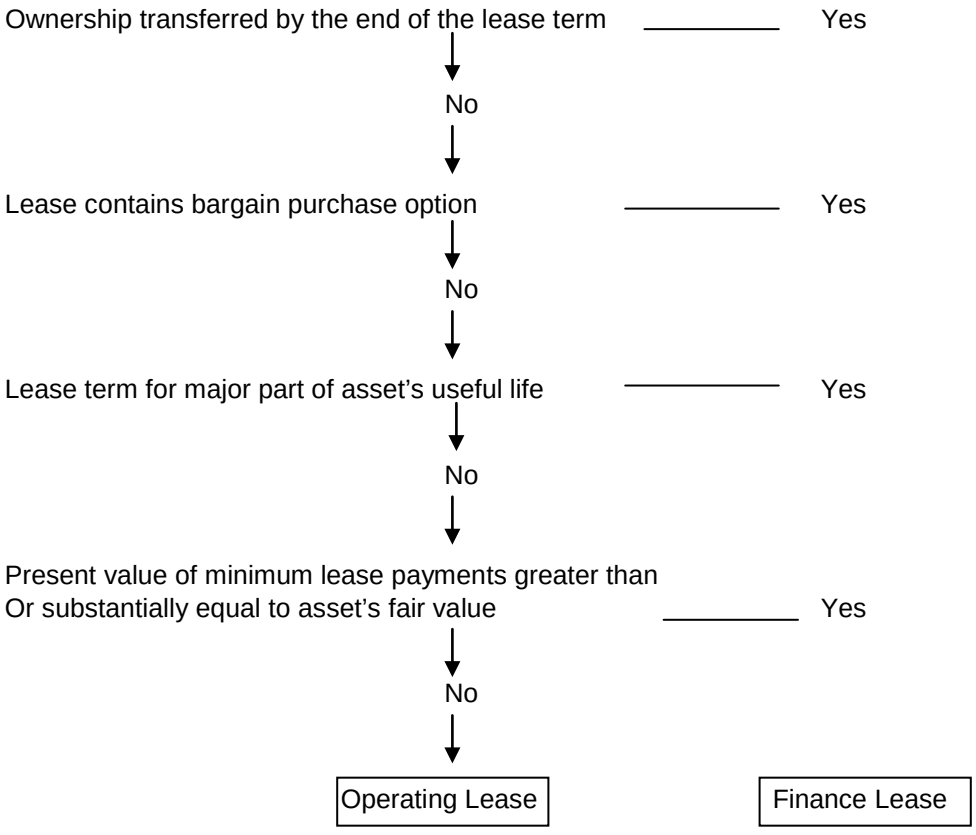


Figure: Operating and Finance Lease

Source: International Accounting Standard 17.

Finance Lease

Finance lease is a lease that transfers substantially all the risks and rewards incident to ownership. Title may or may not eventually be transferred. In a finance lease the lessor merely 'finances' the equipment/asset which the lessee is free to select, order, take delivery and maintain. The lessor arranges funding, accepts the invoice from the vendor/supplier and pays him. Thus lessor's interest in the asset is only by way of a titular ownership. However, the possession thereof may be claimed in case there is a default in payment of rentals by the lessee.

Finance lease, in turn, can be:

(a) *A tax-based financial lease:* It is a financial lease in which the terms, including the amount of rental payments and the existence of lessee options either to renew or purchase have been arrived at in order to maximize tax advantages to either or both the lessor and the lessee. Firms which pay little or no taxes and as such cannot utilise tax shields on depreciation and other capital allowances associate with the acquisition of capital equipments. It therefore, makes sense for such firms to lease the equipments from a leasing company, which can take advantage of the tax shields and pass on a part of the tax benefits in the form lease rentals.

(b) *A leverage lease:* It is a finance lease in which the lessor borrowed the majority of funds required to purchase the leased property from a bank or other lender. Thus, there are three parties to the lease transaction – the lessee, the lessor and the lender. This type of leases are popular in financing of assets which require larger capital outlays. From the lessee's point of view, however there is no difference between a leveraged lease and a non-leveraged lease except that in the case of the former, the lessee may be required to guarantee the debt incurred by the lessor.

(c) *Full payout lease*

(d) *Non-payout lease*

(e) *A cross-border lease:* It is a leveraged lease between a lessor who is national of a country other than that of the lessee. As such it may be an export or import lease.

(f) *An indirect international lease:* Here the lessor and the lessee both are nationals of the same country but the lessor is at least partially owned by financial firms of another country and generally leased property originates in a country other than that of a lessee.

*Operating Lease**

Whereas in financial lease, the lessor's role is primarily that of a financier and the

* Where a lease is a finance lease or operating lease depends upon the substance of the transaction rather than that on the form of the contract. The substance of finance lease is treated as 'purchase' of an asset whereas that of operating lease is treated as 'hire' of an asset.

lessee has transferred a major portion of the risks and rewards associated with the ownership of the asset, the operating lease has the following characteristics:

(1) the lessor himself selects and purchases the equipment and leases it out;

(2) the lease is for a shorter period as compared to finance lease;

(3) during the tenure of the lease, the lessor is responsible for insurance and maintenance of the asset;

(4) the lessor bears the risk of economic and functional obsolescence of the asset and has a continued interest in the leased equipment;

(5) the equipment cost is not fully amortised over the lease period. Of course the lessor can re-lease the equipment or may dispose it off at a profit (S.P. – Book Value at the end of the lease period);

(6) the lessee has the option to terminate the lease contract by notice;

(7) it involves higher payment of rentals for lessors obligations are not confined to mere financing but span over maintenance, repair and technical advice.

Operating lease can be 'specialised' in as much as the lessor specialises in a single equipment line and provides a variety of services. In 'simple' operating lease there is no such specialisation.

Operating lease can be 'dry' or 'wet' in as much as in the case of the former the lessee pays the executory costs connected with the leased asset like insurance, maintenance, repairs etc.

Lease Evaluation for Lessee: Leases provide an attractive financing proposition for meeting project costs and capital expenditure requirements of a business firm on several grounds:

(i) Leasing provides the firm with the long-term financing without diluting ownership or control or being subjected to rigorous obligations of debt-financing. It is flexible in as much as leases can be tailored to meet the various needs of the lessees.

(ii) Leases provide a hedge against risk or obsolescence and permits the firm to avoid the problems associated with the disposal of second hand equipment.

(iii) It can serve as a possible hedge against inflation in that burden of servicing a lease, like term loans, which entails a real term as the price level increases.

(iv) Leasing facilitates 100 per cent financing of the asset and as such frees firm's working capital for other uses.

(v) When a particular asset/equipment is required on a non-recurring basis or for a short period of time, leasing affords a great convenience.

(vi) While it is debatable, leasing leaves normal lines of credit undisturbed because of its 'off-balance sheet' nature.

On the other hand, there are some limitations of lease financing as well:

(i) Lessee is not entitled to the residual value of the asset and as such leasing can be disadvantageous for the assets whose values increase over time.

(ii) The firm may have to carry 'dead-weight' for cancellation of lease before the expiry of the lease period is difficult.

(iii) Apparently, at least, lease is a costlier source of finance, for the lessee has to pay for market cost of funds plus the lessor's margin.

While the non-quantitative factors discussed above will exert a strong bearing on the attractiveness of the leasing option for the lessee, it is essential that cost advantage/disadvantage of leasing over other alternative courses be determined. Here again, the classification of leasing arrangements into financial and operating lease will influence the nature of analysis used.

The lease *versus* borrow decision. The cost of leasing to the lessee is the sum of present value of the net cash outflows resulting from lease rentals. Like wise the cost of borrowing would be the discounted after-tax cost. A comparison between the two would indicate the efficacy of obtaining a financial lease.

Illustration: Suppose the firm in question is in the tax-bracket of 60 per cent and discounts its cash flows at 16 per cent. In the acquisition of an asset worth Rs. 1,000, it is given two offers: either to acquire the asset by taking a bank loan @ 15% p.a. payable after five years, or to lease-in the asset at yearly rentals of Rs. 324 for 5 years. Either instalment is payable at year end. Applicable rate of depreciation is 15% (w.d.v.).

Borrowing Option

(1)	(2)	(3)	(4)	(5)*	(6)**	***	
Year End	*Principal*	*Interest*	*Depre-ciation*	*Tax shield*	*Net Cash Flow*	*Dis-counting Factor*	*Dis-counted Cash Flow*
1	200	150.0	150.0	180.0	170.0	0.9	153.0
2	200	120.0	127.5	136.5	183.5	0.7	128.5
3	200	90.0	108.4	119.0	171.0	0.6	102.6
4	200	60.0	92.1	91.3	168.7	0.6	101.2
5	200	30.0	78.3	65.0	165.0	0.5	82.5
							567.8

***** 60 per cent of (3) + (4)

****** (2) + (3) □(5)

******* Rounded off to one place.

Lease in Option

Year End	*Rentals*	*Tax Shield*	*Net Cash Flow*	*Discounting Factor*	*Discounted Cash Flow*
1	324.0	194.4	129.6	0.9	116.6
2	324.0	194.4	129.6	0.7	90.7
3	324.0	194.4	129.6	0.6	77.8
4	324.0	194.4	129.6	0.6	77.8
5	324.0	194.4	129.6	0.5	64.8
					427.7

Thus, in the given cases, whereas the net effective cost to the buyer under the borrowing option is Rs. 567.8, the cost to the lessee under the leasing option would be much lower, i.e., Rs. 427.7, giving a cash advantage of Rs. 140.1.

Operating Lease – Lease or Buy Decision

A businessman considering the acquisition of a new piece of equipment which can be procured either by purchase or under an operating lease must decide whether to:

(i) maintain the status quo, i.e., not to accept the investment proposal at all, or

(ii) purchase the equipment (P), or

(iii) enter into an operating lease for the equipment (L).

The following decision rules may be employed:

(i) if NPV (P) is positive and also greater than NPV (L), purchase the asset.

(ii) if NPV (L) is positive and also greater-than NPV (P), lease the asset.

(iii) if NPV (P) as well as NPV (L) are negative, reject the proposal.

Illustration

Alfa-Greavert is considering the possibility of which costs Rs. 10 lakhs. This asset is expected to generate an annual revenue of Rs. 12 lakhs for 5 years which represents its economic life where after it would fetch salvage value of Rs. 1.5 lakhs. Costs (other than depreciation) which will be incurred to generate the projected revenues are expected to be Rs. 6 lakhs per year. The asset will be depreciated @ 33½% p.a. (w.d.v.). Applicable tax rate is 50 per cent and the cost of capital 12 per cent.

Alternatively, it may enter into an operating lease agreement with annual rental of Rs. 3 lakhs. The company considers a discount rate of 16 per cent appropriate to the leasing option.

Buying Decision

PV of outflows Rs. 10 lakhs.

PV of Inflows:

Year End	*Revenue (lakhs)*	*Costs (lakhs)*	*Dep. (lakhs)*	*PBT (lakhs)*	*PAT (lakhs)*	*CFDT (lakhs)*	*Dis-counting Factor*	*Dis-counted Cash Factor (lakhs)*
1	12	6	3.3	2.7	1.4	4.7	0.9	4.0
2	12	6	2.2	3.8	1.9	4.1	0.8	3.3
3	12	6	1.5	4.5	2.3	3.8	0.7	2.7
4	12	6	1.0	5.0	2.5	3.5	0.6	2.1

5	13.5	6	0.7	6.8	3.4	4.1	0.6	2.5
								14.6

NPV = 14.6 □10.0 = 4.6 lakhs.

Lease in Decision

Year End	*Revenue (lakhs)*	*Costs (lakhs)*	*Rental (lakhs)*	*PBT (lakhs)*	*PAT/ CFDT (lakhs)*	*Discounting Factor*	*Discounted Cash Factor (lakhs)*
1	12	6	3	3	1.5	0.9	1.4
2	12	6	3	3	1.5	0.7	1.1
3	12	6	3	3	1.5	0.6	0.9
4	12	6	3	3	1.5	0.6	0.9
5	12	6	3	3	1.5	0.5	0.8
							5.1

Even here lease in option appears at least marginally attractive.

Lease Evaluation for Lessor

In assessing the financial viability of a lease proposal, the lessor has to look at both the return and risk associated with it.

As far as lessor's return is concerned, usual capital budgeting techniques are used to evaluate the various decisions such as whether to accept a lease plan or not, or which plan among various alternatives to accept, or how to quote lease rates.

For assessing the return from a lease there is a need to define the lease-related cash flows. Here it is pertinent to mention that cash flow stream from lessor's point of view can not be different from the cash flow stream of the lessee except that the cash outflows of the lessee will constitute the inflows of the lessor. However, the lessor may use a different discount rate and may be in a different tax-bracket.

The lessors' inflows: The lessor's inflows from a financial lease shall be:

(a) lease rentals;

(b) security/initial deposit;

(c) salvage value at the termination of the contract;

(d) tax benefits on account of depreciation and investment allowance etc.

The lessor's outflows: These could be:

(a) initial outflow in purchase of the asset;

(b) financing costs (weighted average cost of capital);

(c) administrative charges;

(d) tax-outflows, including sales tax etc.

Having identified the cash flows from lessor's point of view, NPV (or other techniques) may be used as a decision criterion.

Illustration: A Personal Computer costs Rs. 1,00,000. The PC has a usable life of 5 years and has no salvage value. The leasing company discounts its cash flows at 15 per cent. Carry out financial analysis if it would be attractive for the company and to lease it out to its client at an annual rental of Rs. 40,000. The computer is depreciable @ 20% p.a. (SLM). The applicable tax rate is 50%.

Inflows:

(in Rs.)

Year end	*Lease Rentals*	*Depre-ciation*	*PBT*	*PAT*	*CFAT*	*PV factor*	*PV of CFAT*
1	40,000	20,000	20,000	10,000	30,000	0.9	27,000
2	40,000	20,000	20,000	10,000	30,000	0.8	24,000
3	40,000	20,000	20,000	10,000	30,000	0.7	21,000
4	40,000	20,000	20,000	10,000	30,000	0.6	18,000
5	40,000	20,000	20,000	10,000	30,000	0.5	15,000
6	40,000	20,000	20,000	10,000	30,000	0.5	15,000
	PV of Outflows						1,20,000
							1,00,000
						NPV	20,000

Since NPV is positive, it is advisable for the company to lease out the equipment. However, the above analysis is based upon several simplifying assumptions, violation of which may affect the financial analysis of leasing proposal. These are:

(i) financing costs are ignored.

(ii) it is presumed that the leasing company is not entitled to investment allowance.

(iii) impact of sales tax is ignored.

Another aspect of lease evaluation from lessor's point of view is the assessment of risk – the variability of NPV (or IRR etc.) around their expected values. Two major concerns of the lessor here are (a) the credit worthiness of the lessee and (b) the residual value of the equipment. And the return accruing from a lease transaction have to be carefully evaluated in terms of these two factors.

To conclude, it may be stated here that the evaluation of case discussed here is elementary and introductory. The purpose here has been to introduce the concept of leasing as a financial service. The focus has been on equipment leasing, though the concepts apply well even to real estate lease financing.

Distinction between an Operating Lease and Finance Lease

Some of the major points of distinction between two types of lease are presented in the following table.

	Operating Lease	*Financing Lease*
1.	An operating lease is a rental agreement where the lessee is	A finance lease is like a instalment loan. It is a legal commitment to pay

	committed to pay more than the original cost of equipment during contractual period.	for the entire cost of equipment plus interest over a specified period of time. The lessee commits to a series of payments which in total exceeds the original cost of the equipment.
2.	It provides for maintenances expenses and taxes by lessor.	It excludes the provisions for maintenance or taxes which are paid separately by the lessee.
3.	Leasing company assumes risk of obsolescence.	Lessee assumes the risk of obsolescence.
4.	Contract period ranges from intermediate to short-run.	Contract period ranges from medium to long run.
5.	Contract under this category are usually cancellable from either party is lessor or the lessee.	Contract under this category are cancellable.
6.	The financial commitment is restricted to regular rental payment.	The lease involves a financial commitment similar to loan by a leasing company. It places the lessee in a position of borrower.
7.	The lessor fulfils financial functions.	The lessor fulfils financial function.

Advantages of Leasing

Leasing offers several advantages: Some of these are listed as under:

(i) It permits alternative use of funds.

(ii) It permits firm to acquire assets cheaper and faster than any other source of finance.

(iii) It provides flexibility in the sense that lease rentals can be structured to match the lessee's cash flows.

(iv) It facilitates additional borrowings.

(v) It provides protection to the firm against obsolescence.

(vi) It is free from restrictive covenant which are usually included in debenture or loan agreement.

(vii) It enables a firm to acquire the use of an asset without having to make a down payment. So it is 100 percent financing to the lessee.

Disadvantages of Leasing

However, leasing is criticised on the following grounds:

(i) It is not suitable mode of finance.

(ii) In case of real assets, the lessee loses the advantages of a capital gain.

(iii) The cost of financing is generally higher than debt financing.

The Narasimham Committee on leasing and hire purchase companies, held the view that it is an important sector and recommended:

(i) A minimum capital requirement should be stipulated.

(ii) Prudential works and guidelines in respect of business should be laid down and

(iii) Supervision should be based on periodic returns by a verified supervisory authority.

Real Estate Financing

"The history of real estate financing presents a fascinating record of man's learning to live with, and enjoy the benefits of, the land he lives on". Except for those few who inherit real estate from their ancestors, arrangement of funds for owning a real estate is a problem. Indeed one desires real estate not only for occupancy and use but also as an investment outlet as it not only provide higher returns (fabulous Capital Gains) but also serves as inflation hedge. Moreover, there can be tax advantages associated with, for example, investment in agricultural land in India.

Instrument of financing

Two major instruments of real estate financing are mortgage loans/mortgages and real estate leases.

Real Estate Mortgages

Mortgages are instruments that convey real estate as security for debt. The debt is evidenced by a promissory note or bond representing a personal promise to repay. In some cases the mortgage conveys title to the lender with the provision that if the debt is paid according to the terms of the mortgage, the conveyance is void (a title or 'legal' or 'Enguse'/mortgage). In other cases ('equitable' or 'lien' mortgage) the mortgage gives no legal estate to the mortgagee, instead the borrower retains the title but creates a lien against the real estate in favour of the lender. It can be effected by a mere deposit of deeds (Transfer of Property Act, 1882) with intent to charge them as security or by writing under hand expressed to charge the real estate unaccompanied by the relative deeds or by a memorandum in writing creating a charge on the real estate accompanied by the deeds.

Mortgages are adapted to different types of real estate and vary according to the repayment plan and the purpose of the mortgage. *Term Mortgages* provide for periodic interest payments and the principal is repaid at the end of the term. If the principal is not repaid, at the end of the term, the lender might elect to grant another term mortgage and continue to collect interest on the original debt. *Amortized mortgages* provide for the repayment of the principal over the term of the mortgage. Here the interest is paid on the reducing balances of the principal. *Partially amortized mortgages* also termed as 'baloon mortgage' provide for principal repayment down to a given amount and then required a lump-sum payment for the balance of the principal.

Besides varying in the method of repayment, mortgages are adapted to different types of security and to alternative financing techniques. The legal rights of the borrower and the lender serve as another basis of mortgage classification.

Real Estate Leases

A lease conveys to the 'lessee' (tenant) the right to possess and use another's

property for a period of time. During this time, the 'lessor' (the land lord or fee owner) possesses a 'reversion' that entitles him to retake possession at the end of the lease period.

The tenant's right to occupy land is called a *lease hold estate*. There can be an *estate for years* having a specific starting time and a specific ending time and which can be of any length of time but is not automatically renewable; then there is a *periodic estate* which has an original lease period of fixed length that continually renews itself for like periods of time until the tenant or land lord acts to terminate it; in an *estate will*, the estate can be terminated by either party at any time; a *tenancy at sufferance* occurs when a tenant stays beyond his legal tenancy without the consent of the landlord – he differs from a trespasser only in that his original entry to the property was legal-and he can be evicted without a notice. In the USA two specific forms of real estate leases have emerged-*percentage leases*, and *index leases*. A percentage lease requires the lessee-tenant to pay a monthly base rental together with a percentage of his gross revenue above a certain minimum amount as additional rent. Indexed leases are different from the percentage leases not as a function of the increased lessee-revenue, but as a function of the increased lessor-costs via inserting an escalation clause in the lease deed.

Apart from own resources, there are a host of financial institutions engaged in real-estate funding. Infact, the Government itself is an important source of real estate finance. In Indian context, the following sources of finance may be relevant:

1. *State Housing Boards:* Generally, they function as large scale organisers of housing schemes, certain State Housing Boards however sanction long term loan to individuals for construction of houses on their own plots. In a few states, Housing Boards, in collaboration with commercial banks, collect periodically household savings and credit the individual account holders with a view to accumulating such deposits and using these for the purchase of plots and for construction of houses after a certain period of time. At the end of the stipulated period of time, the concerned bank would take over the total collection with accrued interest and advance a sum equivalent to three times the total collection.

2. *Loans from Employers:* Employers, especially in Public Sector create Trusts to help their employees in getting financial assistance for housing.

3. *Loans from Co-operative Housing Societies:* These societies construct houses for their members on a hire-purchase basis.

4. *Housing Development Finance Corporation Limited (HDFC):* This is an institutional facility for providing long-term finance for construction, purchase and ownership of residential houses and flats in India.

5. *Housing Schemes of Banks:* Several banks have opened special subsidiaries to provide housing loans, e.g. confine Homes.

6. *Life Insurance Corporation (LIC's) Scheme:* LIC operates various housing finance schemes such as, Own Yours House (OYH) Scheme, Own Your Apartment Scheme, Properly Mortgage Scheme. LIC has also opened up a subsidiary named LIC Housing Finance Ltd. offering such schemes as

Jeevan Nivas and Jeevan Kutir.

Thus, it may be seen that there are a variety of financial institutions and governmental agencies engaged in real estate financing. Besides, there are a host of informal mortgage lenders – called 'financiers' – who are also engaged in real estate counselling and finance.

Securitization of Mortgages

Introduction

A mortgage is a charge which a borrower gives to a lender upon a part or the whole of his property. As per the Transfer of Property Act, 1882 "a mortgage is the transfer of an interest in specific immovable property for the purpose of securing the payment of money advanced or to be advanced by way of a loan, an existing or future debt or the performance of an engagement which may give rise to a picuniary liability".* The person transferring the interest is called the *mortgagor*, the person to whom the *interest* is so transferred is called the *mortgagee* and the instrument, if any, by which the transfer is effected is called the *mortgage deed*. The transaction itself is called a *mortgage* or a mortgage transaction.

In a mortgage transaction, therefore, a lender makes a loan to the borrower against the transfer of an interest in an immovable property, collects re-payment of interest and principal. In the event of default the lender seeks to take possession of the property. Thus, lender's interest in the mortgage generally is confined to the collection of interest and eventual collection of the principal amount lent and as such mortgage is an asset which he has to hold for, generally, a long period of time against which no 'liquidity' is available. Of course, the lender having made a loan this way may sell the mortgage to another institution wishing to hold it, but then the secondary market for mortgages is far from developed. It is in this context that a forceful trend toward securitization – conversion of non-tradeable assets into tradeable securities – should be viewed.

The Concept: In securitization the loan itself is not sold to another lender but rather a security instrument is created backed by the principal and interest payments on the loan. In a study by John Henderson and Jonathan Scott *Securitisation*, Woodhead Faulkner, Securitization has been defined as follows:

"The process which takes place when a lending institution's assets are removed in one way or another from the balance sheet of that lending institution and are funded instead by investors who purchase a negotiable financial instrument evidencing the indebtedness, without recourse (or in same cases with limited recourse) to the original lender."

Through this means the beneficial ownerships of the loan is effectively transferred. The purchaser of the loan assumes the risk in the event of loan default, and the lender removes the risk from its balance sheet. Once securitization has taken place, then the securities themselves can be traded in a secondary market. To the borrowers, securitisation does not matter for what they get is loan and to them it makes no difference as to who holds the claim.

* G.S. Lall, Encyclopedia of Banking Terminology, Lallson Publishers, New Delhi.

Securitization of mortgages began in the United States at the end of the 1970s. The various government agencies such as the Government National Mortgage Association (GNMA, 'Ginnie Mae') which is a part of the Department of Housing and Urban Development, the Federal National Mortgage Association (FNMA, 'Fannie Mae') and the Federal Home Loan Mortgage Corporation (FHLMC, Freddie Mac, or the Mortgage Corporation).

Thus it may be seen that, securitization is an important financial service in response to the premium for liquidity that characterizes capital market financing as against bank lending – disintermediation, a trend that was discussed right at the outset of this lesson.

Instruments: In USA, securitisation of mortgages takes place through the route of 'pass-through securities', derivative mortgage securities (DMSs), collateralized mortgage obligations (CMOs), stripped securities, senior/subordinate securities and real estate mortgage investment conduits (REMICs).*

Pass-through securities represent ownership interests in a pool of mortgages, guaranteed either by a federal agency (GNMA) or a federally chartered private body (FNMA or FHLMC). Such securities acquire their name because principal and interest cash flows accruing to the mortgagee 'pass through' to the ultimate owners of the securities.

DMSs involve a restructuring of the cash flows from an underlying mortgage pool. Usually they are backed by pass-through securities and as such represent securities whose increased income flows are 'derived' from the flows of a prior pool of mortgages. The repackaging is designed to cater for different investor preference for risks and returns.

CMOs are designed to break up the income flows from mortgage pools by issuing securities based on mortgage pool as collateral. A CMO has a sequential structure, which means that bonds of different effective maturities can be derived from the same mortgage pool. Freddie Mac, in conjunction with its investment bankers, invented CMOs in the early 1980s.

Stripped securities introduced in 1986 provides for allocation of principal and interest payments from an underlying mortgage pool separately or in any combination to a set of securities.

Senior/subordinate are securities representing senior and subordinate interests in mortgages. The risk and hence the yield on subordinate interest exceeds that of the senior interest.

REMICs are a tax advantaged vehicle for holding mortgaged assets and issuing mortgaged backed securities (MBSs). REMIC sponsors have unlimited flexibility in determining the legal and financial form it takes.

Depository

The Indian stock markets have grown so sharply in the 1980s that the decade itself has been christened as the decade of the capital market. The extent of growth

* See, Michael Ball, Under One Roof, New York, Harvester-Wheatsheed.

can easily be measured by the fact that as against the number of listed companies, the daily turnover in Indian Stock Markets, the number of shareholders, number of listed companies, daily turnover and market capitalisation.

The unprecedented growth of the Indian Stock Markets has resulted in this markets becoming a major market in the emerging stock markets of the world, next only to Taiwan and Korea, both in respect of market capitalisation and turnover.

The systems being used to perform the *registration, clearing and settlement* functions have all come under severe strain as trading has reached present levels. The current procedures for handling individual scrips and transfer deeds in marketable lots, has the entire securities market in a paper-work gridlock that poses the most serious obstacle to the growth of the markets.

This sudden growth has also served to magnify disproportionately the systematic risks that have always plagued the Indian system. Counterparty risk, credit risk, bad deliveries, long delayed deliveries, counterfeit scrips, forged certificates are all at alarmingly high levels. While no market can completely eliminate risk, there is little justification for any market participant to tolerate the kinds of systemic risk prevalent in India today; far less for international investment institutions and fund managers seeking opportunities in developing countries.

To address these problems, the Ministry of Finance initiated for the creation and implementation of computerised system to establish a framework for national clearing, settlement and depository services.

Depository System in India

A depository is an organisation, which assists in the allotment and transfer of securities, and securities lending. The shares in a depository are held in the form of electronic accounts, i.e., in dematerialised form and the depository system revolves around the concept of paper-less or scripless trading. An effective and fully developed securities depository system is essential for maintaining and enhancing the market efficiency, which is one of the core characteristics of a mature capital market. In March 1989, the 'Group of Thirty' had emphasised the importance of a central depository by highlighting the adverse effect on global investment brought about by the inefficiencies of international settlement and clearing facilities in their report on "Clearance and Settlement Systems in the World's Securities Markets". The depository and custodial service is one of the key ingredients of the developed markets like Japan, UK and the USA. Some of the developing countries like Korea, Hong Kong, Malaysia, Shri Lanka, Taiwan and Thailand have also set up depository systems. The depository system provides a wide range of services viz., primary market services, secondary market services and ancillary services. In the case of primary market services, the depository through its participants works as a link between issuers and prospective shareholders. In the secondary market, the depository through participants acts as a link between the investor and clearing house of the exchange to facilitate settlement of the security through book-keeping entries. Further, the depository can provide ancillary services like collecting dividends and provide ancillary services like collecting dividends and interest and reporting corporate information.

In India, the need for setting up a depository was realised after the large-scale

irregularities in securities transactions of 1992 exposed the limitations of the prevailing settlement system. The need for depository system was also realised for the healthy growth of primary market, which would reduce the time between the allotment of shares and transfer of entitlements arising out of each allotment. As India has a large number of listed companies involving a massive amount of paper work, there have been associated problems of wrong/forged signatures, stolen shares, forged/fake certificates etc., which pose a threat to the security of investment. The idea of setting up a depository and the introduction of scripless trading and settlement were thus conceived for improving the efficiency of the markets and eliminating the various problems associated with dealings in physical certificates. A depository system benefits the investing public, the issuers of securities, the intermediaries and the nation as a whole.

The move on depository system in India was initiated by the Stock Holding Corporation of India Limited (SHCIL) in July 1992 when it prepared a concept paper on “National Clearance and Depository System” in collaboration with Price Waterhouse under a programme sponsored by the U.S. Agency for International Development. Thereafter, the Government of India constituted a Technical Group under the Chairmanship of Shri R. Chandrasekaran, Managing Director, SHCIL, which submitted its Report in December 1993. The Securities and Exchange Board of India (SEBI) constituted a seven-member action squad subsequently to discuss the various structural and operational parameters of Depository System. Considering the various problems and issues, the Government of India promulgated the Depositories Ordinance in September 1995, thus paving the way for setting up of depositories in the country. The Depositories Act was passed by the Parliament in August 1996, which lays down the legislative framework for facilitating the dematerialisation and book entry transfer of securities in a depository. The Act provides that a depository, which is required to be a company under the Companies Act, 1956, and depository participants (i.e. agents of the depository) need to be registered with SEBI. The depository shall carry out the dematerialisation of securities and the transfer of beneficial ownership through electronic book entry. The investors, however, have the option to hold securities in physical or dematerialised form, or to rematerialise securities previously held in dematerialised form. SEBI issued a consultative paper No. X on the draft regulations for depositories and participants in October 1995 for wider consultation and notified the regulations in May 1996, which inter alia , cover the norms for registration of depositories and participants, the eligibility criteria for admission of securities to a depository, the specific rights and obligations of depositories, participants and issuers, the periodic reports to and inspections by SEBI. The Depository Related Laws (Amendment) Ordinance, 1997 issued in January 1997 enabled units of mutual funds and UTI, securities of statutory corporations and public corporations to be dealt through depositories.

The National Securities Depository Limited (NSDL), the first depository in India which has been promoted by three premier institutions in India viz. IDBI, UTI and NSE, started operating from November 8, 1996. NSDL carries out its operations through participants and the clearing corporation of the stock exchange, with participants acting as market intermediates through whom NSDL interacts with the investors and the clearing members. To begin with only the capital market segment of the National Stock Exchange of India Limited (NSE) has been associated with the NSDL as only the NSE has a clearing corporation (NSCCL), which guarantees

performance of trade obligations and has been admitted into the depository. The National Stock Exchange has also set up clearing corporation limited which acts as a counter party to every trade executed on the capital market segment of exchange.

Depository System - An overview

The Depository System functions very much like the banking system. A bank holds funds in accounts whereas a Depository holds securities in accounts for its clients. A Bank transfers funds between accounts whereas a Depository transfers securities between accounts. In both systems, the transfer of funds or securities happens without the actual handling of funds or securities. Both the Banks and the Depository are accountable for the safe keeping of funds and securities respectively.

In the depository system, share certificates belonging to the investors are to be dematerialised and their names are required to be entered in the records of depository as beneficial owners. Consequent to these changes, the investors' names in the companies' register are replaced by the name of depository as the registered owner of the securities. The depository, however, does not have any voting rights or other economic rights in respect of the shares as a registered owner. The beneficial owner continues to enjoy all the rights and benefits and is subject to all the liabilities in respect of the securities held by a depository. Shares in the depository mode are fungible and cease to have distinctive numbers. The transfer of ownership changes in the depository is done automatically on the basis of delivery v. payment.

In the Depository mode, corporate actions such as IPOs, rights, conversions, bonus, mergers/amalgamations, subdivisions & consolidations are carried out without the movement of papers, saving both cost & time. Information of beneficiary owners is readily available. The issuer gets information on changes in shareholding pattern on a regular basis, which enables the issuer to efficiently monitor the changes in shareholdings.

The Depository system links the issuing corporates, Depository Participants (DPs), the Depositories and clearing corporation/ clearing house of stock exchanges. This network facilitates holding of securities in the soft form and effects transfers by means of account transfers.

Following presentation about depositories reveal all about depositories, its concepts and trading, i.e. models of depositories, Depository functions, Legal linkage, depository participant, Registrars and issuers, dematerialisation, rematerialisation, electronic credit in new issues, trading system, corporate action—

Models of Depository

— *Immobilisation* – Where physical share certificates are kept in vaults with the depository for safe custody. All subsequent transactions in these securities take place in book entry form. The actual owner has the right to withdraw his physical securities as and when desired. The immobilization of fresh issue may be achieved by issuing a jumbo certificate representing the entire issue in the name of depository, as nominee of the beneficial owners.

— *Dematerialisation* – No Physical scrip in existence, only electronic records maintained by depository. This type of system is cost effective and simple

and has been adopted in India.

Dematerialisation

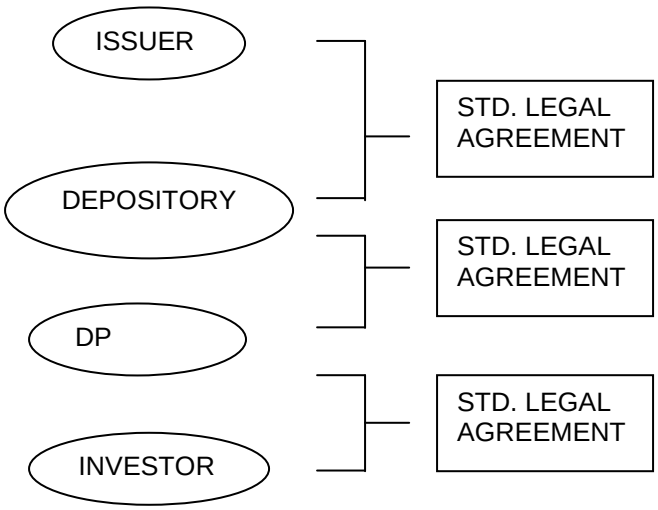
Dematerialisation is a process by which the physical share certificates of an investor are taken back by the Company and an equivalent number of securities are credited his account in electronic form at the request of the investor. An investor will have to first open an account with a Depository Participant and then request for the dematerialisation of his share certificates through the Depository Participant so that the dematerialised holdings can be credited into that account. This is very similar to opening a Bank Account.

Dematerialisation of shares is optional and an investor can still hold shares in physical form. However, he/she has to demat the shares if he/she wishes to sell the same through the Stock Exchanges. Similarly, if an investor purchases shares from the Stock Exchange, he/she will get delivery of the shares in demat form.

Depository Functions

- Account opening
- Dematerialisation
- Rematerialisation
- Settlement
- Initial Public Offers (IPO's) corporate benefits
- Pledging

Legal linkage



Depository Participant

Just as a brokers act an agent of the investor at the Stock Exchange; a Depository Participant (DP) is the representative (agent) of the investor in the depository system providing the link between the Company and investor through the

Depository. The Depository Participant maintains securities account balances and intimate the status of holding to the account holder from time to time. According to SEBI guidelines, Financial Institutions like banks, custodians, stockbrokers etc. can become participants in the depository. A DP is one with whom an investor needs to open an account to deal in shares in electronic form. While the Depository can be compared to a Bank, DP is like a branch of that bank with which an account can be opened. The main characteristics of a depository participant are as under:

- Acts as an Agent of Depository
- Customer interface of Depository
- Functions like Securities Bank
- Account opening
- Facilitates dematerialisation
- Instant transfer on pay-out
- Credits to investor in IPO, rights, bonus
- Settles trades in electronic segment

Registrar/Issuer

- Dematerialisation
- Confirmation of Beneficiary Holdings
- Corporate Actions – Rights, Bonus, etc.
- Reconciliation of Depository Holdings
- Rematerialisation

Dematerialisation

- Investor opens account with DP
- Fills Dematerialisation Request Form (DRF) for registered shares
- Investor lodges DRF and certificates with DP
- DP intimates the Depository
- Depository intimates Registrar/Issuer
- DP sends certificates and DRF to Registrar/Issuer
- Registrar/Issuer confirms demat to Depository
- Depository credits investor a/c

Rematerialisation

- Client submits Rematerialisation Request Form (RRF) to DP
- DP intimates Depository
- Depository intimates the Registrar/Issuer
- DP sends RRF to the Registar/Issuer

— Registrar/Issuer prints certificates and sends to Investor

— Look-in should be retained

— Registrar/Issuer confirms remat to Depository

— Investor's account with DP debited

Electronic Credit in New Issues

— Investor opens account with DP

— Submits application with option to hold securities in depository giving DP-Id and Client-Id

— Registrar uploads list of allottees to Depository

— Depository credits allottee's account with DP

— Refunds sent by Registrar as usual

Trading System

— Separate quotes in Book Entry

— Trading Member to have Clearing Account with DP

— Settlement as per Settlement Calendar of Stock Exchange

— Trading can be introduced in any Stock exchange if settlement is guaranteed

Corporate Actions

— Dividends/cash benefits – these benefits are directly forwarded to the investors by the company or its registrar and transfer agent.

— Non-cash benefits, viz. Bonus, Rights Issue, etc. – these benefits are electronically credited to the beneficial owner's account through Depository.

Benefits of depository system

In the depository system, the ownership and transfer of securities takes place by means of electronic book entries. At the outset, this system rids the capital market of the dangers related to handling of paper. The system provides numerous direct and indirect benefits, like:

Elimination of bad deliveries – In the depository environment, once holdings of an investor are dematerialised, the question of bad delivery does not arise i.e. they cannot be held "under objection". In the physical environment, buyer of shares was required to take the risk of transfer and face uncertainty of the quality of assets purchased. In a depository environment good money certainly begets good quality of assets.

Elimination of all risks associated with physical certificates – Dealing in physical securities have associated security risks of theft of stocks, mutilation of certificates, loss of certificates during movements through and from the registrars, thus exposing the investor to the cost of obtaining duplicate certificates and advertisements, etc. This problem does not arise in the depository environment.

Immediate transfer and registration of securities – In the depository environment, once the securities are credited to the investors account on pay out, he becomes the

legal owner of the securities. There is no further need to send it to the company's registrar for registration. Having purchased securities in the physical environment, the investor has to send it to the company's registrar so that the change of ownership can be registered. This process usually takes around three to four months and is rarely completed within the statutory framework of two months thus exposing the investor to opportunity cost of delay in transfer and to risk of loss in transit. To overcome this, the normally accepted practice is to hold the securities in street names i.e. not to register the change of ownership. However, if the investors miss a book closure the securities are not good for delivery and the investor would also stand to loose his corporate entitlements.

Faster disbursement of non cash corporate benefits like rights, bonus, etc. – Depository system provides for direct credit of non cash corporate entitlements to an investors account, thereby ensuring faster disbursement and avoiding risk of loss of certificates in transit.

Reduction in brokerage by many brokers for trading in dematerialised securities – Brokers provide this benefit to investors as dealing in dematerialised securities reduces their back office cost of handling paper and also eliminates the risk of being the introducing broker.

Reduction in handling of huge volumes of paper and periodic status reports to investors on their holdings and transactions, leading to better controls.

Elimination of problems related to change of address of investor, transmission, etc. – In case of change of address or transmission of demat shares, investors are saved from undergoing the entire change procedure with each company or registrar. Investors have to only inform their DP with all relevant documents and the required changes are effected in the database of all the companies, where the investor is a registered holder of securities.

Elimination of problems related to selling securities on behalf of a minor – A natural guardian is not required to take court approval for selling demat securites on behalf of a minor.

LESSON ROUND-UP

- Various services offered by merchant bankers include: corporate counseling; project Counseling and pre-investment studies; capital re-structuring; credit syndication and project finance; issue management and underwriting; portfolio management; non-resident investment counseling and management; acceptance credit and bill-discounting; advising on mergers, amalgamations and take-over, arranging off-shore finance; fixed deposit brokering; and relief to sick industries
- Mutual funds are the Institutions which provide small investors with avenues of investment in the capital market. They can rely on an investment intermediary which undertakes judicious investment decision and provides the consequential benefit of professional expertise.
- Venture Capital may be defined as a form of equity financing which is specially designed for funding high risk and high reward projects. It plays an important role in financing high technology projects, research and development of commercial production.

- Credit Rating refers to the rating (or assessment and gradation) of creditor-ship securities or debt-instruments, particularly with regard to the probability of timely discharge of payment of interest and repayment of principal obligations.
- Factoring is a type of financial service which involves an outright sale of the receivables of a firm to a financial institution called the factor which specializes in the management of trade credit.
- Finance lease is a lease that transfers substantially all the risks and reward incident to ownership.
- Operating Lease is a rental agreement where the lessee is committed to pay more than the original cost of equipment during contractual period.
- Term mortgage provide for periodic interest payments and the principal is repaid at the end of the term. If the principal is not repaid, at the end of the term, the lender might elect to grant another term mortgage and continue to collect interest on the original debt.
- In Depository System, share certificates belonging to the investors are to be dematerialized and their names are required to be entered in the records of depository as beneficial owners.

SELF-TEST QUESTIONS

1. Briefly outline the role played by SEBI in Financial Services.
2. Describe the role of Merchant Bankers in managing pre-capital issues.
3. 'Loan syndication is one of the project finance services.' Discuss.
4. (i) What do you mean by factoring and what are the salient features of factoring.

   (ii) Leasing is an important type of financial service. Do you agree?
5. What do you understand by credit rating and its advantages to the investors and companies.
6. Define a financial service industry and discuss the various services rendered by it.
7. Write short notes on:

   (a) Depository system in India

   (b) Merchant Banking

   (c) Operating lease and finance lease.

   (d) Venture Capital.

Suggested Readings:

(1) Management of Financial Services — *V.K. Bhalla*; Anmol Publications Pvt. Ltd., New Delhi-110002.

(1) Contemporary Financial Management — *R. Charles Mayer, James R. Mc.*

Guiga, William J. Kretlow; West Publishing Company.

(2) Lease Finance — Origin, Growth Problems and Prospectus — *K. Karuppiah;* Sterling Publishers, New Delhi.

(3) Lease Financing and Hire Purchase, Merchant Banking, Mutual Funds, Factoring and Venture Capital — *Kothari, Vinod;* Wadhwa and Co. Pvt. Ltd., Nagpur.

(4) A Manual of Merchant Banking (Practice and Procedures) — *J.C. Verma*, Bharat Law House, New Delhi.

(5) Emerging Scenario of Financial Services — *E. Gordan & K. Natrajan*; Himalaya Publishing House, Delhi.

(6) Guide to SEBI Capital Issues, Debentures Listing — *K. Shekhar;* Wadhwa Nagpur.

(7) SEBI Law, Practice and Procedures — *R. Suryanarayanan & V. Varadarajan*

STUDY IX

PROJECT PLANNING AND CONTROL

LEARNING OBJECTIVES

The object of the study is to enable the student to understand:

- Introduction of Project Planning
- Prepare of Project Planning
- Project Appraisal by various Financial Institutions
- Project Evaluation Technique
- Loan Documentation
- Loan Syndication – Bridge Loans against Sanctioned Loan
- Monitoring the progress of units assisted by the Financial Institutions
- Social Cost – Benefit Analysis
- Project Review and Control
- Follow-up Reports and Procedures

PROJECT PLANNING

In project planning cost of capital is important consideration. Cost of capital indicates towards the cut-off point or rate of return demanded on new investment in a new project.

Project decisions are taken by the management with basic objective to maximise returns on the investment being made in a project. Notwithstanding the fact, the management may of its own discretion choose to minimise the quantum of investments which may yield highest return or it may seek to maximise investments for obtaining highest growth expansion of the projective processes. The policies, plans and objectives of the management decision in planning a rate of return on investment are noted below:

(a) Opportunities created by technological change requiring replacements necessitating expansion or taking up new activities.

(b) Competitors strategy to avail economic opportunities, investment being planned by them and the threat which may arise to the existing or proposed market shares of the company;

(c) Short-term and long-term forecasts as to revenue proceeds, net profit etc.;

(d) Incentives offered by the state to promote investment in particular areas of productions required for meeting urgent local needs of the country or for exporting for earning foreign exchange.

The above factors affect project decisions. Investment is made on projects which generate sufficient funds to cover cost of financing the capital outlays. The cost of financing directly depends upon the sources, i.e. as to how the investment in a particular project is to be financed. In other words, cost of capital plays an important role in taking up a project investment decision and it sets a minimum standard which could be accepted for the rate of return 297 oject investment.

Before projecting the discussion to cover the complement of cost, it may be avail to view the cost of capital with respect to risk because some return is expected on the investments and to evaluate in right prospective such return, it is necessary to understand the nature of risk associated with the return. There may be three situations viz.

(1) Riskless rate of return may be offered from the proposed investment. This is with reference to investment in the securities which carry no risk of failure or default either in the repayment of principal or interest on investment. Such investment usually occurs in Government securities or guilt-edged securities. The return on such risk free investment could be tolerate even at minimum;

(2) There is another class of investment involving risk known as business risk. The projects which carry the risk of not being able to successfully market the products fall with in the category of business risk. For such risk premium is needed on investment proposed to be made in such project and so the expected rate of return on such investment will be higher than those in risk free investment;

(3) There is financial risk which a project may carry when it is not able to generate sufficient funds to cover interest payments on its debts or pay dividend to the shareholders. Therefore, for investment in such project the rate of return is supposed to be higher.

Keeping in view the above the risk elements, the main sources of capital for investment in a project are as follows:

(1) Shareholders or owners funds invested in the shape of equity or preference shares;

(2) Borrowers from institutions or banks in the shape of mortgage loan/ debentures or bonds;

(3) Retained earnings which may be prolongs back and invested in business;

(4) Depreciation funds.

All these sources of capital involve explicit costs. A firm has to resort not only to one but either to all the combination of the above few sources of financing investments. Each source of capital involve certain costs. This cost is that which must be paid to obtain funds for operation of the project. To find out the cost of investment it is necessary that explicit cost of each of the sources of capital which has been

included in the capital structure be calculated individually and then their weighed average be taken out, which is significant to working out the rate of return expected from the project.

We discuss first the methods of calculating the cost of capital for each individual source and then shall discuss the weighted average cost of capital so as to determine the expected rate of return on the investment in the project.

(1) Cost of Equity

Firms may raise equity capital internally by retaining earnings after taxes and common dividends have been paid to finance their capital expenditures. Alternatively, they could distribute their earnings to the common shareholders and raise equity capital externally by issuing new common shares. In both cases, the financiers are common shareholders to finance capital expenditures. Therefore the common shareholders required rate of return will be same whether they supply fund by purchasing new shares or by foregoing dividends which could have been distributed to them. The shareholders required rate of return which equally the present value of the expected dividends with the market value of the share is the 'cost of equity'.

Equity holders do not expect to receive any fixed or predetermined return on the equity investment but they have the right to participate in sharing future earnings of the company and have the right to dividends per share, or dividend per share plus the growth rate the firm is attaining or the realised yield rate. Thus, any rate which maximise the present value of the equity holders money in a firm should be the cost of capital.

To calculate cost of equity capital, the following formula is used:

$$Ke = \frac{D_1}{P_0} + g$$

Where:

Ke = Cost of equity

D_1 = Dividend paid in period 1

P_0 = Market value of the company's share quoted in Stock Exchange.

g = Growth rate by which the dividend are expected to grow per year at constant compound rate.

(2) Cost of Preference Shares

In case of preference capital, payment of dividends is not legally binding on the firm and even. If the dividends are paid, it is not a charge on earnings rather it is a distribution or appropriation of earnings to preference shareholders. The cost of preference share is not adjusted for taxes because preference dividend is paid after the corporate taxes have been paid.

Preference shareholders have the advantage over equity holders to carry the right to a fixed rate of return but they do not share the growth rate of earnings. The cost of reference capital is calculated by using the following formula:

$$K_p = \frac{D}{R}$$

Where:

K_p = Cost of preference shares
D = Fixed dividend rate on preference capital
R = Issue price of preference share

(3) Cost of Debt

The cost of capital is considered to be the most reliable cost to calculate because interest charges are pre-determined by agreement between the borrower company and the lender bank or financial institution. Cost of capital is calculated as under:

Formula for new debt

$$K_i(new) = \frac{\text{Interest} + (\text{Par} - \text{NP})/N}{(\text{Par} + \text{NP})/2}$$

Where:

K_I (new)= Cost of debt (newly raised)
Interest = Annual interest payable in rupee terms
Par = Face value of debenture/bond or note
NP = Net proceeds of bond or note
N = Number of years to maturity.

Formula for existing debt

$K_i = (1- T)R$

Where:

K_I = Cost of debt (existing)
T = Marginal tax rate
R = Contracted rate of interest.

The above formula can be amended to add other cost on borrowing involved.

(4) Cost of Retained Earnings

Cost of retained earnings is calculated on the basis of opportunity rate of earnings of equity shareholders which is being continuously foregone. If these earnings are paid to shareholders they will receive them as “dividends” which incur tax liability. This gives the following formula for retained earnings:

$K_r = (1- T)D$

Where:

K_r = Cost of retained earnings
T = Taxation rate
D = Dividend rate.

The above formula reflect a simple situation. But if the company offers bonus

shares or rights issue then value of its shares in the market rises and this factor will be taken into consideration while calculating the rate of retained earnings. If any tax is paid on income of shareholders by way of capital gains on selling the share in the market these taxes are to be deducted from the net amount. The revised formula for cost of retained earnings will be as follows:

$$K_r = \frac{D(1-T_i)}{P(1-T_c)}$$

Where:

D = Dividend
T_I = Marginal tax rate on income
T_c = Capital gains tax
P = Market price per share.

In case shareholders have no tax liability then the formula is further revised as under:

$$K_r = \frac{D}{p} \times 100$$

(5) Cost of Depreciation

Cost of depreciation can be assessed on the lines of cost of retained earnings because depreciation funds are also the sum of capital that belongs to the equityholders. But in practice the depreciation fund is only a book entry and not readily available for investment purpose as a source of capital which could be used to finance project. In short period it is included in financing the working capital and acquisition of current assets. So, depreciation fund is not considered as a source of capital and is not included in the assessment of cost of capital.

(6) Weighted-Average Cost of Capital

In the capital structure of a company, the cost of various components of capital after tax is taken together to calculate the weighted average cost which gives the single over all cost of capital. The composite cost of capital to the weighted average of the costs of various source of funds, weights being the proportion of each source of funds in the capital source fund.

The approach is based on certain important assumptions viz.

(1) It assumes that future proposals do not vary significantly in their systematic or market related risk as compared to the company's existing proposals. In reality, the market related risk for new proposals may indeed be similar to that on current projects;

(2) The second assumption is that all component costs in the capital structure are related i.e., a balanced mix of equity and debt is used in the financing decisions;

(3) Current costs are most accurate than historical costs. The cost of each component of capital structure can be analysed in two ways i.e. cost at the present time or the method is used in the current costs;

(4) Existing capital structure is considered to be optimal for a reasonably profitable corporate unit with traditional mix of debt and equity; this assumption is quite reasonable and holds goods.

Weighted-average cost of capital may be expressed in single formula that shows cost of capital as sum of the weighted individual costs of each components of the capital structure. The formula is:

$$K_0 = (\%D_{mkt})(K_i)(1-T_r) + (\%PS_{mkt})(K_p) + (\%ES_{mkt})K_i$$

Where:

K_o = Overall cost of capital

K_l = Cost of debt

$1-T_r$ = On minimum company's corporate income tax rate

K_p = Cost of preference shares

K_l = Cost of equity

$\%D_{mkt}$ = Percentage of debt in capital structure

$\%PS_{mkt}$ = Percentage of preference shares in capital structure

$\%ES_{mkt}$ = Percentage of equity shares in capital structure.

Examples

ABC Co. Ltd. has a mix of equity and debt comprising each of the component as 80% and 20% in its Capital Structure. In future project investments this percentage is maintained. The cost of capital based on this ratio can be calculated following the cost of debt and cost of equity derived as per formula discussed above i.e.

Suppose Current Price (P_0) of equity of ABC Co. Ltd. is Rs. 15, Dividend (D) expected per share in coming year to be Rs. 1.00 and the growth rate (g) at which dividend has been growing per year is 5% over past ten years which is to be maintained coming future, then cost of equity capital is as under:

$$K_e = \frac{1.00}{15} + \frac{5}{100} \text{ or}$$

= .06 + .05

= .11 OR 11%.

Similarly, cost of debt with contracted rate of interest being 11% and tax rate being 20% is an under:

$$K_i = (1-.20).11$$

= 0.88

= 8.8%

To calculate weighted average cost of capital for ABC Co. Ltd. the first requirement is to assign the weight. If the Company's new project requires investment of Rs. 50 million debt capital repayable within 15 years and Rs. 200 million debt capital comprised of 20 million shares of Rs. 10 each then weighted

average cost of capital would be arrived at as under:

Sources of Capital	*Current Price*	*Market Price*	*Weight*
Debt: Rs. 50 million 15 years maturity	Equal to redemption price	Rs. 50 million	$\frac{50}{250} = .20$
Equity: 20 million shares of Rs. 10 each	Rs. 10	Rs. 200 million	$\frac{200}{250} = .80$
	Total	Rs. 250 million	1.00

Based on above analysis,

$K_0 = .20K_i + .80K_e$

= .20 (0.88) + .80 (.11)

= 10.56%

In most simple way, the weighted average cost of capital can be calculated in the following manner also:

Sources of Capital	*Proportion of different sources in capital structure (W)*	*Cost of capital from difference sources (X)*	*(2) × (3)* *W × X*
(1)	(2)	(3)	(4)
Equity share capital	80	11	880
Preference share capital	—	—	—
Debt	20	8.8	176
Retained Earnings	—	—	—
	$\Sigma W = 100$		$\Sigma WX = .1056$

$$K_0 = \frac{\Sigma WX}{\Sigma W} = \frac{1056}{100} = 10.56\%$$

(*Source:* J.C. Verma: Managerial Economics - Concepts and Analysis for Business Decisions)

The general practice in assigning weight is that equity capital is assigned weight as per makret value of shares; debts is given redemption value i.e. 100% weight; preference share capital is assigned weight as per market value of redemption; retained earning is given weight as per equity market value adjusted for shareholders personal tax liability on dividend income. Once cost of capital is obtained, it gives the required rate of return on cut-off rate of interest. This means that any further investment should generate the future revenue so much that the present value of the cash flow should not be less than this rate.

Preparation of Project Report

Preparation of project report is a pre-investment study of investment proposal but encompasses a thorough investigating process covering economic, technical, social managerial and commercial aspects. Project report is a working plan for implementation of project proposal after investment decision by a company has been taken.

Importance of preparation of project report has been felt in the wake of sophisticated technology being adopted and the heavy financial state of public funds through financial institutions, banks and investment organisation being contemplated. High technology involve, higher cost in the project implementation and as such economy cannot afford to tolerate failure of the project. Therefore, to ensure before taking in hand a project whether or not the proposed project is viable, preparation of project report has become essential exercise for all corporate units particularly in the light of the following background:

(1) Planning in advance, the accomplishment of the following objects:

Performance	Objectives
Marketing	Objectives
Operations	Objectives
Technical	Objectives
Financial	Objectives
Personnel	Objectives
Organisation	Objectives
The end product	Objectives
The customer benefit	Objectives, and
The societal	Objectives

(2) To evaluate above objectives in the right perspective it is essential to consider the input data, analyse the data, predict outcome, choose best alternatives, take action, measure results with predictions. Stress is laid that the objectives become measurable, tangible, verifiable, attainable and the risk of failures is avoided to the maximum desired extents.

(3) To evaluate constraints on resources viz. manpower, equipment, financial and technological.

(4) To avail of the financial facilities who require a systematic project report to evaluate desirability of financing the project. Besides, the financial intermediaries today check up and verify the project proposals for accepting the responsibility for a company to procure funds from the capital market. Merchant banks who have entered in the capital market as financial intermediaries are quite careful about the project viability before taking up a contract for making financial services available to corporate units.

(5) Successful implementation of a project depends upon the course of action suggested in the project report. Besides, comparison of results will depend upon the projected profitability and cash flows, production schedule and targets as planned in the project report.

The above background necessitating the preparation of a project report leaves

the impression that the task of preparation of project report involves skills, expertise and experience of field work covering different aspects by financial, technical, commercial, socio-economic, government rules and regulations and the legal requirements under different laws and can only be handled by a team of experts in different areas. Project idea can be formulated by an entrepreneur but project report cannot be prepared single-handedly as it requires a multi-disciplinary approach to incorporate the following set of analysis in the project report:

(1) Technical analysis comprising systems analysis using technique of operation research to sort out complex problems like allocation problems, replacement problems, inventory problems, scheduling and queuing of operations with use of PERT/CPM, Linear programming. Inter programming, Goal Programming and simulation etc.

(2) Marketing research to forecast demand for goods/services which may be produced on implementation of the project, capture market and elicit cooperation of the consumers etc.

(3) Financial analysis, to project future cash flows, profitability, evaluate net worth, to do cost-benefit analysis, profit plannings, budgeting and resource allocation, etc.

(4) Techno-economic Analysis suggesting to adopt optimal technology for project size/objectives, to explore economic conditions to absorb projects products, etc.

(5) Project Design and network analysis i.e. detailed work plan to the project and its time profile.

(6) Input output analysis etc.

Format of Project Report

There is no prescribed format for the preparation of a project report - but a project report should contains mainly the following set of information in general:

(1) Information about industry and its status in the economy, present production and demand, indicating Licensed, installed capacity, Government policies and export potential. Generally speaking, broad guidelines in this respect may be had from the plan documents of the Government.

(2) Broad market trend of the product within and outside the states for 5 years.

(3) Raw material survey, giving specifications and quality of raw materials required and their availability.

(4) Process - broad description of different processes and their relative economics.

(5) Availability of technical know-how.

(6) Location of Plant, its advantages.

(7) Water - requirement of water for process, boiler feed, cooling etc., sources of water available and making it useable for the factory and to townships.

(8) Power - total power requirement for the factory specification of power and choice between purchased power and generated power. If power to be

generated - total cost of investment, choice of fuel and the cost for fuel available to factory.

(9) Fuel - its requirement for steam raising or processing source and price at which it will be available for factory including taxes and surcharge.

(10) Effluents - type and quality of effluents, their treatment and disposal, investment in the effluent treatment and disposal. Government of India has since decided that any project proposal has to have a clearance of Environmental Authority set up by the government.

(11) Implementation programme: implementation and construction programme in form of CPM/PERT.

(12) Cost of Project - (Specify foreign exchange cost if any):

(a) Land, inclusive of development expenditure incurred on the land;

(b) Buildings to be erected for housing the plant and machinery, the administrative office, stores, services, etc. requirements estimates to be included in the project cost;

(c) Plant and machinery; including other equipments and their estimated cost;

(d) Offsite facilities: utilities and auxiliary facilities;

(e) Preliminary expenses (share issue, stamp duty, cost of raising equity etc.);

(f) Contingencies;

(g) Cost of spare, repairs and maintenance during trial run and commissioning period;

(h) Pre-commissioning and commissioning expenses;

(i) Working capital margin-details of estimation be given.

(13) Margin of financing-broad pattern to be indicated.

(14) Cost of production - project broad pattern five years vis-a-vis design capacity. Break even point of production cost should be given, effect of variation of cost of raw materials, utilities, selling price etc. be indicated and elaborated. Price trend of raw material and finished goods be discussed.

(15) Profitability for five years after commission of the project should be worked out in the prescribed format.

(16) Cash flow statement and pay period should be worked out for the project.

(17) Technical feasibility be discussed in detail with financial viability.

(18) Organisation and management – description of corporate management, promoters experience and background organisational chart, key personnels and delegation of power and responsibility structure be fully described.

Aspects of Project Appraisal

Appraisal means to critically examine with a focus of attention on specific aspects, areas of operations, and target goals to ensure the conformity of the performance to the proposed goals. Basic task before the appraiser is to study progress in term of cost productivity ratio, time schedule relationship, inter-action between different agencies, performance of personnel in terms of their responsibilities and objectives of the company.

Important ingredients of appraisal are the following:

(1) Objectives as defined in the proposal to be kept in view for satisfactory assessment of operational courses;

(2) Accuracy of methods and measurements planned to be adopted is well adhered to;

(3) Objectivity of the proposal is highlighted so as to keep off from the bias and personnel prejudices;

(4) Ensure the reliability of the data and projected statements;

(5) Predictors made to conform to reality and should be objective.

In project appraisal above points should be kept in view by the members of appraisal team irrespective of the fact whether the appraisal is being done for an industrial project being implemented by a corporate unit or the project devoted to the national economy sponsored by the state agency.

Form the angle of a company unit the project appraisal of the project may be done at three stages as under:

(1) Projects appraisal by the corporate unit itself i.e. the promoters of the company are interested in ensuring that on successful implementation of the project whether or not it would generate the required rate of return on the total investment. The promoters make selection of the projects following investment criteria of obtaining the required rate of return. In this appraisal , all aspects with reference to project idea are identified and evaluated. As a matter of fact, it is a feasibility study done to identify the project, identify internal constraints and external difficulties, environmental constraints including government placed restrictions and regulations. Once the promoters are satisfied on this aspect, they have the formal feasibility report prepared and consider it for investment purposes.

(2) Second stage of project appraisal arises when a project report duly accepted by the promoters is submitted by the corporate unit of financial institution for considering it for grant of financial institution for considering it for grant of financial facilities to finance the cost of implementation of the project.

(3) Project appraisal is done by Government agencies for according approvals required to clear a particular project under the different statues or state regulations. The main criteria followed by Government agencies is the cost benefit analysis and social gains.

Project Appraisal under normal inflationary and deflationary conditions

Timing for project appraisal is most important consideration for all types of appraisers. A project under normal circumstances is appraised from different angles viz. technical feasibility, managerial aspects, commercial aspects, financial viability

and economic and social aspects.

Under the normal conditions when prices are generally stable, demand pattern as projected in the project report is unchangeable, the project cost described in the project report remains unchanged at current prices and as such there is not much danger of any sudden escalation in project cost or over run in the projected resources.

There is practically no risk involved of either business or financial nature and evaluation of the project could be done from different angles without providing for any change in project cost and planning for additional financial resources to meet the over run or escalations.

Nevertheless, project appraisal can't be devoid of inflationary pressures as normal conditions for a project do not exist. Because the project is to be implemented over a period of time ranging upon the size and magnitude of the project, i.e. it could be six months or beyond to run or two or more years. During such a period, it can't be predicted as and when the trade cycles set in and the up-turn in economy is generated.

In a developing economy like India, inflation grow at a planned steady rate because of the economic development activities and as such provision for a probable escalation in the project cost is generally provided as a cushion to inflationary pressures.

However, during inflationary conditions the project cost is affected in magnitude of parameters. Cost of project on all heads viz. labour wage, raw material, fixed assets, equipments, plant and machinery, building material, remuneration of technicians and managerial personnels undergo a shift change. Besides, inflationary conditions place constraints on the resources of the consumers of the product and affect the demand pattern. Thus cost at production are affected besides the projected statements of profitability and cash flow by the change in the demand pattern and market forecasting figures. The inflationary pressures alone do not stop here. The financial institution and banks revise their rate of lending and their financing cost further escalate during inflationary conditions. Under such conditions, the appraisal of the project generally be done keeping in view the following guidelines which are usually followed by the Government agencies, banks and financial institutions:

(1) Make provisions for delay in project implementation, escalation in project cost as per the forecasted rate of inflation in the economy particularly on all heads of cost.

(2) Sources of finance should be carefully scrutinized with reference to revision in the rate of interest to be made by lender and the revision which could be followed in the interest bearing securities. All these factors will push up the cost of financial resources for the corporate unit.

(3) Profitability and cash flow projections as made in the project report require revision and adjustment should be made to take care of the inflationary pressures affecting adversely future projections.

(4) Explain fully the criteria followed in adjusting the inflationary pressures viz. there are two criteria followed given as under:-

(a) take inflationary rate at average rate and escalate the total cost at that rate;

(b) adjust each cost item against inflationary rate. This would make adjustment for inflationary pressures in the cost elements responsible outflows and the revenue elements in the cash. Both cash inflows and outflows will accordingly adjust to inflationary changes at the appropriate rate applicable to each of them respectively.

(5) Examine the financial viability of the project at the revised rates and assess the same with reference to economic justification of the project. The appropriate measure for this aspect is the economic rate of return for the project which will equate the present value of capital expenditure to net cash flows over the life of the project. The rate of return should be acceptable which accommodates the rate of inflation per annum.

(6) In inflationary times, early pay back projects should be prepared. Because projects with long pay back are more subjected to inflationary pressures and the cash flow generated by the project will bear high risk.

A different situation may arise in deflationary or recessionary situation. The economy is in down swing, prices are falling, lack of effective demand is discernible, production capacities are already affected narrowing the cash inflows affecting liquidity of the project adversely because wages and salaries and other overhead costs do not fall which keeps the outflow at static rate with declining inflows. The main consideration in project appraisal during this period is the cash inflow, sales, the demand for the projects and sales forecasting outliving the predictions. As a matter of fact new project are delayed as the appraisal never remains so realistic and the sources of supply of money become tight; investors have no enthusiasm in investing this money or savings in the corporate securities for the uncertain working results and higher risk investment. Nevertheless, the appraisal of the project should be done keeping in view the above factors.

From the above discussion, it is concluded that the difference in project appraisal during normal inflationary and deflationary condition is only of degree if due care is taken to adjust the economic, commercial or financial aspects of the project affecting the cost and cash inflows, the profitability and liquidity of the project.

Project Appraisal by Financial Institutions: Lending Policies and Appraisal Norms of Financial Institutions IDBI, IFCI, ICICI

General Approach to Appraisal

Project Report submitted by a corporate unit to a financial institution for grant of financial facilities is properly appraised by a team of expert drawn from different disciplines.

The project appraisal is done as a “business risk” and, therefore, efforts are made to corroborate the data submitted by a company with authentic sources. Each project is appraised on its own merits and flexibility is observed while applying the norms of ratio analysis, funds flow analysis, financial indicators, technical norms etc. The basic objective during appraisal remains the project and its future in the form of successful implementation and efficient operation so as to contribute to national

economy. If a project remains successful, the money lend by financial institutions is returned safely. The growth of the project is the best security for the financial institutions than the physical and legal security. No doubt this security from an important part in the entire transaction for lending and borrowing for the project.

Viewing from the above angle, project appraisal, in general, by the financial institutions seek to consider *inter alia* the following aspects:

(1) The project profile, its reliable and formulation and project report;

(2) The promoters capacity and competence;

(3) Viability Tests:

(A) Technical Aspects

(B) Financial Aspects

(C) Economic Aspects

(D) Commercial Aspects

(E) Managerial Aspects

(F) Environment, Energy management and Economical Aspects

(G) Societal Aspects.

Each of the above criteria is discussed precisely in the following pages with a view to give an insight to the readers as to how the appraisal in practice is done for industrial projects undertaken by corporate units.

1. The Project

The first and foremost consideration for appraisal of project report by a financial institution is the examination of the project itself. It may be recalled that the term lending financial institutions have been established by the Government with the sole objective to promote development and growth of the industries which are given planned priorities for the economic development of the country. Therefore, the project should be such which meet this standard and falls within the category of approved projects.

Another important consideration in this area is that the project report prepared by the corporate unit should confirm to prescribed standard of the financial institutions. To be on the safe side, it is desirable if the project report is prepared by the reputed consultants approved by the financial institutions or the Technical Consultancies organisation established in different parts of the country by the financial institution.

There is no standard proforma for preparation of report but to facilitate its easy appraisal it should be self contained study with all necessary feasibility reports, market surveys, projected financial statements, managerial personnels and organisational charts, status of the company in the ownership and title to the property and the legal relationship with the promoters be clearly specified to avoid discrepancies and confusions. In reality, the prescribed application form for financing by the financial institutions contains clauses to bring out most of the salient features in accepting a project proposals.

2. The Promoters: Capacity and competence

The promoters capacity and competence should be examined with reference to their management background, traits as entrepreneurs, business or industrial experience, and past performance in other concerns, their integrity and reputation, market standing and legal competence.

Different considerations have got to be applied for the established entrepreneurs, or promoters and the new entrepreneurs. The basic requirement is that their profile should inspire confidence of their abilities and capacities to run the project successfully and continue the interest therein till the repayment of the financial facilities disbursed by the institutions to the unit promoted by them. In the cases of technocrats who are coming up and taking up the industrial project, these aspects are paid more attention than their experience with entrepreneurity ability or skills.

3. Viability Tests

Viability test of project is to be carried out by examining the project from different aspects as discussed below. It is necessary that the project should prove out to be successful in all the tests.

A. Technical Aspects of Project Appraisal

Technical examination of a project involves consideration of the following factors:

I. Feasibility of the selected technical process and its suitability under Indian conditions

In a type of industry in which technology is rapidly changing, one cannot ignore the possibility of technological obsolescence. Therefore, examination of the technology adopted for the industrial unit has to be made with reference to technical information available on its technique, plant and equipment to be used in the productions processes.

II. Scale of operations

There are certain industries which can work economically only at a certain minimum scale. This is new thrust area of the government to ensure that the productivity is achieved by allowing economic operations at minimum scale. For example, units of less than 25,000 spindles are not economic. Likewise, the scale of operation planned in the project should be evaluated properly.

III. Location

The location of the project in relation to the sources of raw materials, availability of power, fuel, transport, skilled and unskilled labour and in relation to the markets to be served requires careful investigation. In some industries like cement, the project has to be located near the source of limestone; while in the case of glass industry, it is an advantage to locate the factory near the consuming market and in those areas which are declared by Government for concessional tax treatment as backward districts location. In other words a particular industrial site should be examined keeping in view the above factors.

IV. Plant and Equipment and their specifications

Apart from the suitability of the plant and equipment, the reputation and experience of the suppliers of plant and equipment is important. Because in many instances it becomes the responsibility of the supplier to provide for maintenance, training of working staff over the plant to assure better quality of equipment.

V. Plant Layout

The layout of the plant at the location site is important from the point of view of possible future expansion. It should be examined with reference to the site plan.

VI. Facilities for the supply of water, power and fuel

Arrangements have got to be made for supply of water and this aspect should be thoroughly assured. Power is again very scarce in supply. Therefore, full assurance be obtained for supply of power from the State Supply Power Boards. The proposals of the company for putting Diesel Generating Set for augmenting energy source should be examined with reference to availability of finance and the fuel.

VII. Facilities for disposal of effluents and also of the by-products, if any

In the case of chemical industries, disposal of effluents, which may be harmful to human and marine life is important. In such cases effluent may require proper treatment before it can be discharged in a river. This aspect be examined and proper care to be provided for effluent treatment as per Statement.

VIII. Availability and economies of the means of transport in the region be examined and ensured.

IX. Arrangements for securing the technical know-how and training of personnel and labour who have to operate in the shop-floor be certified and ensured.

X. Construction Schedule

This involves scrutiny of the main physical elements of the project from the engineering design work to the installation and testing of equipment and commercial production. A realistic assessment of the construction schedule has a vital bearing on the estimated project cost in as much as pre-operative expenses as an element of project cost are generally under estimated.

XI. Cost Estimates

The investigation of cost estimates takes into account the following aspects:

(a) Examination of the assumption on which the cost estimated have been based be carefully done with reference to costs of buildings, plant and machinery and other items. Whether realistic budgetary quotations have been obtained from reliable supplier is also looked into.

(b) Provision for escalation in the prices of imported and indigenous machinery made in the project report be examined with reference to the current economic situation and the market condition.

(c) Adequate provision for pre-operative expenses such as interest on loans payable during the construction period, establishment and other expenses to be met during the construction period, training of personnel, preliminary and

capital issue expenses, instalments of interest and principal on deferred payment, if any, payable during the construction period. In this context a realistic assessment of construction schedule for estimating pre-operative expenses be made. Funds needed for shares, repairs, maintenance and tool, trial run and commissioning expenses are also checked up as may be necessary for a long gestation complex project before coming into an operation unit.

(d) Machinery spare parts - Adequate provision for spare parts of imported and indigenous equipment for the first two years is necessary.

(e) Miscellaneous fixed assets - In estimating the project costs, expenditure on items like furniture and fixtures, miscellaneous tools and equipments, cabling for distribution of power, railway siding, equipment for supply and treatment of power, laboratory equipment, workshop equipment, fire-fighting equipment, humidification equipment, effluent treatment and disposal instruments and meters are required to be taken into account for estimating the cost of project.

(f) Contingency - Provision for contingency is intended to provide for any unforeseen increase in the project cost. Contingency is over and above the provision for escalation in thee prices of plant and machinery which can be foreseen and has to be separately provided. Financial institutions insist on a contingency of about 10% in the aggregate amount of the items of cost for which prices are not firm.

(g) Working capital - In the case of new projects provision for margin money for working capital for starting production and for raising bank borrowings against inventories-stocks of raw materials, goods-in-process and finished goods is included as part of capital cost to the extent of 25%. The idea is that working capital loan for the balance part would be available from commercial bankers. It is advisable to calculate working capital requirements on the basis of about 3 to 6 months cost of production, depending on the nature of industry and the fact whether the raw materials will be indigenous or imported.

(h) General - In reviewing project costs, it is better to be on the conservative side and to make provision for taking care of the delays and unfavorable movement of prices. There are two areas in which project costs generally exceed the original estimates viz. pre-operative expenses and building costs.

Technical Know-how

In the case of project of which the promoters have no experience, it may be necessary to arrange for technical know-how. Where such an agreement for technical know-how has been entered. It is necessary to examine the responsibilities and functions of the such collaborators.

B. The Financial Aspects of Project Appraisal

The financial aspects of the project are analysed under the following heads:

(I) Amount of resources required to bring the project into operation and the sources from which finance will be obtained.

(II) Equity-Debt ratio.

(III) Profitability and cash flow.

(IV) Security.

I. Amount of resources required to bring the project into operation and the sources from which finance will be obtained

The first question to be investigated is as to how much finance will be needed for completing the project. The total financial requirements of the project will include some or all of the following items:

(a) The cost of land, buildings, plant and machinery, miscellaneous fixed assets, stores and spares required for the project including technical know-how and engineering expenses.

(b) Allowance for escalation and contingency.

(c) Pre-operative expenses.

(d) Preliminary and capital issue expenses.

(e) Margin money for working capital.

After the estimated cost of the project, inclusive of margin money for working capital, has been arrived at, the next question to be examined is as to the sources from which the finance will be provided for the project. In the case of new projects, the sources of finance are the following:

1. Share Capital.
2. Long-term rupee loans for meeting the expenditure on the project.
3. Foreign currency loan for financing the cost of imported items.
4. Deferred payments on plant and machinery.

In the case of existing industrial units which may be undertaking a scheme of expansion or renovation, a part of the expenditure may be financed through internal accruals in addition to the above mentioned sources.

1. Share Capital

It requires to be examined whether the applicant has obtained approval from SEBI appropriate for the issue of the share capital. The proportion of equity capital to preference capital is also required to be examined. The rate of interest on preference shares and the period of redemption also requires to be looked into.

2. Long-term rupee and

3. Foreign currency loans

In the case of large-sized projects, the long-term capital is provided by more than one financial institutions, and the security for loan is shared by all of them on a *pari passu* basis. In such a case it is necessary to have more details of the finance assured to be given by other financial institutions. The terms and conditions attached to financial assistance are examined.

4. Deferred payments on plant and machinery

In cases where the plant and equipments are being purchased on deferred terms, the suppliers generally ask for a guarantee from a financial institution. Careful examination is made of the terms and conditions of suppliers and the instalments of interest and principal on deferred payments which have to be met during the construction period of the project with reference to cash flow statements.

5. Retained earnings

In the case of existing concerns a part of the cash expenditure on the expansion or modernisation scheme may be financed out of internal cash accruals from depreciation and retained profits. In such cases the estimates are given careful scrutiny as to how far the internal cash accruals require careful scrutiny as to how far these estimates can be accepted as realistic.

To judge reasonableness capital issue of long-term loans.

II. Debt Equity Ratio

A careful balance has to be stuck between debt and equity. A debt equity ratio of 1:1 is considered ideal but it is relaxed upto 15:1 in suitable cases. Further relaxation in debt equity ratio is made in case of high cost project and infrastructure projects. All long term loans and deferred credit are treated as debt while equity include free reserve and in case of existing companies with losses, it is arrived at after deducting carry forward losses. Reserves created out of revaluation of assets are not taken into account. Convertible debentures which are to be converted into equity shares after one year is treated as long term debt. Redeemable preference shares to be redeemed beyond a period of 3 years is taken as equity. Convertible Preference Shares are always treated as equity.

III. Profitability and Cash Flow

Profitability and cash are assessed through projections of two types viz., (a) projected statements of profitability after the project starts commercial production and (b) a cash flow statement for operation period after commencement of commercial production.

IV. Security

Loans from financial institutions are generally secured by a first mortgage on all the fixed assets of the fixed assets of the industrial concern such as land, buildings and first charge by way of hypothecation on plant, machinery and other movable assets. Second charge is obtained on stocks of raw materials, goods in process and finished goods. Industrial concerns are free to raise loans for working capital against raw materials, goods in process, finished goods and consumable stores and book debts from commercial banks. In the case of large sized projects, where joint financing by several financial institutions is done, the security is shares on a *pari passu* basis amongst them.

C. Economic Aspects of Project Appraisal

An economic analysis of industrial projects is made on the basis of the following

techniques of economic appraisal. Techniques of Economic Appraisal

There are three measures commonly used for economic appraisal:

(1) Economic Rate of Return (ERR)

(2) Domestic Resources Cost (DRC)

(3) Effective Rate of Protection (ERP)

1. Economic Rate of Return (ERR)

ERR is a rate of discount which equates the real economic cost of project outlay to its economic benefits during the life of the project. ERR is an attempt to find out the rate of return to the economy or society and not the private promoters or various agencies involved in promoting a project. The need for ERR arises because current market prices and costs taken into account to determine the financial viability of the project do not represent the true value from the national or economic view point.

Method

While computing ERR, analysis is made using shadow prices which reflect the real cost of inputs to the society and real benefits of the output rather than market prices. The capital cost of the project, working capital requirements and operating costs are divided into tradeable, non-tradeable and labour components, which are then revalued using international prices, conversion factors and shadow wage rates respectively.

Based on the revalued project cost, working capital, operating costs and revenues, a steam of cash outflows, inflows, and net flows are computed during project implementation period and operating life of the project. The cash flows are then discounted to arrive at the economic internal rate of return.

Shadow prices

A key issue in shadow pricing is whether any goods is tradable or not. Any goods fully traded when an increase in its consumption results in a corresponding increase in import or decrease in export; or when an increase in production results in a corresponding increase in export or decrease in import. Thus, for fully traded goods, the shadow price is the border price translated in domestic currency at market exchange rates.

Some goods and services like land, building, transportation and electricity are not amenable to foreign trade. Hence accounting prices for non-traded items are defined in terms of the marginal social cost and marginal social benefit. In practice, the calculation of marginal social cost and marginal social benefits is often a difficult task. Little and Mirrlees (L-M) suggested that the monetary cost of a non-traded item can be broken down into tradable, labour and residual components. Each of these components could be revalued using international price, conversion factors and shadow wage rate respectively.

Financial institutions in India use the partial L-M approach where the above

components are converted into social cost and benefits by applying suitable conversion factors.

2. Domestic Resource Cost (DRC)

DRC measures the resource cost of manufacturing a product as against the cost of importing/exporting it. It indicates the long term comparative advantage a country enjoys in the production of a particular product.

The output from any project adds to domestic availability implying a notional reduction in imports to the extent of output of the project or an addition to exports if the product is being exported. This in turn implies that foreign exchange is saved to the extent there is reduced imports or foreign exchange is earned to the extent there is increased exports.

However, in the setting up of the project itself and in the manufacturing of the product, foreign exchange outflows may be incurred in order to procure machinery, raw materials etc. The foreign exchange saved or earned thus has to be adjusted for such outflow.

Method

The foreign exchange saved/earned thus has to be seen in relation to the domestic resources deployed in production. It may be noted that in arriving at domestic resources deployed, the rupee costs are taken net of taxes and duties as these constitute transfer payment to the economy.

DRC is therefore computed as the quantum of domestic resources or costs deployed in production to the net foreign exchange (US$) saved or earned.

In computing foreign exchange saved or earned, sales realization is taken at border prices, viz. The c.i.f. price for a product substituting for imports and f.o.b. prices for a product to be exported. All direct and indirect foreign exchange outflows i.e., c.i.f. cost of imported inputs, depreciation of imported equipment and cost on foreign capital employed are then deducted to obtain the net foreign exchange savings/earnings. In order to ensure uniformity and comparability, the net foreign exchange saved/earned is expressed in terms of US$.

There are two variants of DRC: Crude DRC (C-DRC) and Refined (R-DRC). In C-DRC, tradeable raw materials which are locally procured, are included in Domestic Resource Cost and form part of numerator, while in R-DRC tradeable raw materials which are locally procured are treated as notional foreign exchange loss and valued at international prices (including in denominator). R-DRC is normally lower than C-DRC.

3. Effective Rate of Protection (ERP)

ERP attempts to measure the net protection provided to a particular stage of manufacturing. The domestic price of a product is affected by the various tariffs and quantitative control imposed and subsidies provided by the Government. Domestic costs are also affected by such controls on the material inputs going into the product. The competitive strength of the product in the international market is however

revealed only by costs and prices after excluding or adjusting for the various controls.

Method

Since controls affect prices, the basic parameters utilized for calculation of ERP is “value added” i.e. the difference between selling prices of a product and the cost of the material inputs. In the absence of various measures of protection in the economy as well as across the border, theoretically, there should not be difference in value added computed at domestic prices (DVA) and value added at international or border prices (WVA). Any difference in the value added at these two set of prices indicates a measure of protection.

ERP = Value added at domestic prices – Value added at international prices

As with ERR, the material inputs are broken down into tradeable and non tradeable inputs. Two measures of ERP are in use – the ERP (Balassa) (ERP-B) and the ERP (Cordon) (ERP-C). the difference between the two arises on account of their treat-ment of non-tradeable inputs.

In ERP-B, non-tradeable inputs are considered to have zero protection and are hence measured at domestic prices while computing both DVA and WVA. In ERP-C, however, non-tradeable inputs are not consider relevant in measuring rate of production and are treated on par with primary factors of production. Thus, in ERP-C, value added is the difference between selling price and only tradeable inputs. Normally, the ERP-C is expected to be lower than ERP-B.

D. Commercial Aspects of Project Appraisal

The appraisal of commercial aspects of a project involves the investigation of arrangements for buying plant and machinery, arrangements for obtaining raw materials and for marketing the products. The procedure for the procurement of plant and machinery whether machinery will be purchased on the basis of global tenders or confined to any particular country is examined in detail. Many times the foreign collaborators are themselves the suppliers of plant and machinery.

The main objective in the examination is to see whether the proposed arrangement will ensure the best value for the money spent. Appointment of sole selling agents and the justification for their appointment and the terms on which the sole agents will be appointed are examined in detail. The company’s own marketing forecasts are also examined.

E. Managerial Aspects of Project Appraisal

The success of an industrial project ultimately depends upon the quality of its management. The appraisal of management aspect is, therefore, quite vital for the success of the project. It is not necessary that the promoters should have experience in a particular industry but should have adequate experienced personnels appointed on the technical, administrative and accounting sides.

Where the company had technical and financial collaboration with a foreign firm of repute, the entire arrangement is examined thoroughly.

F. Environment, Energy Management and Ecological Aspects

Project Report should contain the provision for treatment of effluent so as to keep the environment free of pollution. Besides, reconsideration is given to the aspects of energy conservation and use of alternative source of energy. Financial institutions give more importance in project appraisals to these aspects.

G. Social and Other Related Aspects

Industrial projects have to make provisions adequate and to the satisfaction financial institutions with regard to the housing and medical (in case of hazardous industries) facilities for the workers, Chief Executive and other key personnel who are supposed to stay near the work side and are available at all times. Financial Institutions can also assess if any alternate arrangements are proposed for the personnel to be available at work sites at all times. While assessing the cost of project, a requisite amount for the same should be provided.

In evaluation of the project reports, care is also taken by financial institutions that there is a “spread” effect of ancillarisation, and use of appropriate technology or technology transfer into the country in the proper direction. A phased manner of commissioning of a project is preferred for two reasons. In case of part commissioning, the success of the project is tested at the earliest before sinking the total layout. That apart, the investment starts yielding return in part which may be diverted toward the project in meeting expenditure in part.

Conclusion

The appraisal of the project report is done by a team of experts and the entire findings are summarized in an appraisal report which is placed before the decision making authority to approve the project and accept the obligation to provide finance for its implementation.

PROJECT EVALUATION TECHNIQUE

From the point of view of the Financial Institutions, a project must be sound and viable from different aspects. Depending upon the socio-economic factors connected with the project, the overall evaluation techniques of the Financial Institutions remains the same but assessment criteria may be varied as the circumstances may demand. Financial Institutions apply social cost-benefit techniques in evaluation of projects even though these projects envisage partly profit maximization or import substitution or increasing production of high priority items in short supply in the country. All these aspects are given due consideration while evaluating a project. Overall, the social cost benefit analysis plays an important role and the justification for investment decisions in project financial institutions may not lie purely in the project’s economic viability.

The sanction of a loan application is given after examination of the project proposal for viability. The parameters laid down to appraise the project include.

1. Promoters’ Capability and Competence

Promoters are the core of the management. The background of the promoters, their qualifications, business and industrial experience, past performance etc., are looked into in detail with a view to assessing their capabilities for implementing and operating the project. The stronger the commitment of the promoters towards the

project, the more likely is project implementation to be as per the schedule.

2. Project Preparation

This refers to the preparatory work done by the promoters in connection with the project, i.e., thoroughness with which the feasibility report, project report and the market survey report have been prepared with regard to be project proposed to beset up by promoters.

3. Project Viability

In project evaluation and appraisal, the viability test cover the following aspects:

(i) *Technical Viability:* A project is considered to be technical viable if all the relevant technical aspects which are essential for the successful implementation of the project have been taken into account by the promoters and a reasonable choice has been made, under the given set of circumstances for selection of location of the project, its size, choice of process, etc. The appraisal must have also taken into account materials and input requirements and specifications, acquisition of appropriate technology, and the machinery and equipment requirements, and the work schedule for development of the site.

Technical appraisal of a project broadly involves a critical study of the following aspects:

- Appropriateness of the technology, the suitability of the selected technical process under Indian conditions and arrangements made or proposed to be made therefor.
- Scale of operations and whether the size of the unit would be adequate for the economic and financial viability of the project.
- Selection of the plant site in relation to the load bearing capacity, flood and earthquake hazards, free access from public roads, satisfaction from sources of raw materials, water, power and fuel as also transport facilities, availability of skilled labour, nearness to the market for the finished products etc.
- Adequacy and suitability of the plant and equipments and their specifications, plant layout, reputation of the machinery supplies, balancing of different sections of plant, proposed arrangements for procurement of plant and equipment, technical engineering services etc.
- Technical and executive management available during the implementation period and for operation of the project.
- Arrangements for the disposal of factory effluents, prevention and control of pollution, maintenance of environmental and ecological balances and utilisation of the by-products, if any.
- Project Implementation Schedule-PERT or CPM Chart, if any, and monitoring arrangements for implementation of the project.

Technical collaboration arrangements, if any, terms of the technology transfer etc.

(ii) *Financial Viability:* A project is considered to be financialy viable if the

earnings are expected to be sufficient to meet the burden of servicing debt, to cover fixed charges, operating and maintenance costs, and, in addition, yield a reasonable return on the investment made. Profitability projections are made to judge the financial viability of the project.

The profitability projections are made taking into account the various concessions/subsidies which may be available to the project and the tax burden associated with the project.

Broadly, assessment of financial viability of the project involves consideration of following aspects:

(i) Cost of the Project.

(ii) Financing Plans, Financial Collaboration arrangements and the terms there-for.

(iii) Requirements of working capital.

(iv) Projections of future profitability.

(v) Projections of cash flow.

(vi) Break-even and sensitivity analysis of the project.

(vii) Assessment of financial rates of return, financial ratios, cost benefit analysis etc.

(viii) Debt-equity Ratio.

(ix) Promoters' contribution.

(iii) *Commercial Viability:* A project is considered to be commercially viable if it is able to market its products competitively in the domestic or international markets at a reasonable margin of profit. The appraisal takes into account the aggregate demand (projected) for the proposed product service and the expected share of the market the project expects to capture. The commercial broadly involves market analysis to cover:

—☐Consumption trends in the past and present consumption level;

—☐Past and present supply position;

—☐Production possibilities and constraints;

—☐Cost structure;

—☐Imports and Exports;

—☐Structure of competition;

—☐Elasticity of Demand;

—☐Consumer behaviour, intention, motivation, attitudes, preferences and requirements;

—☐Distribution channel and marketing policies in use;

—☐Administrative, technical and legal constraints.

(iv) *Social and Economic Viability:* A project is considered to be socially and economically viable, if the benefits which accrue from project serve the larger social

purpose. These benefits include creation of additional employment opportunities, savings in foreign exchange, good export prospects, development of a back-ward (less developed) district/area (as identified by the Government), growth of village and rural industries or development of ancillary projects of substantial advantage to rural areas and community in general. Projects harnessing indigenous technology or envisaging effective utilization of locally available raw materials, manpower or other resources or lending to ancilliarisation also fall in this category. Economic/social cost-benefit appraisal involves consideration of the following aspects in relation to the project under consideration:

- Direct economic benefits and costs.
- Impact on distribution of income in the society.
- Impact of level of savings and investments in the society.
- Fulfillment of social goals such as self-sufficiency, employment and social order.

(v) *Project Appraisal*- Social and other Related Aspects: It has been observed that most of the industrial prospects set up in backward areas suffer because of the absence of housing facilities. While assessing the cost of the project adequate provision for housing of chief executives and other key personnel is allowed to be made in the project cost upto a reasonable extent, say, upto 10% of the project cost on a case-wise basis. Assistance for 'project-specific infrastructure' is also now available for new projects coming up in Category 'A' districts/areas.

Further, with a view to ensuring that there is a 'spread' effect of industrialization, the prospects of ancillarisation, and , use of appropriate technology transfer into the country in the proper direction are given weightage, while making an evaluation of the projects for the purpose of financing.

(vi) *Project Appraisal - Energy Management and Ecological Aspects*: Alongwith economic appraisal, sociological and ecological considerations are also kept in view and given due weightage. It is ensured that the applicant concern has made adequate provision for treatment of effluents so that environment remains pollution-free.

In the context of high priority and significant importance being given to the energy conservation and use of alternate sources of energy. Afls have been attaching considerable importance to the 'energy management', while financing industrial projects. For this purpose, the steps proposed to be taken for the conservation of energy or use of alternate sources of energy are now examined in greater depth, while appraising a project.

Priority Criteria

Normally, in financing new apart from individual priority, the following considerations are also kept in view:

- Projects proposed to be located in notified backward districts/areas, specially in 'No-Industry' and 'Special Region' Districts.
- Projects which contemplate harnessing indigenously available technology or process know-how and raw materials.

—☐Export-oriented projects, normally with export obligation of 60% and above.

—☐Projects promoted by new or technician entrepreneurs.

—☐Employment-oriented and labour intensive nature of project.

—☐Projects where benefits are to flow to rural areas or which are proposed to set up in the co-operative sector.

—☐Projects which aim at either conserving the requirements of energy of contemplate the use or manufacture of renewable energy system/devices.

—☐Project relating to infrastructure development.

Techniques of Appraisal:

Once the various costs estimated and benefits expected to accrue from a given project has been identified, the feasibility of making an investment is examined by the application of the appraisal criterion. The important appraisal criteria can broadly be categorised into discounting criteria and non-discounting criteria.

Some of the appraisal techniques used in evaluation of investment decision in a project are:

(a) Non-discounting Techniques
  (i) Urgency
  (ii) Accounting Rate of Return
  (iii) Pay Back Period.

(b) Discounting Techniques
  (i) Net Present Value
  (ii) Internal Rate of Return
  (iii) Benefit Cost Ratio.

While applying the mathematical tools to evaluate the advisability of undertaking a project for implementation there is an inbuilt provision to analyse the risks and uncertainly related to the returns expected from the project. The discounting appraisal techniques takes into account the time value of money (the premise being that a Rupee earned today is more valuable as compared to a Rupee earned tomorrow) and the risk associated with the project.

Modern Technique in Project Appraisal

The traditional method of project appraisal discussed in the preceding paragraphs is undergoing a change. Internationally, the project appraisal is carried out by assessing risk and eliminating or mitigating the risks. The following 16 risks are examined in connection with provision of finance.

1. Supply (raw material), Traffic (road/highway projects), Reserve (oil, iron ore etc.)
2. Market
3. Foreign Exchange
4. Operating : Technical
5. Operating : Cost

6. Operating : Management
7. Environmental
8. Infrastructure
9. Force Majeure
10. Completion
11. Engineering
12. Political
13. Participant
14. Funding
15. Syndication
16. Legal.

The project appraisal skill lies in identifying the major risks and mitigating those risks so that the project implementation progresses smoothly.

LOAN DOCUMENTATION

Term lending by the Financial Institutions is a high risk business and is therefore important for them to satisfy themselves that no legal lacuna or formality is omitted as might expose the Financial Institutions to the danger of losing the money lent. The relationship between the Lender and the Borrower is a legal relationship which results in mutual rights, duties and liabilities and commercial prudence demands that these should be well expressed and be fool proof as far as possible. As such, after the project has been found to be viable, the Financial Institutions process the request for loan through legal scrutiny before lending the money. How such legal examination is carried out and what legal formalities are to be compiled with by the Borrower/ Assisted Unit and what documents the Borrower should keep ready for expeditious execution of the Loan Agreement to enable the Financial Institutions to disburse the sanctioned loan amount are discussed in the following paragraphs.

Before, discussing the formalities in connection with the execution of the Loan Agreement, it would be pertinent to mention here that lending by Financial Institutions and Investment Institutions viz. IDBI, IFCI, ICICI, SFCs, SIDC and LIC and UTI, GIC and its subsidiaries are based on certain special characteristics which distinguish them from other type of lenders. These are:

(a) Finance is provided by the above named Institutions either for setting up, expansion, modernisation or for reconstruction of an industrial concern, day to day operational financial difficulties and not for general purposes of trading or meeting the expenses and liabilities of the Borrower Unit.

(b) The borrower is required to charge its entire assets, immovable and movable including uncalled capital and book debts as security for the financial assistance and not merely just sufficient assets for covering the term loan. Additionally, the borrower is precluded, in terms of Loan Agreement, from creation of any charge on its assets without the prior approval of the lender except in the case of creating charges in favour of bank on the stocks of raw materials, semi-finished goods, consumable stores and book debts and such other movable as may be agreed to in writing, for securing borrowings for its

working capital requirements.

(c) Consortium finance i.e., joint financing by the lenders. Consortium finance involves lending by two or more Finance Institutions to the same borrower against the same security. However, where the lending is to the same borrower but for two different units or against separate securities, it is not a case for consortium finance.

(d) The consortium finance concept involves the borrower submitting a detailed application to the lead institution giving complete details of the project including technical aspects. Cost of various items such as land, plant and machinery, technical know how; technology and process of manufacture; raw materials, power and water requirement; effluent disposal systems; import substitution; making the country self-sufficient in the said product; development of an industrially backward area; generation of employment opportunities in and around the location of the plant both for the skilled and unskilled categories; development and growth of ancillary industries; capabilities of the promoters; and schedule of completion of the project to enable the lending Financial Institutions to appraise the project. The technical feasibility and financial viability of the project is analysed and evaluated by the technical and financial staff of the Institutions which may also sometimes involve engaging outside consultants. The emphasis of such evaluation is not the security aspect only but the feasibility and viability of the project in the light of overall economic development of the country and the capability of the promoters to put up and run the project economically and efficiency on the principles of sound management techniques. Hence, it should be remembered that where other lenders may shy away from financing a project for lack of adequate security, the Financial Institutions may still finance the project based on its feasibility and viability and the importance and contribution of the project to the overall economic development of the country.

What is Security?

In the context of a financial transaction, ‘security connotes some right or interest which the creditor has over the properties (either immovable or movable) of the Debtor (i.e. the Borrower) so that in the event of the Debtor/Borrower failing to pay his debt as and when due, the lender-Creditor may reimburse himself for the debt out of the property charged. Security can be in various forms but normally for loans by the Financial Institutions it means (i) mortgage of the immovable properties of the borrower, and (ii) hypothecation of the movable properties of the Borrower.

The rupee term loan, foreign currency term loan and deferred payment guarantee assistance sanctioned by all India financial institutions is secured by a first mortgage of immovable properties and hypothecation of movable property.

Since the borrower is to pay an additional interest on all rupee and foreign currency loans till the date of creation of mortgage it is essential for the borrower to ensure its creation as early as possible.

The procedure to be adopted for creation of mortgage is as under:

—☐Submit copies of the land title deeds together with mutation certificates and

the lay-out plan to the legal department of the lead institution.

—☐The legal officer will verify the ownership records for the last 30 years in case of freehold land to ensure that the current owner holds, good and marketable title. If the land is acquired by the Government for setting up industries/ industrial area, investigation is carried out from the date of issue of notification for acquisition; but searches is done from the date of award.

—☐In case commercial banks are participating in the term loan funding of the project, *pari passu* letters would be exchanged between the lead institution and the participating commercial banks. Though the exchange of this letter, the lenders would offer *pari passu* change in favour of each of the other co-lenders.

—☐The borrower must obtain clearance from the Income-tax Officer under Section 281(1) of the Income-tax Act for the creation of mortgage and submit the same to the legal department. In the case of new companies this requirement is not compulsory. However the borrower is required to furnish a certificate from the statutory authority that the company has no tax liability.

—☐Original title deeds should also be submitted by the borrower to the lead institution.

—☐The lead institution will hold the original title deeds as securities against its own term loan assistance and also as security on behalf of other participating financial institutions and commercial banks.

—☐An authorised director of the borrower shall have to execute a declaration at the time of creation of joint mortgage by deposit of title deeds before the Notary Public in the manner directed by the lead institution.

In respect of expansions and modernisation where mortgage has already been created and the borrower is seeking additional financial assistance, the process of creating final security is much simpler. Only *pari passu* letters need to be exchanged amongst the original lenders and the new lenders and that too only where the new lenders are other than AFIs. Through the exchange of these letters, submissions of a declaration by an authorised director of the borrower, the scope of the existing joint mortgage may be enhanced to include the additional financial assistance now availed. Prior to the creation of mortgage the lead institution undertakes updating of searches when the time gap between the mortgages exceeds one year.

Loan Documents Execution: Pre-requisites

Procedure for execution of documents has been standardised. The AFIs furnish the fair engrossments of the documents required for availing of the financial assistance. Sometimes delay takes place in providing certain documents required in connection with the execution of the loan documents. The Company Secretary of the Borrower should therefore in consultation with Legal Department of the financial institution and the Company's advocate arrange to have:

(a) Inspection and investigation of the Title Deeds of the Borrower in respect of its properties by the Lenders and/or by the advocates chosen by the Borrower from the panel maintained by the Lenders to establish a clear and

marketable title in favour of the Borrower to its properties.

(b) Approval of the shareholders of the company for mortgaging/charging company's properties in favour of the Financial Institutions as required under Section 293(1)(a) of the Companies Act, 1956;

(c) Shareholders' Authority to the Board of directors of the company to borrow in excess of the limits of its paid-up capital and free reserves as required under Section 293(1)(a) of Companies Act, 1956;

(d) Resolution of the Board of directors of the Company accepting the terms and conditions of the Sanction Letter or Letter of Intent issued by the Financial institution sanctioning the term loan and execution of Loan Agreement and Deed of Hypothecation.

(e) Normally the Lending Institution obtains several undertakings from the borrower on stamp papers. These are:

  (i) Undertakings from the Promoters Group regarding non-disposal of their shares in the Company without prior approval of the Lender;

  (ii) Undertaking by the Promoters to meet the over-run in the cost of the project without having recourse to the Institutions and agreeing not to withdraw the unsecured loans and deposits brought in by the Promoters/their Group for financing the project;

  (iii) Undertaking to complete the pending formalities given in the Sanction Letter within a stipulated period and also to create the Mortgage (if not completed) within a stipulated period.

(f) The Institution in the case of bridge loan gets a Demand Promissory Note signed by the authorized Director.

(g) The Institution also obtain a 'No-lien' letter from the Company's Bank to which the sanctioned loan amount is to be credited. Format of this 'No-lien' letter is provided by the Lending institution.

(h) Permission of the Income-tax authorities under Section 281 of ITA.

(i) Letter of Confirmation under Section 9A of IDBI Act that none of its Directors are interested in the project being financed.

(j) Permission/exemption under Urban Land Ceiling Act, wherever required.

As such before signing the Loan Documents with the Financial Institutions, the Company secretary should, besides keeping the aforementioned documents/paper, constantly liaise with the lenders to ascertain if any further compliance is required to enable disbursement of the loan amount as soon as the documentation gets completed. The importance of the Loan Agreement and its main terms and conditions discussed hereunder.

Loan Agreement of Financial Institutions

"The Loan agreement is an agreement expressed in writing and entered into between the borrower and the lender bank, institution or other creditors. It envisages a relationship taking into account the commitment made at that time and the conduct of the parties carrying legal sanctions."*

* J.C. Verma: Corporate Finance: Legal Aspects of Borrowing.

A company, as a borrower, delivers power to borrow under the Memorandum of Association and Articles of Association read with the provision of the Companies Act, 1956. The agreement as such is required to be on behalf of the company under its express or implied authority and may in the same manner be varied or discharged.

Loan agreement for borrowing money from financial institutions can be executed under the authority of the Board authorization and authorizing affixation of the common seal of the company on the documents at the time of its execution. An agreement, thus executed, binds the company and is valid in the eyes of law.

Simplification of Legal Documents and Procedures

The main document is the common loan Agreement. The standard form of loan agreement has been split into two parts viz. (1) Loan Agreement-which contains provisions/terms of sanction applicable to specific loan project such as rate of interest, security, amortization schedules and special conditions stipulated in respect of assistance sanctioned; (2) General Conditions- which are applicable to all cases where assistance is provided by institutions and they are not normally variable/ negotiable. The borrower company is required to sign the Loan Agreement at (1) above and the General Conditions will form part of the loan agreement.

Loan agreement contains the following provisions:

1. Agreement and term of loan covers.
   - —☐Amount of loan and terms of loan
   - —☐Interest
   - —☐Last date of withdrawal
   - —☐Repayment
   - —☐Conversion rights. (in certain cases)
2. Security
   - — Security for loan
   - —☐Creation of additional security
   - —☐Acquisition of immovable properties
   - ☐ Guarantee.
3. Appointment of Nominee Directors.
4. Special Conditions, if any.
5. Effective date of agreement.
6. Schedule I-Particulars of loan.
7. Schedule II-The Project.
8. Schedule III-Financing Plan.
9. Schedule IV-Particulars of Interest.
10. Schedule V-Amortisation schedule.
11. Schedule VI-Special Conditions.

12. Testimonium clause.

General conditions

General conditions contain the following:

1. Definition.
2. Approvals (from lead institution under Loan Agreement).
3. Disbursement, interest, commitment, other charges and repayment.
4. Borrower's 'Warrantees'.
5. Pre-disbursement conditions.
6. Conditions applicable during currency of the Loan Agreement.
7. Reports.
8. Inspection.
9. Events of defaults and remedies.
10. Cancellation, suspension and termination.
11. Waiver.
12. Applicability of other statutes.
13. Miscellaneous provisions.

Usual conditions in Loan Agreement

The usual conditions in the Loan Agreement of the Financial Institution can be discussed under the following sub-headings:

(1) The Loan Agreement Terms

(2) The Security for loan

(3) Borrower Warranties

(4) Conditions precedent to disbursement of the loan

(5) Concurrent covenants

(6) Reporting System and Inspection of the assisted units

(7) Remedies for the breach of Agreement

(8) Cancellation, Suspension and Termination of Agreement

(9) Miscellaneous provisions.

(1) Loan Agreement Terms

The loan agreement begins with the 'date of execution and 'description of the parties to the agreement'. The main term used in the loan agreement are defined and a 'brief description of project and financing plan' is given. The following discussion will cover only general aspects and where the context so requires the extra information

will be added to make more clear the sense inherent in a particular loan condition.

The Terms of Loan

Under the terms of the loan, the exact amount of the loan the company agreed to borrow is specified.

After mention of the loan agreement amount, another important clause in the loan agreement is 'interest which contains the exact rate of interest applicable to the loan and mode of its payment which is quarterly instalments falling due on specified dates.

In the eventuality of default in payment of instalment of interest, the clause contains provisions of compound interest being reckoned with rests taken or made quarterly. There is provision for interest on defaulted instalments of principal. Again liquidation damages are to be paid on such defaulted sums at the rate settled by the financial institutions. The clause also describes the mode of computation of interest and other charges.

Another important clause in the Loan Agreement is the conversion of the option into Equity. In line with the Government's policy, mandatory conversion option has been done away with. Institutions shall, however, have a right to convert loan into equity in the event of default and assistance granted for rehabilitation of the borrower concern or to meet a part of the cost of over-run. In case of conversion of loan into equity is applicable to a particular loan it is so stated under the clause 'conversion right'. The institutions reserve a right to convert at par the entire outstanding amount into equity and in the case of conversion option attached to over-run cost of the project upto 20% of the additional assistance sanctioned by the institutions. The consequences of conversion is that the portion of the loan so converted would cease to carry interest as from the date of conversion and the loan stands correspondingly reduced. Upon partial conversion, the instalment of loan payable after the date of conversion stands reduced proportionately by the amount of the loan so converted into equity shares of the company. On such conversion, the lender becomes the equity holder.

Disbursement of the loan amount is another important aspect. The loan agreement describes the terms of disbursement. The basic idea is that the loan amount is required to be used by the borrower company as per the schedule of expenditure submitted by it and all expenditure is to be adhered to as per the schedule. The institutions want that the amount so disbursed by them should be used for the purpose of project implementation only. With this end in view, the draw-down schedule of the loan amount is drawn and mode of disbursement for the loan is also specified in the agreement.

Another important term of the loan agreement is the repayment of loan. The borrower has to repay the principal amount of the loan in quarterly instalments to the lender institution from a particular date depending upon the moratorium allowed as per the information furnished in the application for the financial assistance. The repayment clause contains provisions to exercise right by the lending institution to vary or alter the repayment schedule wherever cash inflow/profitability position so warrants. The company shall not make premature repayment of loan without prior permission of the lenders, and on such request being made by the company, the lenders reserve the right to impose such conditions to accept premature repayment.

Generally, lenders stipulate payment of premium with such premature repayments. However, premature repayment of foreign currency loan is not possible and only in very special case the Institutions recommend such premature repayment after obtaining the approval of the Ministry of Finance and of the Reserve Bank of India.

(2) The Security for loan

The security clause is an important clause in the loan agreement. The borrower company has to execute security documents in favour of the lender on the basis of the provisions made in the agreement.

Loan Agreement stipulates security for the loan in the forms of mortgage of immovable properties, hypothecation of movable assets and personal guarantee of the promoters/directors of the borrowing company. The security clause stipulates first mortgage over the borrower's immovable and movable properties including its movable machinery, spares, tools, and accessories, present and future, and also a first charge on all the remaining assets of the borrower, present and future, (save and except book debts in the case of hypothecation), subject to prior charges created and/to be created in favour of the borrowers' bankers on the borrowers' stocks of the raw materials, semi-finished goods and finished goods, consumable stores and book debts and such other movables as may be agreed to by the lenders for securing borrowing for working capital requirements in the ordinary course of the business. Where there are more than one mending institution involved, the mortgage and charge are to be created on *pari-passu* basis in favour of such institutions.

The provision of personal guarantee of Promoter/Directors made in the security clause is discretionary. The institutions in some cases obtain pledge of unencumbered shares held by the promoter as security for the loan. In these cases, it is to be ensured that the shares are not subject to lock-in-period or the intention to create the pledge is discussed in the prospectus.

(3) Borrowers Warranties

Under this clause the borrower ensures the lenders of the accurate description of the project in the Loan Application, on the basis of which the borrower has been granted the loan followed by execution of the agreement. The borrower also undertakes to furnish correct information relating to the project to the lender in future also. Besides, this clause requires the borrower to disclose any material affecting the project in future also. Such changes may cover scope of the projects, the location of its factory, the processes to be used for the manufacture of its products, the line of activity, the specifications of machinery and equipment required for the project, buying and selling arrangements, the management set-up, the arrangements entered into with collaborators, machinery suppliers and technical consultants etc. except as approved by the lenders from time to time.

Warranties clause also cover assurance by the borrower for a good title to its properties. The assurance specifies that there has been no changes or encumbrances on the property or the assets of the borrower; that the properties are not involved in any litigation of title or ownership; that there is no defect in the property affecting its title, of ownership; that there is no infringement of public law, or no default in payment of demands of Municipalities or other statutory authorities etc. Further, warranty also covers that the properties are not affected by any public

schemes like widening of public roads etc.

In addition to the above, the warranties clause covers briefly about the selling and purchasing arrangements; management agreements; financial position; auditors certificates, permissions under FEMA; various consents/licence from Government of India or State Agencies; Agreement with technical consultants/collaborators; agreements with machinery suppliers; construction schedules; cash budgets; supply of power, water, raw material, arrangements for working capital and arrangements for meeting short fall in the resources for completion of the project. Compliance of provisions of the Companies Act, 1956 in relation to borrowing like passing of requisite resolutions under Sections 293(1)(a) and 293(1)(d); adequacy of technical, financial and executive staff; resolving conflict in Memorandum of Association and Articles of Association exist in loan agreement. This list of warranties is not complete or exhaustive but only illustrative. Additional conditions befitting the circumstances are appended whenever the Institution deems them fit.

(4) Condition Precedent to Disbursement of the Loan

To safeguard the interest of the financial institutions, the borrower is required to comply with the following matters incorporated under this clause in the Loan Agreement:

(a) The borrower shall have share capital paid-up to the required extent as stipulated in the loan agreement;

(b) The borrowers shall have created security in favour of lenders having proved to the satisfaction of the lenders about the borrowers clear and marketable title over its properties;

(c) The borrower shall have complied with the provisions of the Companies Act, 1956, viz. under Section 293(1)(a) as applicable;

(d) The borrower shall have entered into arrangements with other financial institutions and banks where so required for the balance portion of the funds required for completion of the project;

(e) The borrower has furnished tax clearance certificate under Section 230A of the Income-tax Act, 1961; (whenever applicable)

(f) That there are no legal proceedings pending against the borrower company involving any claim on its properties;

(g) There has been no default discharge of its obligations to the financial institutions;

(h) The borrower shall satisfy the lender of the utilisation of earlier disbursed amount of the loan.

Here, also additional conditions precedent to disbursement could be added depending upon the circumstances of each case as the Institution may deem fit. Similarly, some of the above conditions could even be deleted where the circumstances so warrant when compliance of such conditions in a particular case is not required.

(5) Concurrent Covenants

The affirmative covenants and terms as given in the Loan Agreement which apply during the currency of the Loan Agreement covers the following subject matter:

(a) project implementation;

(b) utilisation of loan;

(c) loan amount to be kept in separate Bank Account;

(d) insurance of the mortgaged assets and insurance policies to be furnished to the lenders endorsing the Lenders as Mortgages;

(e) to report to the lender any changes in project;

(f) to report to the lender any adverse changes in the production and profitability projections;

(g) to report to the lender the changes in different contractors/agreements as covered in the loan agreement specially those made with machinery suppliers/collaborators/technicians or technical consultants and suppliers of raw materials;

(h) borrower to ensure proper maintenance of the property;

(i) borrower to inform the lender of the notices received by it about the winding up proceedings and other legal process instituted against the company;

(j) borrower to inform the lenders of the causes of delay in completion of the project;

(k) borrower to inform any loss-damages the borrower suffers due to any unforeseen circumstances;

(l) on happening of certain events proportionate repayment of the loan is required to be made by the borrower. These, events may include payment being made to other lenders covered under the loan syndication arrangements without making proportionate payments to all i.e. preference being made in payment of dues by paying one over the other;

(m) the borrower to reimburse and pay costs/charges and expenses to lenders e.g. travelling expenses of lender's inspection team etc.

(n) furnish to lenders the documents executed in favour of banks and other institutions;

(o) make alterations in memorandum of association and articles of association as desired by the lenders;

(p) pass necessary resolutions to entitle lenders to rights shares/bonus shares where rights of conversion of loan into equity has been exercised by the lenders;

(q) furnish details of additional property, movable or immovable acquired by the company subsequent to the creation of mortgage;

(r) borrower shall facilitate the appointment of the lender's nominee directors;

(s) borrower to agree to the lenders' right to depute observers at meetings of the Board of directors or General Meeting of the Borrower Company.

(t) borrower to place before its Board of Directors for consideration of all important matters and also those matters which the lenders may desire;

(u) borrower to uphold lenders' rights to appoint Technical/Management consultants and chartered accountants as and when the lender may so decide.

Negative Covenants

In addition to the above positive covenants, there are certain 'negative covenants in the agreement which are required to be performed by the borrower. These negative covenants restrict the company (1) to pay commission to promoters, directors, managers or other persons for furnishing guarantee or indemnity or for undertaking any other liability in connection with any financial assistance obtained and/or to be obtained by the borrower for the purpose of the project; (2) to pay dividend to the equity share holders if default has been committed in payment of interest or repayment of instalments of principal to the lenders; (3) to create charge or lien on its assets; (4) to enter into any partnership, profit-sharing or royalty agreements or enter into any similar arrangements whereby the business or operations of the company are affected; (5) to create any subsidiary or become subsidiary to any other existing concern; (6) to recognise or register any transfer of shares in the borrowers' share capital by the promoter directors, their relatives and associates who are required to furnish "Undertaking for non-disposal of shares" to the Financial Institutions; (7) to permit withdrawal of unsecured loans and deposits brought in or to be brought in by the Promoter Directors Group or Associates to finance capital cost of the project and to meet the working capital needs unless such withdrawal or payment of interest on such unsecured loan and deposit is permitted by the lenders.

The various other aspects covered under the 'negative covenants include not to carry out (1) the amendment of the memorandum of association and articles of association or alteration in the capital structure of the Company i.e. borrower (2) transfer of undertaking, trading activity other than the activities permitted by the Lenders (3) payment of directors remuneration, in addition to what has been approved by the Central Government and the Institution. Negative covenants also relate to (1) Mergers/consolidation etc. utilisation of funds, donations, new project, change of registered office and location of factory, not to raise loans or debentures or invest funds in other concerns etc. without the prior approval of the Lenders.

(6) Reporting System and Inspections

The borrower company is required to submit to the lender the quarterly/half-yearly progress reports during the period when project implementation is in progress. Once the project is completed and production is commenced the borrower company is required to submit quarterly progress reports of production, sales, gross profits and other important details having a bearing on the operational performance of the company. Besides, the audited annual accounts of the company are also required to be submitted by the company to the lenders.

In addition to above and obtaining the information through periodical reports, the loan agreement contains provision for having the inspection of the borrower concern carried out periodically by the lenders to verify project expenditure, Books of Accounts and records; technical-cum-financial-cum-legal inspections through the Institutional Inspection team of experts in different areas. This practice continues till the entire amount of the loan is repaid. The cost of such inspection is borne and paid by the company on demand and until payment, the same shall carry interest at the same rate as on defaulted sums under the loan agreement.

(7) Remedies for the Breach

The main remedy of the lender against the borrower is to call back the loan amount with interest and other dues. The clause for remedies specifies those circumstances in which the lender can take recourse to such remedies. These circumstances, *inter alia*, are default in payment of principal sum of the loan; interest and arrears of interest, non-performance of covenants and conditions; supply of misleading information to the tenders relating to the projects, its promoters or relating to its operations; refusal to disburse loan by other Financial Institutions; sales, disposal or removal of Assets of the Company without lenders approval etc. etc.

(8) Cancellation, Suspension and Termination of Loan

The lender may cancel any part of the loan by giving notice to the borrower if such loan amount remains unavailed of by the borrower company. Any portion of the loan may be suspended or terminated for non-compliance of the terms and conditions of the loan agreement by the borrower or on emergence of any extraordinary situation. Such suspension shall continue till the default is remedied.

Legal Documents

Legal documents which emerge from the Loan Agreement are the legal documents for creating of security as stated in sub-para (2) in the foregoing paras.

For creation of equitable mortgage by deposit of Title deed on its immovable property the director of the company duly authorised by a board resolution is required to handover the title deed to the lead institution. The lead institution complete the transaction by accepting delivery of the title deeds from the borrower across the table and record the transaction in its books. If the mortgage is done by extension of the existing mortgage, the authorised director is required to give his oral ascent and consent to lender to hold the document of title as security for additional/new loan.

The borrower executes Deed of Hypothecation in favour of Lenders in the standard form of the lenders. In addition to the Deed of Hypothecation there are certain other letters of undertaking and Declarations as detailed under clause (b) (i), (ii), (iii) and (iv) under “Loan Document Execution: re-requisites” executed by the borrower.

For creation of mortgage/charge on the Company’s properties, particulars of charge pursuant to Section 125/127/135/130 of the Companies Act, 1956 are filed with the Registrar of Companies in Form No. 8 and Form No. 13 within 30 days of the creation of the charge or modification of any existing charge.

LOANS FOR MODERNISATION AND RENOVATION

Need for Modernisation/Renovation of Industry

The Seventh Five Year plan laid special emphasis on induction of modern technology, modernisation of plant and upgrading of technology in order to ensure that the economy moves towards production of low cost quality goods of international specification so as to gain international competitive strength. It is well known that many sections of Indian industry are currently faced with the problem of large scale obsolescence of plant and machinery. This has adversely affected the productivity and production, inflated cost of production and prices, and resulted in deterioration in the quality of output. This has resulted in reducing our competitiveness in the world

market and reduced our export earnings. Because of not effecting timely modernisation of industry, wide productivity gaps have emerged between the Indian industry *vis-a-vis* the industries in developed countries. A fairly modernised unit is in a better position to tide over the difficulties arising out of periodic fluctuations and also modernisation help to achieve fuller utilisation of capacities with relatively lower capital outlay and it helps the units to overcome backlog of modernisation/ renovation/replacement of plant and equipment to improve their productivity and to improve their competitive strength. Modernisation is a continuous process and has assumed greater importance in the context of recessionary conditions and the need for increasing exports.

In addition, with the initiation of the liberalisation process started in 1991 in the form of economic reforms, the industry can be expected to face stiffer competition both in the domestic and foreign markets, making it all the more crucial to promote and develop a modernised industrial sector.

A number of assistance schemes have been introduced by various financial institutions with the objectives other than those of providing assistance for modernisation and renovation of units.

LOAN SYNDICATION

Loan syndication involves obtaining commitment for term loans from the financial institutions and banks to finance the project. Basically it refers to the services rendered by merchant bankers in arranging and procuring credit from financial institutions, banks and other lending and investment organisation or financing the client project cost or working capital requirements. In a service, it is project finance service. The following institutions are involved in loan syndication:

(a) Public financial institutions:

IFCI Ltd.

Industrial Development Bank of India (IDBI)

ICICI Ltd.

Small Industries Development Bank of India (SIDBI)

(b) Investment Institutions:

Life Insurance Corporation of India (LICI)

Unit Trust of India (UTI)

General Insurance Corporation of India (GICI)

(c) Other Specialised Institutions:

Industrial Investment Bank of India (IIBI)

State Industrial Development/Investment Corporations

(d) State Financial Corporations

(e) Nationalised Commercial Banks.

Loan syndication is infact a tie up of term loans from the different financial

institutions. The process of loan syndication involves the following steps:

Firstly, where the borrower directly submits the loan application to the lead financial institutions for a particular industry, the loan syndication gets automatically arranged through the lead institution who on its own would like the other financial institutions to participate in the financial assistance to the borrower. In this case, borrower need not approach the different financial institutions.

Secondly, where the borrower engages a merchant bank for arranging the loan syndication, then it becomes the duty of the merchant bank to approach the financial institutions before making a formal application to ascertain the possibilities of getting loan for a particular industry from the financial institutions. On getting the positive response, the merchant bank submits the formal information or applications form to the financial institution for the loan on behalf the borrower. The merchant banker also makes an indepth study of the investment proposal before taking up the project for loan syndication.

The process of loan syndication involves the formalities such as (1) preparation of project details, (2) preparation of loan application, (3) selection of financial institutions for loan syndication, (4) issue of sanction letter of intent from the financial institutions, (5) compliance of terms and conditions for the availment of the loan, (6) documentation, and (7) disbursement of the loan.

The public financial institutions require the borrower to submit the requisite information for the loan in the prescribed forms alongwith the project report which is thoroughly scrutinised by the them at individual levels and discussed in the inter-institutional meetings. After the officers of the institutions satisfy themselves of the viability of the project, the proposal for the loan is submitted to the sanctioning authority and it is after this sanction the formal letter of intent is issued to the borrower. This letter of intent is only an offer for financial assistance which is required to be accepted by the borrower in its board meeting with all the necessary terms and conditions appended to it. On complying with the terms and conditions of the loan, the borrower company avails of the loan amount in suitable instalments as per the project details submitted and agreed to by the Financial Institutions. Before compliance of all the formalities and before the creation of security, the borrower also can avail of a Bridge Loan against the sanctioned amount of the loan.

Bridge loans against Sanctioned Loan Assistance

AFIs, in exceptional cases in order to ensure the timely implementation of the project by the assisted concern provide bridge loans against the sanctioned assistance ordinarily upto 80% upon execution of bridge loan agreement. The bridge loan is normally secured by the following:

(i) Personal guarantee of the borrowers/directors and in the case of joint sector companies also by the SIDs. In the case of industrial cooperatives, instead of personal guarantee a 100% State/Central Government guarantee is accepted;

(ii) Deed of hypothecation creating a charge on the machinery and other movable (subject to prior change on specified movables in favour of bankers for working capital);

(iii) Demand promissory note; and

(iv) Execution of a letter of negative lien on fixed assets. The bridge loan sanctioned upon execution of bridge loan agreement remains a demand loan and is normally repayable within a period of six months from the date of first disbursement. This period can be extended at the instance of the AFIs. The bridge loans are sanctioned pending the execution of Loan Agreement and creation of security. Till the borrower concern creates substantive security an additional interest @ 1% over and above, the document rate is charged upto the date of creation of final security.

The important aspect of loan syndication is the involvement of the financial institutions in financing arrangements of the project. The formalities of the loan application, documentation, compliance of legal formalities etc. remains the same as in raising the loan from a single institution. In the later half of the seventies the Merchant Banking System had developed expertise in loan syndication and the borrowers feel it convenient to engage Merchant Banks for availing of the financial services being rendered by these Merchant Banks to average on behalf of applicant for loans syndication.

MONITORING THE PROGRESS OF UNITS ASSISTED BY THE FINANCIAL INSTITUTIONS

A project should have the following stages in its life time:

(1) Project formulation

(2) Project appraisal

(3) Project implementation

(4) Project monitoring

(5) Project evaluation.

Monitoring is the stage that comes next to the implementation stage and is concerned with giving direction for better implementation as per the plants and schedules. Basically, it involves monitoring the health and progress of the assisted concern, to ensure that the project implementation is proceeding as per the plant laid down in this regard.

The process of monitoring involves taking corrective actions and remedial measures to avoid extreme eventualities. There is a schedule for performance in terms of both cost and time, which is required to be monitored i.e. inducement is given to act on the schedule, adhere to timings of performance and the pre-estimated cost targets set. Monitoring involves periodic examination of the targets set to evaluate adherence to various schedules relating to various activities to the term lending institutions and review of the reported activities by the Lending Institutions and suggested corrective actions to remedy the defects/drawbacks noticed in the functions on the assisted unit.

Monitoring can not be accomplished without follow up action it is for this reason the financial institution monitoring the project require the company to submit periodic information/statements. The information furnished by the assisted unit assists the lending institution to evaluate the progress on project implementation.

For an efficient project monitoring, the lending institutions generally require the

assisted units to furnish various reports as under either directly or through nominee directors, and officials of the financial institutions also make site visits:

(1) monthly production report.
(2) monthly progress report.
(3) half yearly/yearly statement of account, working results, and financial reports.
(4) quarterly progress report.
(5) periodical site inspection and review of performance.
(6) reporting through need based management information system.
(7) review of reports received from the nominee directors.

The information received is analysed and the reasons for delay or variations in execution of plans/targets are called for from the assisted company. Monitoring and follow up serve an important purpose in that if these were not periodic follow up, it may be too late to take corrective measures by the time the defects come to the fore.

The following check-list is normally adopted for the monitoring of the progress of the project during implementation stage.

Task/Activity	*Original date of accomp-lishment*	*Actual date of accomp-lishment*	*Cause for delay/ variation*
Purchase of land			
Site development			
Finalisation of design and engineering			
Ordering of plant and machinery			
Receipt of plant and machinery			
Contract for civil construction			
Commencement of civil work			
Trial runs			
Commencement of production			

The completion of details as per the above check-list reveals the causes and the avenues of delay and variations. For each listed activity or task, a separate or composite statement could be prepared which may clearly specify the original cost, revised cost, actual expenditure incurred, balance expenditure proposed to be incurred, excess of the expenditure over the planned expenditure, ways and means to meet the overruns in the cost of the project etc. This statement will be helpful in locating clearly the areas which requires the urgent attention to ensure that valuation are kept under control.

Performance targets or standards are laid down for every project and watching the attainment of these targets and giving timely directions for non-adhering to these targets are the main functions involved in monitoring. Feedback information is most essential in the project monitoring and therefore continuous review of the progress report on the project to check the variations in the results, helps in eliminating those deficiencies which cause such variations. With this end in view, financial institution

and banks who finance a particular company anxiously await the receipt of the periodical reports about the progress of the project at different stages of its completion.

For successful monitoring of a project it is necessary that the following important aspects are given due consideration:

(1) objective of monitoring;

(2) layout of performance standards;

(3) collect information about the achievements during the period under review;

(4) measure and compare the information furnished with the targets set;

(5) review the results and workout the remedial measures necessary to achieve the desired objectives; and

(6) report the results to the top management for decision making.

Site Inspection

Site inspection plays an important part in ensuring the success of the monitoring system prevalent in an organisation. Site inspection could be done by an officer of the lead institution alone or alongwith the officers of other participating institutions and the commercial banks. During such inspecting officers collect detailed information in the inspecting officers detailed information in the prescribed forms which are sent in advance to the companies if found convenient.

For a company with smooth sailing there is no problem if records are maintained properly in providing the requisite information. But difficulties arise where there are adverse features like heavy over-run, deterioration in operations, defaults committed by the company in payment of institutional/banks dues or statutory dues, pending legal proceed against the company, diversion of loan money, conflict in management etc. In such effects detailed information is required to be furnished by the borrowing unit, and the inspecting staff has to verify each every aspect related to the information sought by them.

Such inspections generally cover the following areas and the company, executives should be ready detailed information on various associated aspects therefor.

1. Project

(a) Implementation on time. If not, reasons for slippages.

(b) Cost of project. If any overruns, the revised project cost and reasons for overruns,

(c) Means of financing as originally planned in case of revised cost estimates, what are revised means of financing the overruns,

(d) Expenditure budget for the next six months.

2. Technical Aspects:

Detailed information may be required in the following areas:

(a) Plant and machinery

(b) Raw material

(c) Processing System

(d) Effluent treatment of disposal, pollution control, etc.

3. Financial Aspects:

(a) Working capital arrangements

(b) Defaults to institutions

(c) Auditors' findings and their report

(d) System of financial control, planning, budgeting followed by the company

(e) Corporate investment plans, if any.

4. Management Conditions:

(a) Constitution of the board and management;

(b) Organisational set up and inadequacies there in;

(c) Style of management, delegation and MIS;

(d) Project monitoring and control system followed by the company;

(e) Marketing and selling arrangements followed/to be followed by the company and the expected results;

(f) Utilisation of borrowed funds; and

(g) Defaults in meeting commitments.

Social Cost-Benefit Analysis

As has been discussed earlier, while evaluating investment decision about a project, cost-benefit analysis is done to estimate the contribution of a project in the form of goods and income to its participants. The difference between sales proceeds and costs incurred in production and affecting the sale constitute the profit or loss from any project. While evaluating a project, the Financial Institutions generally analyses whether the prospective borrowing unit can be expected to generate a reasonable level of profit which will enable the borrower to pay back the loan and still make an acceptable income from the new activity. This falls within the ambit of financial analysis. But when a project is analysed from the point of view of the benefit it will generate for the society as a whole, a different approach is considered necessary for such evaluation. Economic analysis is a method of estimating the gains and losses from a project to the nation as a whole. In economic analysis, the overall gain to the economy are called the benefits, the costs are costs as in the case of financial analysis and the social costs associated with the project. The difference between the two is termed as social benefits. In financial analysis the value of benefits and costs is based on market price, but in economic analysis the value of some of the inputs/returns accruing from the project is modified to reflect the overall social benefits accruing to the society, and the social cost of implementing the project. The values used in economic analysis which differ from market prices are called 'shadow prices' or 'accounting prices'. Another important concept used is that of pricing at 'opportunity cost' i.e. the price of inputs used in project being analysed should reflect the value of what those inputs would be worth in other activities in the absence of the project under evaluation. Shadow Accounting process equate market prices only under conditions of perfect markets-a condition which invariably does not exist in developing countries. Therefore the need to develop shadow prices arises to

measure the net economic benefits arising from a particular activity.

There are three principal measures which may be employed to select projects that would best sub-serve the goal of economic development of a nation. These are as follows:

(1) *Maximum social benefits*—Which is equal to the present value of total project benefits minus present value of total costs;

(2) *Benefit cost ratio*—present value of total benefits divided by present value of total costs;

(3) *Internal rate of return*—it is the discount rate which makes the present net worth of a project equal to zero, it represents the average earning power of the money used in the project over the project life and the higher it is, the more profitable for the nation.

The important questions in making cost benefit analysis are—what cost to be included, what benefit to be sought, what are the main and immediate objectives of the project, how to value them, what rate of interest will be appropriate at which these are to be discounted, what are the relevant constraints etc. Some of the answers to these queries are that costs are to interpreted in economic terms. Further, costs are to be calculated in terms of the opportunities foregone for employing factors of production for a particular project. Similarly, labour costs are not to be calculated at the existing rate in places where serious unemployment or under employment exist, because existing rate may be artificial due to minimum wage legislation. Therefore, shadow price of labour will have to be calculated. Based on these guidelines, cost-benefit analysis is done to assess the following gains:

(1) impact on national income

(2) impact on government finance

(3) impact on immediate beneficiaries.

The impact may be tangible, which would be measured in monetary terms or it may be intangible (which may not be possible to be measured in monetary terms but the impact of the benefit may be felt). The stream of benefits will differ from period to period and will be affected by the discount rate used for computing the value of the project, choice of interest rate and the price trend envisaged for the project. The selection of the project is based on the criterion maximisation or the present value of the benefits fees the present value of total costs. The following criteria are used to facilitate the selection process:

Select:

where present value of benefits is greater than present value of cost;

where ratio of present value of benefits to the present value of cost is greater than one;

where constant annuity with the same present value as benefit is greater than the constant annuity with the same present value of cost; and

where internal rate of return is greater than the chosen rate of discount.

From the wider government angle, cost-benefit analysis should conform to the public policy on income redistribution and employment objectives. From private

entrepreneurial angle, the choice of discount rate could be revenue over expenditure but in the case of a government project social benefits are the main/important objectives.

Social cost benefit analysis is done in India by financial institutions and the banks while assessing the economic viability of the project. No doubt, a project once complete adds to the GNP and generates employment with ancilliarisation in the area, but in terms of pollution, effluent discharge, health and hygiene in the neighbourhood, human habitations etc. are the main considerations to appraise the demerits of the project. These indirect social costs in terms of hazards to the citizens are treated in a different way so that the adverse impact of the project could be minimised in the wake of extra social benefits to the community. However, the projects which are selected at national level by the Government on the basis of GNP contribution and maximisation of employment are criticised at times by the academicians on many grounds viz. (i) politicised competition of making claims and counter-claims about such projects without much reality; (ii) emanating from political ideologies, such project evaluation is subjected to over criticism and the benefits likely to accrue may be termed as over-optimistic; (iii) such types of projects produce certain benefits which cannot be quantified always, yet these may be valuable and essential as indirect contributors to economic growth. Examples of such projects are Birth-control projects, Educational Development Projects etc.

Again, projects which are selected to contribute most to further growth of GNP may all too likely to continue favouring increases for the richer segments of society. It has been reported that in developing countries, GNP additions have benefited the higher class of the society and the poor have been rendered poorer inspite of launching of such society oriented projects. (Ref.: Development Digest: Vol. XVII No. April 1979 p. 93).

Inspite of these criticisms, in developing countries projects which aim at improving the economic lot of the poorer sections of the society will continue to find favour with the Financial Institutions, if properly justified. Nevertheless, the cost-benefit logic calls for minimising costs per unit of output value. Hence, while evaluating such a project from the cost-benefit angle, the employment generated for inhabitants of a hitherto industrially backward area may not be quantifiable and the benefit may not be possible to be measured in terms of money, but the impact of the benefit of employment generation though incurring costs, can definitely be reduced in terms of the ‘shadow price’ concept. As such, projects which create jobs by devising make-work projects with little capital input or material input but having maximum product value may find favour with the Financial Institutions/Banks. Though this may run counter to the logic of efficient economic productive system or the gains through large scale production, in order to solve the unemployment problems in the country, projects which could provide more intangible benefits in terms of social good are encouraged. Despite the above criticisms, the social cost-benefit concept of project evaluation is gaining wider acceptance in general and use of shadow pricing in project evaluation is expanding. As such encouragement is given to entrepreneurs to set up projects which will help in redistribution of income or projects which will help in pulling out the society from its industrial backwardness and encourage the people to come out of their traditional and outdated way of living to a better standard of living to a better standard of living through economic gains.

As part of economic appraisal. AFIs endeavour to asses the Internal Exchange Rate (IER) in projects involving considerable capital or current expenditure in foreign exchange and more particularly in projects which aim at import substitution or export promotion. Besides, 'Social Cost Benefit Analysis' is also made while appraising a project for which purpose Economic Rate of Return (ERR), based on accepted principles, is determined. Inter-firm comparison of the project with similar projects financed earlier is also made with a view to assessing the project cost and its profitability in as realistic manner as possible.

PROMOTERS CONTRIBUTION

The term promoters contribution refers to the contribution made by promoters, directors, friends, relatives and associates. These should constitute a considerable percentage to the overall cost of the project. The basic principle behind envisaging a minimum level of contribution by the promoters is that they should have a reasonable and sufficient stake in the project and resourcefulness to impose confidence in the institutions about their continued interest. Generally the equity capital which is directly brought in by the promoters constitute as the promoters contribution but now a days the financial institutions consider the following funds also as promoters contribution:

- Unsecured loans, interest fee as also carrying interest, from promoters which are subordinate to institutional loans.
- Equity contribution by IFC(W).
- Equity contribution by OED.
- Equity participation by state level institutions.
- Internal cash accruals in case of expansion/modernisation/diversification etc. of existing projects.
- Contribution to rights issue by the existing shareholders including financial institutions, in the case of expansion/modernisation and diversification of projects.
- Investment by other companies.

PROJECT REVIEW AND CONTROL

With a view to exercising control over the project and on the affairs of the company, both during the implementation period as well as during the commercial operation of the project, the following course of action is followed by the financial institutions.

(1) *Periodic Reports:* The periodic reports in the prescribed forms are required to be submitted regularly by the industrial units during the construction period and post construction period. The reports include monthly progress report during construction period, quarterly/monthly progress report of the operational data, special reports, annual reports, etc., depending upon the nature of the industry and the stage of implementation of the project. In case of foreign currency loans, the half yearly progress-cum-financial report as on 30th June and 31st December is required. All these statements and reports are made in the prescribed forms of the financial institutions.

(2) *Balance Sheet Analysis:* It is a comparative study of the information furnished in the balance sheet and other financial data of the company on an annual basis to draw conclusions on the financial strength of the company, its capital structure, its liquidity position, investment of funds etc. The annual report of the company containing the audited balance sheet and income statement and fund flow statements is examined carefully.

(3) Notices of annual meeting and Committee meetings, Board of Directors meetings; copies of Agenda Papers, Minutes of the Meetings and other relevant documents are examined which are sent by the company to the financial institutions in discharge of the contractual obligations of the company. Sometimes these Minutes/documents etc. reveal crucial information about the function of the company and enable the institution to appraise the actual working of the company.

(4) Reports of the nominee directors appointed by the financial institutions on the board of the assisted company help in the indirect control on the company and are instrumental in follow up of the progress of the company. The nominee director is required to ensure proper utilisation to funds lent to the company by the financial Institutions/Banks. The Nominee Directors draw attention of the members of the Board for the compliance of various statutory and contractual obligations by the company particularly those affecting the interest of the secured creditors. he is required to ensure the early implementation of the project and the discharge of the obligations of the Borrower towards the financial institutions in repayments of the loan and interest instalments.

(5) Periodical inspections of the factory and the Books of Accounts etc. of the assisted unit are made by the financial institutions and the banks with a view to exercise control over the company to find out whether the project for which the loan was given is working satisfactorily and there is no diversion of funds or in fund or in its business activities. Inspection may be financial or financial cum-technical depending upon the particular situation which warrants special inspection of the company.

In the addition to the above course of action, direct discussion with the company's top executives and promoters carry more influence on the follow up system. Information about the progress of the company is obtained directly during the discussion with these executives and supplemented by the record contained in the periodical reports, inspection reports, communications received from the nominee directors etc.

Follow up Reports and Procedures

Various reports are required to be submitted by the borrower company to lender institution to cover follow up of the project and the utilisation of funds. With a view to giving idea to the readers of the contents of follow up reports, the two types of report, one to general follow up through inspection and the other for periodical follow up during routine inspection are briefly discussed hereunder:

General Follow up Inspection Report

Name of the Company

Date as on

1. Location
   (a) Registered Office :
   (b) Plant(s) :
2. Date of incorporation :
3. Date of commencement of production :
4. Promoters :
5. Other major companies, if any, controlled by the promoters and brief comments on the state of health thereof :
6. Collaborators/consultants, if any, and broad scope of their services :
7. *Details of assistance*
   (as on_____)

Institutions/ Banks	*Nature of assistance sanctioned*	*Developed/ sanctioned disbursed*	*Present holding outstanding*	*Defaults*		
				Intt.	*Instal-ments*	*Period of default*
(i)						
(ii)						
(iii)						

8. Capacity
   (in per annum)

Product	*Licensed capacity*	*Existing installed*	*Proposed total installed capacity envisaged in project*	*Remarks if any*

9. *Manufacturing Process*
   (Broad outlines)
10. Capital structure
11. Names and holding of ten largest shareholders other than institutions :

	Name	(Rs. in lacs) Holding
(i)		
(ii)		
(iii)		
(iv)		

12. *Insurance*
    Assets covered and value of cover, fully covered or not :
    Risk covered :
    Policy held by :
13. *Capital Structure*
    (a) Capital (Rs. in lacs)

Authorised	:	
Issued	:	
Subscribed	:	
Paid-up	:	
Calls-in-arrears	:	
Details of call-in-arrears due to promoters/directors	:	

(b) Description of existing shareholdings	*Equity % to (paid-up total value)*	*Pref. % Total (paid-up value)*
(a) Indian promoters/directors:		
(b) Foreign collaborators:		
(c) Institutions and Banks:		
IDBI		
ICICI Ltd.		
IFCI Ltd.		
LIC		
UTI		
GIC		
Bank		
Public Others		

(c) Market quotation	:	Rs. ..... per equity shares of Rs. ..... in the Stock Exchange on
(d) Changes, if any, in the shareholding of the promoter group :		

14. Schedule of Implementation

Particulars of activity	*Original Scheduled Date*	*Actual completion*	*Probable date of completion*
1. Acquisition of land			
2. Site development			
3. Finalisation of Design and Engineering			
4. Ordering of Plant and Machinery			
5. Receipt of Plant and Machinery at site			
6. Awarding contract of civil work			
7. Commencement of building construction			
8. Completion of civil work			
9. Trial runs			
10. Commercial production			

15. Details of cost of Project and means of Financing
I. Cost of the Project

Head/sub-Head	*Original cost*	*Revised cost*	*Expenditure Balance incurred as on_*
1. Land and Site development			
2. Buildings			
(a) Factory Buildings			
(b) Non-factory buildings			
3. Plant and Machinery			
(a) (i) Imported (CIF value)			
(ii) Imports duty, Clearing and forwardings charges			
(b) (i) Indigenous			
(ii) Freight and clearing charges			
(c) Foundation installation and erection charges			
(d) Machinery, stores and spares			
4. (a) Technical know-how fees			
(b) Expenses on foreign technician and Indian Technician abroad			
5. Misc. Fixed Assets			
6. *Pre-operative expenses:*			
(a) Interest and Commitment charges on term loans			
(b) Other expenses			
7. Preliminary and Capital Issue expenses			
8. Contingencies			
9. Margin money for working capital			
TOTAL			

16. *Means of financing*

Sources	*Original proposal*	*Revised proposal*	*Amount raised*	*Amount yet to be raised*
1. Share Capital				
(a) Promoters				
(b) Collaborators				
(c) others				

2. Term Loans
   (R/L & FCL)
   (a) IFCI
   (b) IDBI
   (c) ICICI
   (d) LIC
   (e) GIC
3. Deferred Payments
4. Unsecured loan/deposits
5. Central/State Subsidy
6. Internal resources
7. Other sources (specify) _____
   TOTAL _____

17. Sources of Application of Funds Statement for Next Six Months

Sources	*Funds available*	*1st month*	*2nd month*	*3rd month*
1. Case/Bank balance				
2. Share money				
3. *Term loan from*				
(a) IFCI				
(b) IDBI				
(c) ICICI				
(d) LIC				
(e) GIC				
4. *Payments*				
1. Land and Site Development				
2. Buildings				
3. Plant and Machinery				
4. Installation charges				
5. Misc. Fixed assets				
6. Pre-operative expenses				
7. Margin money				

18. Particulars of Directors

Name	*Address*	*Age*	*Qualification*	*Name of other Cos. in which interested*

19. *Organisation Chart, indicating the position of person already joined the company*
20. *List of Key Executives*

Name	*Age*	*Qualification*	*Experience*	*Last post Held*	*Salary paid (Rs.)*

REPORT FOR THE YEAR ENDED 20____

(Implementation Stage)

1. Name of the Concern
2. Location of the Factory
3. Brief Particulars of project
   (a) Licensed capacity
   (b) Installed capacity
4. Changes, if any in the Project as approved by_____* (the changes should be clearly indicated)
5. Cost estimates – (Under main heads given in the common Application/. Heads of Agreement)

Head/ Sub-head	Cost Estimates		Reasons for variations	Expen-diture com-mitted upto	Cumulative Expenditure incurred upto the quarter ended	Balance expen-diture to be incurred	Budget for the next six months
	Original	Revised					
1	2	3	4	5	6	7	8
(i) Land and Site development							
(ii) Buildings							
(a) Factory buildings							
(b) Non-Factory buildings							
(iii) Plant and Machinery							
(a) Imported (CIF value) import forwarding charges							
(b) Indigenous							
(c) Freight, clearing and							

* Specify the name of the institution.

other charges
(d) Foundations Installations and erection charges
(e) Machinery, Stores and spares
(iv) (a) Technical know-how and Engg. Fees
(b) Expenses on foreign technicians and training of Indian technicians abroad
(v) Misc. fixed assets
(vi) *Pre-operative expenses*
(a) Interest and commitment charges on term and loans (including deferred payments)
(b) Establishment expenses
(c) Other expenses
(vii) Preliminary and Capital issues expenses
(viii) Contingency (give details where provision has been utilised)
(ix) Margin money for working capital
TOTAL

6. *Means of Financing*

(Rs. in lakhs)

	Original	*Revised*	*Amount raised*	*Balance to be raised*	*Budget Resources mobilisation for the next six months*
(1)	(2)	(3)	(4)	(5)	(6)
(i) Share Capital					
(a) Equity					
(1) Promoters					
(2) Collaborators					
(3) Others					
(b) Preference					
(ii) Term Loans					
(a) Rupee Loan					
(1) IDBI					
(2) ICICI					
(3) IFCI					

(4) Others (specify)

(b) *Foreign Currency Loan*

(1) ICICI

(2) IFCI

(3) Others (specify)

(iii) Deferred Payments

(a) Imported Plant and Machinery

(b) Indigenous Plant and Machinery

(iv) Unsecured loans/deposits

(v) Central/State deposits

(vi) Internal resources (including drawdown of cash/bank balances)

(vii) Other sources specify) _____

TOTAL _____

Notes: (a) Status of calls in arrears

(b) Status of documentation with the lead institution

(c) Status of arrangements for "Deferred Payments" and/or guarantees there against, if any

(d) Progress made in securing working capital facilities from Banks indicating the lead Bank.

7. Technical/Consultancy/Assistance/Collaboration

8. Government Consents/Approvals

	Consent/ Approval	*Whether obtained*	*If not, when expected to be obtained*
(1)	(2)	(3)	(4)
(i) Industrial License (conversion of Letter of Intent into Industrial License)			
(ii) Import Licence			
(iii) Consent of Control of Capital Issues			
(iv) Whether foreign Collaboration/technical assistance agreement(s) has/have been taken on record by the Government			
(v) *Other consents*			
(a) Permission for effluent disposal			
(b)			
(c)			

9. Physical Progress

	Time Schedule		*Present status (indicate percentage of progress by value and reasons for anticipated delays, if any)*
	Original	*Revised*	
(1)	(2)	(3)	(4)
(i) Acquisition of land and site development			
(ii) Completion of civil construction			
(iii) Plant and Machinery			
(a) Imported			
(1) Placement of orders			
(2) Delivery of site			
(b) Indigenous			
(1) Placement of orders			
(2) Delivery of site			
(c) Foundation installation and erection: (both for imported and indigenous machinery)			
(iv) Completion of off-site facilities			
(v) Progress made in obtaining power supply for regular production			
(vi) Trail runs			
(vii) Commercial production			
(viii) (a) Details of the organisation:			
(i) Broad basing of Board of Directors/Changes, if any, in the composition of the board;			
(ii) Changes, if any, in the key technical/other personnel;			
(iii) Recruitment and training of Labour			
(b) Arrangements, made/to be made for marketing the product(s)			
(c) Arrangements made/to be			

made for procuring principal raw materials/components/ utilities

(d) Any other arrangement effected

(ix) Favourable and unfavourable factors that have helped or retarded the progress of the project during the period.

LESSON ROUND-UP

- Project decisions are taken by the management with basic objective to maximize returns on the investment being made in a project.
- Project report is a working plan for implementation of project proposal after investment decision by a company has been taken.
- Project appraisal should be analyzed for determining the project objects, accuracy of method and measurement, objective of the proposal, reliability of data and project statements.
- A careful balance has to be stuck between debt and equity. A debt equity ratio of 1:1 is considered ideal but it is relaxed up to 1.5:1 in suitable cases.
- Economic Rate of Return is a rate of discount which equates the real economic cost of project outlay to its economic benefits during the life of the project.
- Domestic Resource Cost measures the resource cost of manufacturing a product as against the cost of importing/exporting it. The output from any project adds to domestic availability implying a notional reduction in imports to the extent of output of the project or an addition to exports if the product is being exported.
- Effective Rate of Protection attempts to measure the net protection provided to a particular stage of manufacturing
- The Loan agreement is an agreement expressed in writing and entered into between the borrower and the lender bank, institution or other creditors. It envisages a relationship taking into account the commitment made at that time and the conduct of the parties carrying legal sanctions.
- Loan syndication involves obtaining commitment for term loans from the financial institutions and banks to finance the project. Basically it refers to the services rendered by merchant bankers in arranging and procuring credit from financial institutions, banks and other lending and investment organization or financing the client project cost or working capital requirements
- In Social Cost-Benefit Analysis, a project is analyzed from the point of view of the benefit it will generate for the society as a whole.

SELF-TEST QUESTIONS

1. What is Project report? Why is it necessary to prepare project report? Sketch a formal for project report to be submitted to a financial institution.
2. Discuss the important covenant incorporated in a long term loan agreement. Also state its relevance.
3. How the financial institutions monitor the projects financed by them.

4. Narrate the steps taken by financial institutions while appraising a project.
5. Discuss various financial schemes offered by IFCI to corporate sector in India.
6. Write short notes:
   (i) Promoters contribution
   (ii) Social Cost benefit analysis
   (iii) Viability tests
   (iv) Economic aspects of project appraisal
   (v) Borrowers warranties in loan agreement
   (vi) Social Cost Benefit Analysis.
7. Discuss various techniques of economic appraisal followed by the lending institutions.

Suggested Readings:

(1) Project Preparation and Implementation – *Prasanna Chandra*; Tata McGraw Hill Ltd., New Delhi.
(2) Project Financing – Policies, Procedures and Practices – *H.P.S. Pahwa*; Bharat Law House, New Delhi.
(3) Guidelines issued by Financial Institutions.
(4) Corporate Finance – Legal Aspects of Borrowing – *J.C. Verma*; Vision Books (P) Ltd., New Delhi.
(5) Financing an Industrial Unit – *Jay Narayan Vyas*
(6) A Manual of Merchant Banking – *J.C. Verma*, Bharat Law House, New Delhi.
(7) Project Appraisal and Planning or Developing – *M.D. Little and J.A. Mirrlecs*; Heinemann Educational Books, London.

STUDY X

DERIVATIVES AND COMMODITY EXCHANGES

LEARNING OBJECTIVES

The study will enable the students to understand:

- Definition and concept of Derivatives
- Characteristics of Derivatives
- Spot Contract *vis-à-vis* forward Contract
- Forward Markets
- Options – Put Option – Call Option
- Future Swaps
- Participants in the derivatives market
- Development of Derivatives Market in India
- Clearing and Trading in Index Futures
- Trading in Index Future
- Settlement Mechanism at Stock Exchanges
- Risk Management System
- Commodities Market-Evaluation and Advantages
- Commodity Future Trading in India
- Future of Commodities Market in India

INTRODUCTION

In recent decades, financial markets have been marked by excessive volatility. As foreign exchange rates, interest rates and commodity prices continue to experience sharp and unexpected movements, it has become increasingly important that corporations exposed to these risks, be equipped to manage them effectively. Price fluctuations make it hard for businesses to estimate their future production costs and revenues. Derivative securities provide them a valuable set of tools for managing these risk. Risk management, being used to control such price volatility has consequently risen to the top of financial agendas. It is here that derivative instruments are of utmost utility.

As instruments of risk management, these, generally, do not influence the fluctuations in the underlying asset prices. However, by locking-asset prices, derivative products minimize the impact of fluctuations in asset prices on the profitability and cash flow situation of risk-averse investors.

CONCEPT OF DERIVATIVES

In any commercial transaction, there are minimum two parties. Between these parties there is an exchange of price and goods or service. One of the parties pays the price while the other party provides goods or services. The exchange of price and goods or services could be either simultaneous or follow one another with a

time gap.

Let us consider these illustrations:

Illustration 1

'A' agrees to buy a shirt from 'B' for Rs. 800/-. 'A' pays Rs. 800/- to 'B' and 'B' delivers the shirt to 'A'. Both these transactions take place simultaneously.

Illustration 2

'A' agrees to buy a shirt from 'B' for Rs. 800/-. 'A' pays Rs. 800/- to 'B' while 'B' promises to deliver the shirt after one week.

Illustration 3

'A' agrees to buy a shirt from 'A' while 'A' promises to pay in four monthly installments of Rs. 200/- each.

All the above three illustrations are examples of "Spot" transactions. Virtually all the commercial transactions are "Spot" transactions. In a spot transaction, pricing of goods or services is done according to the current value. The goods or services being purchased are tangible.

Now let us consider a situation where both the parties in a transaction agree to the quantity of goods and price but the exchange is to take place at a future date.

Illustration 4

'A' is a farmer who intends to sell his crop of 50 tones of wheat, which shall be ready after six months. He wants to make sure about the price that he should get for his crop. 'B' is a bakery owner who needs 50 tonnes of wheat at the time of the next crop for his bakery business. He wants to make certain that he gets the quantity after six months. Both of them negotiate a deal under which 'A' agrees to supply 50 tonnes of wheat to 'B' at a price of Rs. 10,000 per tonne.

The above illustration is a case of forward contract in which the quantity of wheat and its price have been settled but the exchange is to take place after six months. In this contract, the item to be exchanged i.e. wheat, is a commodity. There can be instances when the subject of exchange is foreign currency, shares, real estate etc. In every forward transaction, a nominal amount (expensed as a percentage of the contract amount) is paid upfront by the buyer to the seller as a token of his willingness to buy and also with a view to impose a moral binding upon the seller in addition to the legal binding of the contract.

WHAT ARE DERIVATIVES?

A derivative, in general is a financial instrument or security whose payoff depends on a more primitive or fundamental goods, called the "Underlying". The value of a primitive asset is determined by its own price level or pay-off which is associated with it. Generally, the underlying markets are equity, commodities including metallurgical products, treasury, foreign exchange bills and real estate. A gold futures contract, for example is a derivative instrument. The value of the contract depends upon the value of the gold, which underlies the futures contract. Similarly,

an equity share is an underlying asset. The value of the share is the price of the instrument itself. But, the value of a derivative on this equity share is dependent on the price of the latter and, therefore, derived from it. The gains or losses from the derivative security are dependent on the changes in the price of the underlying asset.

Derivatives are financial contracts whose value/price is dependent on the behaviour of the price of one or more basic underlying assets (often simply known as the underlying). These contracts are legally binding agreements, made on the trading screen of stock exchanges, to buy or sell an asset in future. The assets can be a share, index, interest rate, bond, rupee, dollar exchange rate, sugar, crude oil, soyabean, cotton, coffee etc.

Thus, a 'derivative' is a financial instrument, or contract, between two parties that derive its value from some other underlying asset or underlying reference price, interest rate, or index. A derivative by itself does not constitute ownership; instead it is promise to convey ownership.

The Underlying Securities for Derivatives are:

— Commodities (Castor seed, Grain, Coffee beans, Gur, Pepper, Potatoes)
— Precious Metals (Gold, Silver)
— Short-Term Debt Securities (Treasury Bills)
— Interest Rates
— Common Shares/Stock
— Stock Index Value (NSE Nifty)

Securities Contracts (Regulation) Act, 1956 (SC(R) A) defines "derivative" to include—

1. A security derived from a debt instrument, share, loan whether secured or unsecured, risk instrument or contract for differences or any other form of security;
2. A contract which derives its value from the prices, or index of prices, of underlying securities.

Derivatives are securities under the SC(R)A and hence the trading of derivatives is governed by the regulatory framework under the SC(R)A.

CHARACTERISTICS OF DERIVATIVES

The important characteristics of derivatives are as follows:

— Derivatives traded on exchanges are liquid and involves the lowest possible transaction costs.
— Derivatives can be closely matched with specific portfolio requirements.
— The margin requirements for exchange-traded derivatives are relatively low, reflecting the relatively low level of credit-risk associated with the derivatives.
— Derivatives are traded globally having strong popularity in financial markets.
— Derivatives maintain a close relationship between their values and the values of underlying assets.
— The change in values of underlying assets will have effect on values of

derivatives based on them.

Commodity Derivatives and Financial Derivatives

The derivatives market developed in the U.S.A. in the form of commodity futures. It was in the 19th century that commodity futures were started to facilitate grain trade. Much of the early history is directly linked to the city of Chicago and the needs of farmers and grain merchants. Although various examples of the forward pricing of many products can be traced back through the medieval times, forward pricing was only regularized for a few specific commodities by the Chicago Board of Trade in 1848. Formal futures trading was subsequently established in 1865, at the time of American Civil War and at a time when the prices of staple commodities such as grain and cotton would fluctuate dramatically and often quite unpredictably. The result of this wild price movement was that the producers, mainly farmers, had no idea from one day to the next just what could be expected for their goods. The buyers and the processors on the other hand no control over their expenditures. All parties could see the benefit of having a contractual form where forward prices could be fixed.

Although early forward contracts in the U.S. addressed merchants' concern about ensuring that there were buyers and sellers for commodities, "Credit Risk" remained a serious problem. To deal with this problem, a group of Chicago businessmen formed the Chicago board of Trade (CBOT) in 1848. The primary intention of CBOT was to provide a centralized location known in advance for buyers and sellers to negotiate forward contracts. In 1865 the CBOT went one step further and issued the first "exchange traded" derivatives contracts in the U.S. These contracts were called "futures contracts". In 1919 Chicago Butter and Egg Board, a spin off of CBOT, was reorganized to allow futures trading. Its name was changed to Chicago Mercantile Exchange (CME). The CBOT and CME remain the two largest organized futures exchanges.

The first stock index futures contract was traded in Kansas City Board of Trade. Currently the most popular futures contract in the world is based on S & P 500 index, traded on CME. During the mid eighties, the financial futures became the most active derivatives instrument generating volumes many times more than the commodity futures.

Financial derivatives came into the spotlight along with the rise of uncertainty of post 1970, when the U.S.A. announced an end to the Britton Woods System of fixed exchange rates. This generated enormous discomfort owing to currency fluctuations. To mitigate this risk, foreign currency derivatives were introduced on an Over the Counter (OCT) basis by banks that ended up providing cover to their importer/ exporter clients at a cost. Within a few years, commodity futures exchanges that had perfected the trading/clearing/settlement of derivatives over many decades started futures trading for currencies.

The chronological sequence of development of derivatives is given below:

1874 : Commodity Futures

1972 : Foreign Currency futures

1973 : Equity Options

1975 : T Bond Futures

1981 : Currency Swaps

1982 : Interest rate swaps, T-note futures, Eurodollar futures, Equity index futures, options on T-bond futures, Exchange listed currency options.

1983 : Options on equity index; Options on T-note futures; Options on Currency futures; Options on equity index futures; Interest rate caps and floors.

1985 : Eurodollar options, swaptions

1987 : OTC compound options; OTC average options.

1989 : Futures on interest rate swaps, Quanto Options.

1990 : Equity index swaps.

1991 : Differential swaps

1993 : Captions, Exchange – listed FLEX options

1994 : Credit default options

1995 : Credit derivatives

1996-98: Exotic derivatives

2003-04: Energy derivatives, Weather derivatives

It may be seen that the trading in derivatives that began through the commodities continued for over 100 years and acquired new shapes through financial derivatives in the last quarter of the twentieth century. Over a period of time, the following types of instruments have emerged on the landscape of financial derivatives:

(A) Options

An option represents the right but not the obligation to buy or sell a security or other asset during a given time for a specified price called the “Strike” price. An option to buy is known as a “Call” and an option to sell is called a “Put”. Options can be either “Covered” or “Naked”. In a covered Option the contract is backed by the asset underlying the Option whereas in a Naked Option, the contract is not backed by the Security underlying the Option.

(B) Forward Contracts

In a forward contract, the purchaser and its counter party are obligated to trade in security or other asset at a specified date in future. The price paid for the security or assets is agreed upon at the time the contract is entered into.

(C) Futures

A Future represents the right to buy or sell a standard quantity and quality of an asset or security at a specified date and price. Futures are similar to Forward Contracts, but are standardized and traded on an exchange, and are valued or “Marked to Market” daily. The “Marking to Market” provides both parties with a daily

accounting of their financial obligation under the terms of the future. Unlike Forward contracts, the counter party to a Futures contract is the clearing corporation of the appropriate exchange. Futures often are settled in cash or cash equivalents, rather than requiring physical delivery of the underlying assets.

(D) Stripped Mortgage Backed Securities

Also called SMBS, these instruments represent interest in a pool of mortgages, called "Trenches" the cash flow of which has been separated into interest and principal components.

(E) Interest only securities

Called IOs, receive the interest portion of the mortgage payment and generally increase in value as interest rates rise and decrease in value as interest rates fall. Where the underlying mortgages for an IO carry floating rate of interest, the value of the IOs tends to increase in value during periods of rising interest rates because individual borrowers are less likely to refinance and prepay their mortgages. The value of the SMBS would, therefore, tend to increase over the "life" of the mortgage instrument.

(F) Principal only "securities

Called POs, receive the principal portion of the mortgage payment and respond inversely to interest rate movement. As interest rates go up the value of the PO would tend to fall, as the PO becomes less attractive compared with other investment opportunities in the market place.

(G) Structured Notes

These are debt instruments where the principal and/or the interest rate is indexed to an unrelated indicator. An example would be a bond whose interest rate is decided by the prevailing bank rate.

(H) Swaps

A swap is a simultaneous buying and selling of the same security or obligation. Interest rate swaps are fairly common in which two parties exchange identical securities having different interest rate structures. The swap market has grown dramatically. Today Swaps involve exchange of other than interest rates, such as mortgages and currencies. Swaps may also include "Caps" and "Floors" or Caps and Floors combined – "Collars". A derivative consisting of an option to enter into an interest rate swap, or to cancel an existing swap in the future is called a "Swaption".

(I) Warrants

All options having maturity above one year are called warrants. These are generally traded over-the-counter.

(J) Leap

Leap the acronym for Long-term Equity Anticipation Securities are options having

a maturity of up to three years.

(K) Swaptions

Swaptions are options to buy/sell a swap that will become operative at the expiry of the option. Thus a swaption is an option on a forward swap. Rather than having calls and puts, the swaptions market has receiver swaptions and payer swaptions. A receiver swaption is an option to receive fixed and pay floating, whereas a payer swaption is an option to pay fixed and receive floating.

Participants in the derivatives market

Hedgers use futures or options markets to reduce or eliminate the risk associated with price of an asset.

Speculators use futures and options contracts to get extra leverage in betting on future movements in the price of an asset. They can increase both the potential gains and potential losses by usage of derivatives in a speculative venture.

Arbitrageurs are in business to take advantage of a discrepancy between prices in two different markets. If, for example, they see the futures price of an asset getting out of line with the cash price, they will take offsetting positions in the two markets to lock in a profit.

DEVELOPMENT OF DERIVATIVES MARKET IN INDIA

The first step towards introduction of derivatives trading in India was the promulgation of the Securities Laws (Amendment) Ordinance, 1995. It withdrew the prohibition on options in securities. The market for derivatives however, did not take off, as there was no regulatory framework to govern trading of derivatives. SEBI set up a 24-member committee under the Chairmanship of Dr. L.C. Gupta on November 18, 1996 to develop regulatory framework for derivatives trading in India. In its report, the committee prescribed necessary pre-condition for introduction of derivatives trading in India; it recommended that derivatives should be declared as 'securities' so that the regulatory framework applicable to trading of 'securities' could also govern trading of securities. SEBI also set up a group in June 1998 under the Chairmanship of Prof. J.R. Varma to recommend measures for risk containment in derivatives market. The Report worked out the operational details of margining system, methodology for charging initial margins, broker net worth, deposit requirement and real-time monitoring requirements.

The Securities Contract Regulation Act SC(R)A was amended in December 1999 to include derivatives within the ambit of 'securities'. Thereafter a regulatory framework was developed for governing the trading in derivatives. Derivatives were formally defined to include: (a) *a security derived from a debt instrument, share, loan whether secured or unsecured, risk instrument or contract for difference or any other form of security, and (b) a contract which derives its value from the price, or index of price, or underlying securities.* The Act also made it clear that derivatives are legal and valid, but only if such contracts are traded on a recognized stock exchange. The Government also rescinded in March 2000 the notification, which prohibited forward trading in securities.

Derivatives trading commenced in India after SEBI granted the final approval to

commence trading and settlement in approved derivative contracts on the NSE and BSE. NSE started operations in the derivatives segment on June 12, 2000. Initially, NSE introduced futures contracts on S&P CNX Nifty index. However, the basket of instruments has widened considerably. Now trading in futures and options is based on not only on S&P CNX Nifty index but also on other indices *viz.*, CNX IT and Bank Index as well as options and futures on single stocks (currently on 119 stocks) and also futures on interest rates.

Chronology of the Development of Derivatives Market in India

December '95	Permission sought by the Exchanges from SEBI to start trading in derivatives
November '96	Setting up of LC Gupta Committee to design a policy framework for derivatives trading in India
July '99	RBI Permitted OTC Forward rate agreement (FRAs) and interest rate swaps
May '00	S&P CNX Nifty was chosen by SIMEX for trading futures and options
May '00	SEBI permitted the Exchanges (NSE & BSE) to start trading in derivatives
9 June '00	BSE commenced trading of Index futures based on SENSEX 30 Index
12 June '00	NSE commenced trading of index futures based on S&P CNX Nifty Index
25 September '00	S&P CNX Nifty futures commenced trading at SGX
June '01	Index Options Introduced on NSE based on S&P CNX Nifty Index
July '01	Stock Options introduced on NSE on 31 securities only. Now, the list has been broadened and includes 119 securities.
November '01	Stock Futures introduced on NSE on 31 securities. The list now has been broadened to include 119 securities.
June '03	Futures trading commenced on Interest rates (Notional 10 Years Bond, Notional 10 Year Zero Coupon Bond and Notional 91-day T-bill)
2003	Interest rate derivatives
2008	Trading in currency commenced futures.

National Stock Exchange of India (NSE) has made noteworthy contribution in setting up an organized derivatives market. At the outset it was realized that the fulfillment of certain pre-requisites was essential before the trading in exchange traded derivatives could start. Some of the pre-requisites are:

1. Strong and healthy cash market

The first and foremost requirement is the existence of a strong and healthy cash market. An efficient, transparent and fair cash market with strong settlement cycles helps in building an efficient derivatives market.

2. Clearing Corporation and Settlement Guarantee

Existence of a common clearing corporation providing settlement guarantee as well as cross margining is essential for speedy settlement as well as for risk minimization. This is particularly important in the case of derivatives where there are often no securities to be delivered and the settlement is arranged in the form of cash difference.

3. Reliable wide area telecommunication network

Since derivative trading must be introduced on nation wide basis so as to provide equal opportunities for hedging to the investor population throughout the country, existing and reliable telecommunications network along with existence of proven automated trading systems is extremely important.

4. Risk containment mechanism

There should exist a strong and disciplined margining system in the form of daily and mark to market margins, which provide a cover for exposure along with price risk and notional loss in case of default in settling outstanding positions, thereby minimizing market risk.

Differences between spot contract and forward contract

- In a spot contract, at least one component, i.e. either the price or the goods/ services is tendered at the time of the contract. In a forward contract, both the components are exchanged at a specified future date.
- In a spot contract, both the parties transact on the basis of their present capability. The buyer purchases according to his ability to pay for the goods or services and the seller sells according to his present ability to deliver the goods or services. In a forward contract, a leveraging of capabilities is involved. Since no down payment is involved, the buyer might contract to buy a larger number of goods or services, expecting to derive some benefits from the perceived price differential between the spot price and the likely price at the time of maturity of the forward contract. Also the seller, feeling that a larger number of goods shall be available at the contracted price at the time of maturity, agrees to sell a far larger number of goods.
- In a spot contract, execution of the contract is more or less certain because both the components, i.e. money and goods are available. Even through the transaction does not pass through a regulated delivery and payment mechanism yet the chances of default are very less. The problems of payment and delivery get magnified in the case of a forward contract.

Problems in case of a forward contract

There are three major problems in a forward contract – Liquidity, inadequate knowledge, and counter party risk.

(a) The problem of liquidity

One basic problem with the forward markets is that the terms of the contract are too general and too flexible. Thus 'A' and 'B' might agree for delivery of a particular variety of 50 tonnes of wheat at a particular place after six months. Now this contract has been tailor-made for the requirements of 'A' and 'B'. Both of them have tied up irrevocably to the contract and there is no way they can assign the contract to third parties unless of course they can find individuals with exactly matching requirements. Possibility of that happening is remote and as a result 'A' and 'B' are left holding on to a contract which both of them must fulfill.

(b) Inadequate knowledge

Further, in the forward transactions, there is no regular interface between the buyers and the sellers. At best there could be telephonic interaction but there is neither organized market nor any intermediaries on which both the parties could rely. Since a forward contract is a bilateral relationship between two parties, it requires utilization of only that much information as might be available to them. This results in inefficient transactions based upon inadequate discovery of price and insufficient knowledge about the quality of goods and services.

(c) Problem of Counter Party Risk

Yet another risk that is faced in forward transactions is that of "Counter Party Risk". By this term we mean that there is an ever present risk of the other party not being able to honour its commitment.

Suppose that in the illustration being considered by us, at the time of the maturity of the forward contract, the price of the wheat rules at Rs. 12,000/- instead of Rs. 10,000/- per tonne which is the contracted price. In this situation, the seller might have a tendency to back out of the contract. Or alternately, the price may be Rs. 8,000/- per tonne when the buyer may not like honour the contract since he has wheat of that particular kind available at a lesser price.

Apart from the price element, counter party risk could also arise from variation in quality of the goods, place of delivery etc. It could also happen that one of the parties to the forward contract goes bankrupt. In the absence of a regulated market for these forward contracts, the counter party risk is an important element that can jeopardize forward contracts.

Advantages of forward markets

In spite of the problems of the forward contracts described above, there are two important contributions of these contracts.

(a) Forward contracts are useful hedging tools

Hedging is a process of risk management under which the risks emanating from a transaction are covered or mitigated. So, when the farmer enters into the forward

contract with bakery owner for selling 50 tonnes of wheat six months hence, he is hedging against the decline in price. The bakery owner, on the other hand, is hedging against the lack or shortage of supply. Both of them are trying to create a certain future for themselves as far as this transaction is concerned. Viewed in this background, forward contracts are excellent means of hedging against price risk and quantity risk.

(b) Forward contracts help in price discovery

The time gap between signing or formulation of a forward contract and its execution gives rise to uncertainty. From this uncertainty is born speculation regarding future price of the goods and services. Assuming that both the seller and the buyer have near perfect information about future price of the goods and services, the forward contract may be considered as an appropriate means of their price discovery.

How to eliminate limitations of forward contracts

If all the forward contracts were to be initiated, traded and settled through the medium of an exchange, the limitations of forward contracts would be overcome. This is how it is done:

— The large number of participants that trade through the exchange eliminates the problem of liquidity. The demand and supply equilibrium of the goods keeps shifting constantly. The original contract is thus capable of changing hands a number of times before final execution.

— The limitation of inadequate knowledge is overcome by the pooling of knowledge of multitude of seasoned players in the exchange. The imperfections of knowledge give way to a constantly updated knowledge back up for the participants in an exchange-traded set up.

— The limitation of counter party default is eliminated in a forward exchange having clearing house facilities. The clearing house, by taking margin money from the participants, ensures that all the transactions are paid for.

Moving beyond forward contracts

Having discussed that forward contracts would be much more safe to enter into if routed through an exchange, let us consider if anything else can be traded other than plain contracts to deliver a particular quantity of goods.

Forward contracts contain an undertaking to deliver goods at a future point of time. At the time of maturity of the contract, the goods are to be delivered and payment is to be made. At best, in an exchange traded forward contract, the contract can be negotiated by both the buyer and the seller.

Since the forward contract helps in price discovery and six months is a sufficiently long time to impact prices in the spot market, it would be quite logical to conclude that the forward prices should also more in tandem with spot prices. In case of frequent changes in the forward price, people would be tempted to play at the price differential rather than deal in a single contract. This tendency on the part of

investors gave rise to the advent of instruments called futures, which reflect the perceptions about future prices of commodities and financial products. Similarly, another variation of the contract gave an option or choice to the buyer to purchase or not to purchase goods at the time of maturity. These variations or deviations from original objects of contracts are called derivatives.

STOCK INDEX FUTURES

Stock Index Futures are financial derivatives which have a Stock Index as the underlying.

An index is a scale of numbers that represents changes in a set of values between a base time period and another time period. These changes are reflected through the movements of the index values along the scale.

A Stock Index, on the other hand is a particular kind of index that represents changes in the market values of a number of securities contained in that index.

A Stock Index can be representative of a group of industries or of dominant companies among various industries. It can have a broad base of hundreds of companies or a select base of say 30 companies.

But why do we need the Stock Index at all? A major reason for the development of the indices is that they provide an efficient proxy for the market, to enable the portfolio managers to beat the market. Stock indices, being representative in character act as an effective barometer of the national economy and the market sentiments.

Since the index is representative of the values of the component stocks there can be more than one ways in which the values of the component stocks can be arranged in order to arrive at the index value. These ways are described as under:

1. Market Capitalization Method

Under this arrangement, a weight is assigned to each component total of the Stock Index based upon its share in market capitalization of all the components. Then, on daily basis, changes in the market capitalization of each component impact the value of the index in proportion to their weights. Market capitalization, as we know is the multiple of the market value and the number of outstanding shares.

2. Market Value Method

Under the method, the weight is assigned on the basis of the market value and the index represents the aggregated market value of the component Stocks.

3. Equal Weightage

Under this arrangement of components, equal weightage is given to all the components. If there are 50 stocks in an index, each shall have 2 percent weight.

Out of the above three methods of arrangement, the market capitalization method is the most rational since it takes into account both market price and the number of shares. Thus a component having both larger floating stock and greater market value gets a better weightage.

Stock Indices in India

Both the major stock exchanges in India, i.e. Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) have created a number of indices. Some of these are as follows:

- BSE-30 (Sensex)
- BSE-100
- BSE-200
- BSE-500
- S & P CNX Nifty
- S & P Mid cap
- S & P CNX 500

The Sensex and Nifty are the most popular indices. Both of these are considered benchmark indices.

Trading in Index Futures

Index futures are the future contracts for which the underlying is the cash market index. In India, futures on both BSE Sensex and NSE Nifty are traded.

By trading in index futures, the investors are betting on the state of the economy or collectively on the future market values of the shares of leading companies from major industrial groups. In a normal contract for purchase of equity shares, physical quantity of shares is delivered but in a futures contract, there is nothing to be delivered.

In the cash market, there is an ascertainable quantity of the security that is being traded. This quantity is subject to the upper limit of the amount of floating stock. In futures trading, the contracts are generated according to the interest of the contracting parties and as such, hypothetically, any numbers of futures can be traded.

Both the BSE and the NSE have introduced trading in index futures according to a similar pattern. The highlights of the trading methodology are as under:

(A) Who can trade in index futures?

Any eligible investors who can trade in the cash market, can trade in the futures market. For every buyer there is a seller of the futures. What makes them agree on the contract value is the divergence of their views on the likely value of the index future at the expiry of the contract.

Let us illustrate this with the help of an example:

Suppose the BSE Sensex value as on Jan. 1, 2006 is 3300. An investor ‘A’ takes a bullish view on the future movement of the Sensex i.e. he believes that Sensex value shall rise. There is another investor ‘B’ who believes that Sensex value should fall, i.e. he is bearish about future movement of the Sensex. Let us assume further that both ‘A’ and ‘B’ believe that the movement shall be 50 points from the present

level after three months. 'A' has targeted a likely level of 3350 while 'B' has targeted a likely level of 3250. Both of them agree to enter into a index futures contract at a Sensex value of 3325 after three months. At this level, 'A' expects to make a profit of 25 points (3350-3325) while 'B' expects to make a profit of 75 points (3325-3250).

Under the contact 'A' is a buyer of the futures, i.e. he agrees to buy the futures at the contracted value on the expiry of the contract. 'B' is a seller of the futures, i.e. he agrees to sell the futures at the contracted value on the expiry of the contract.

On the expiry date of the futures contract, i.e. after three months, if the Sensex value is 3315, 'A' will incur a loss of ten points while 'B' shall gain ten points. The contract will be closed by payment of the equivalent money by 'A' to 'B'.

If may be noted here that the contracting parties need not wait for full three months for closing the contract at their end. If the Sensex future value a fortnight after the contract date is 3340, 'A' can book profit of 15 points and exit by selling his position to another buyer in the system. If on the other hand, the Sensex futures value is 3300, 'B' can book profit of 25 points and close his end of the contract by purchasing index futures of similar quantity and duration from a seller in the system.

Following is a terminology of commonly used terms in the Index Futures market:

- Contract Size: is the value of the contract at a specific level of index. It is denominated by the product of the index level and the multiplier.
- Multiplier: It is a pre-determined value, used to arrive at the contract size. It is the price per index point.
- *Tick size:* It is the minimum price difference between two quotes of similar nature.
- *Contract Month:* It is the month in which the contract will expire.
- *Expiry Day:* It is the last day on which the contract is available for trading.
- *Open Interest:* It is the total outstanding long or short position in the market at any specific point in time. As total long outstanding positions in the market would be equal to total short positions, for calculation of open interest, only one side the contracts is counted.
- *Volume:* is the number of contracts traded during a specific period of time during a day, during a week or during a month.
- *Long position:* is the outstanding/unsettled purchase position at any point of time.
- *Short position:* is the outstanding/unsettled sales position at any point of time.
- *Open position:* is the outstanding/unsettled long or short position at any point of time.

Trading, clearing and settlement on Stock Exchanges

The pattern of trading on both the BSE and the NSE is similar.

Period

The contracts are traded in one-month two-month and three month expiry cycles. All contracts expire on the last Thursday of the relevant month. On the Friday

following the last Thursday, a new contract for that expiry period would be introduced for trading. Thus at any point in time, three contracts would be available for trading with the first contract expiring on the last Thursday of that month.

Lot Size

Trading is a minimum lot size of 200 units for NSE Nifty. Thus if the Nifty is trading at 1050, then the value of a single futures contract would be Rs. 210000. The minimum tick size for a Nifty contract in 0.05 units and for Sensex, it is 0.1 units.

Orders

Orders for trading are identified in the following manner:

1. Buy “Open”
2. Sell “Open”
3. Buy “Close”
4. Sell “Close”

Buy “Open” orders are those wherein the client has first opened a buy position before sell. At the time of closure of this open position, the order is called a sell “Close”.

Similarly when a client sells prior to buying, the sell order is identified as Sell “Open” and when the same sell “Open” position is to be closed out the respective buy order is market as a Buy “Close” order.

The futures market is a zero-sum game, i.e. the total number of long in any contract always equals the total number of short in any market. The total number of outstanding contracts (lot/short) at any point in time is called the “Open Interest”.

The open-interest figure is a good indicator of the liquidity in every contract.

Clearing and settlement

Clearing and settlement is undertaken by clearing members of the exchange and the clearing bank. Clearing members can be either trading members, clearing members who can trade and settle only for their own trades; or professional clearing members who can clear and settle their own trades as well as those of other trading members.

Mark-to-market settlement and margin determination

The Clearing Corporation of the contracts to margins in two forms, Mark-to-market settlement and Initial margins.

Mark-to-Market settlement of index futures

All open positions in the index contracts are daily settled at the Mark-to-Market settlement price. Thus if a contract entered on a particular day at Sensex value of 3300 has the value at 3310 the next day, the position of the buyer will get credited by 10 points and position of seller will get debited by 10 points. The process will continue till the closure of the position. On the expiry, the settlement price is the spot index

value as on expiry of any futures contract, the spot value and the futures value coverage. Mark-to-Market settlement is in cash.

Initial Margin

The computation of initial margin is done using the concept of Value-at-Risk (VAR). The initial margin amount will be large enough to cover a one-day loss that can be encountered on 99% of the days. Value at Risk is a single number which estimate maximum possible loss on an investment. VAR methodology seeks to measure that a portfolio may stand to lose within a certain horizon time period due to potential changes in the underlying assets' market price. In other words VAR seeks to measure the maximum loss that a portfolio might sustain over a period of time given a set probability level. Initial margin amount computed using VAR is collected up-front.

Options

An option is the right, but not the obligation, to buy or sell a specified amount of commodity, currency, shares index or other financial instrument at an agreed price on or before a specified date in future. An option may also relate to buying or selling a specified number of futures contracts.

There are two parties to an options contract. The long who buys the option and the short, who sells or writes it. The long enjoys the right (and not the obligation) which is granted by the seller of the option for a price, called the premium. There are two types of options – calls and puts. A call option gives its holder the right to buy while a put option entails a right to sell for its holder.

Options contracts are standardized in respect of the following:

(a) The underlying asset, which may be a commodity, currency, shares of a company.

(b) Size of the contract.

(c) Specified price, which is called exercise price or strike price. It may be higher than, lower than or equal to the current price of the underlying asset.

(d) Expiration date - An options contract ceases to grant any right after this date if the option is not exercised. If an option is exercisable only on the expiration date, it is called a European style option. An American style option is one which can be exercised at any time up to the date of expiration.

Contracts for options which are traded on exchanges are designed by the exchanges only, and they contain all details about the underlying asset, size, expiration date etc. The exercise price is able set by the exchange. For example, in case of contracts of options or shares, the exercise price, E, may be higher or lower than, or equal to the current price, P, of the share. Incidentally, if $E < P$, a call option is "in the money", and a put option is "out-of-the-money". If $E > P$, the call option is "out-of-the-money" and the put option is "in the money". If $E = P$, then both call and put options are called "at-the-money".

Difference between Futures and Options

Futures	*Options*
Both the parties are obliged to perform the contract.	Only the seller (writer) is obligated to perform the contract.
No premium is paid by either party.	The buyer pays the seller (writer) a premium.
The holder of the contract is exposed to the entire spectrum of downside risk and has potential for all the upside return.	The buyer's loss is restricted to downside risk to the premium paid, but retains upward indefinite potentials.
The parties of the contract must perform at the settlement date. They are not obligated to perform before the date.	The buyer can exercise his option any time prior to the expiry date.

WHAT IS A PREMIUM?

In the options market, a contract is written giving the buyer of the contract the right (option) to purchase or sell a particular security at a fixed price for a period of time. The seller agrees to deliver if the contract owner elects to buy, or to purchase if the contract owner elects to sell. For agreeing to the terms of the contract, the seller receives a fee, which in options is called the premium.

Suppose the common stock of TISCO is trading in the market at Rs. 140/- a share. A contract (option) might be written allowing the buyer of this contract to purchase 100 shares of TISCO stock at Rs. 140/- at any time over the next three months. The seller will have agreed to deliver the 100 shares at this price on demand. For granting this option, the seller is paid a fee (premium) of say Rs. 8. This fee translates into Rs. 800 – Rs. 8 a share for each of the 100 shares covered by the contract.

If, within the next three months, TISCO stock rises to Rs. 165/- a share, an option contract will be exercised by the buyer. He will have purchased 100 shares of TISCO at Rs. 148 a share (Rs. 140 contract price plus Rs. 8 per share premium) which is well below the Rs. 165 market price.

If the stock had declined to Rs. 130/- a share during the three-month period, the owner of the contract would do nothing. He will certainly not pay Rs. 140/- a share for stock worth only Rs. 130/-. The contract will expire. The seller of the contract will keep the Rs. 800/- premium. The buyer will be out of Rs. 800/-.

This example illustrates an options contract that gave the owner the right to purchase stock. Options can also be devised that give the owner the right to sell stock at a fixed price.

TYPES OF OPTIONS

There are only two types of options – puts and calls. Although there are always two parties to an options contract, they are always defined from the standpoint of the buyer (owner) of the contract.

The buyer of a put has purchased a right to sell. Sounds a bit strange, but that is what a put is. The owner of a put has the right to sell.

The buyer of a call has purchased the right to buy. Again this sounds a bit odd, but it is correct. The owner of a call has the right to buy.

Long Seller versus Writer

The buyer of an option has purchased a contract. This is quite easy to understand. But the seller of the contract can be acting in either of two capacities.

In dealing with other securities, the seller can be selling long or short. Selling long means that the party owns the stock or bond and is eliminating his holding.

Option Premium

But the three basic factors that determine an option premium are:

1. Intrinsic Value
2. Time Value and
3. Volatility

Intrinsic value is a option's arithmetically determinable value based on the strike price of the option and the market value of the underlying stock.

Time value reflects the fact that the longer the option has to run until expiration, the greater the premium should be. This is perfectly logical. The right to buy or sell a stock for two months should be worth more than the same privilege for only one month. The third factor namely volatility is also easy to understand. Higher the volatility higher the risk and higher the risk higher the premium. Two terms used frequently in the options are class and series.

Class

A class of options consists of all options of the same type (put or call) covering the same underlying security. All TISCO calls comprise a class of options. All TISCO puts comprise a different class of options. All TELCO calls make up a class.

Series

A series of options is all options of the same class having both the same strike price and the same expiration month. In the one class of TISCO calls, there is a number of different series as each call within that class has a different strike price and/or a different expiration month from any other option within the class. Each individual option is called a series. The total of all puts or calls on a particular stock makes up a class.

Options Derivatives

In simple terms, the options premium is determined by the three factors mentioned earlier, intrinsic value, time value, and volatility.

But there are other, more sophisticated tools used to measure the potential variations of options premiums. They are generally employed by professional options traders and may be of little interest to the individual investor.

These four tools are known as options derivatives. They are:

Delta

Gamma

Theta

Vega

Delta

An options delta is used to measure the anticipated percentage of change in the premium in relation to a change in the price of the underlying security. If a particular call option had a delta of 60% we would expect the option premium to vary by 60% of the change in the underlying stock. If that stock rose 1 point, the option premium should rise approximately 6/10 (60%) of 1 point.

Gamma

Gamma measures the expected change in the delta factor of an option when the value of the price of the underlying security rises. If a particular option had a delta of 60% and a gamma of 5%, an increase of 1 point in the value of the stock would increase the delta factor by 5% from 60% to 65%.

Theta

The theta derivative attempts to measure the erosion of an option's premium caused by the passage of time. We know that at expiration an option will have no time value and will be worth only the intrinsic value if, in fact, it has any. Theta is designed to predict the daily rate of erosion of the premium.

Naturally other factors, such as changes in the value of the underlying stock will alter the premium. Theta is concerned only with the time value. Unfortunately, we cannot predict with accuracy changes in a stock's market value, but we can measure exactly the time remaining until expiration.

Vega

The fourth derivative, Vega is concerned with the volatility factor of the underlying stock. We have pointed out that the volatility varies among different securities. Vega measures the amount by which the premium will rise when the volatility factor of the stock increase.

Vega measures the sensitivity of the premium to these changes in volatility.

Delta, gamma, theta and vega are very sophisticated tools for predicting changes in an option's premium. They merely take the three factors which determine a premium (price of the stock, passage of time, and volatility), and measure each in an exacting manner. The derivatives vary for each series of options.

Trading Mechanism

The derivatives trading system at NSE, called NEAT-F&O trading system, provides a fully automated screen-based trading for derivatives on a nation-wide basis. It supports an anonymous order driven market, which operates on strict price/ time priority. It provides tremendous flexibility to users in terms of kinds of orders that can be placed on the system. Various time and price related conditions like Good-till-

Day, Good-till-cancelled, Good-Till-Date, Immediate or Cancel, Limit/market Price, Stop Loss, etc. can be built into an order.

There are four entities in the trading system.

The NEAT-F&O trading system distinctly identifies two groups of users. The trading user more popularly known as trading member has access to functions such as, order entry, order matching, order and trade management. The clearing user (clearing member) uses the trader workstation for the purpose of monitoring the trading member(s) for whom he clears the trades. Additionally, he can enter and set limits on positions, which a trading member can take.

Contract Specification

The contract specification for derivatives traded on NSE are summarized in the following tables:

(A) Index Futures

Sr. No.	*Item*	*Particulars*
(1)	*(2)*	*(3)*
1.	Security Description	N FUTIDX NIFTY
2.	Underlying	S & P CNX Nifty Index and CNX IT Index 6 indices
3.	Style of Option	N.A.
4.	Contract Size	200 or multiples thereof (minimum value of Rs. 2 lakh)
5.	Price Steps	Rs. 0.05
6.	Expiration Months	Three near months
7.	Trading Cycle	A maximum of three month trading cycle – the near month (one), the next month (two) and the far month (three). New Contract is introduced on the next trading day following the expiry of near month contract.
8.	Last Trading/Expiration Day	Last Thursday of the expiry month or the preceding trading day, if last Thursday is a trading holiday.
9.	Price Bands	Operating range of 10% of the base price.
10.	No. of Strike Prices	N.A.
11.	Strike Price Interval (Rs.)	N.A.
12.	Settlement	In Cash on T+1 basis
13.	Daily Settlement Price	Closing price of futures contract
14.	Final Settlement Price	Closing price of index on expiry day.
15.	Settlement Day	Last trading day
16.	Margins	Up – front initial margin on daily basis

(B) Futures on Individual Securities

Sr. No.	*Item*	*Particulars*
(1)	*(2)*	*(3)*
1.	Security Description	FUTSTK
2.	Underlying	267 Securities
3.	Option Type	N.A.
4.	Contract Size	Multiples of 100 , as may be specified by NSE
5.	Price Steps	Rs. 0.05
6.	Expiration Months	Three near months
7.	Trading Cycle	A maximum of three month trading cycle – the near month (one), the next month (two) and the far month (three).
8.	Last Trading/Expiration Day	Last Thursday of the expiry month or the preceding trading day, if last Thursday is a trading holiday.
9.	Price Bands	Operating range of 20% of base price.
10.	No. of Strike Prices	N.A.
11.	Strike Price Interval (Rs.)	N.A.
12.	Settlement	In Cash on T+1 basis
13.	Daily Settlement Price	Closing price of futures contract
14.	Final Settlement Price	Closing price of securities on expiry day.
15.	Settlement Day	Last trading day
16.	Margins	Up – front initial margin on daily basis

(C) Index Options

Sr. No.	*Item*	*Particulars*
(1)	*(2)*	*(3)*
1.	Security Description	N OPTIDX NIFTY 6 indices
2.	Underlying	S & P CNX Nifty Index
3.	Style of Option	European
4.	Contract Size	200 or multiples thereof (minimum value Rs. 2 lakh)
5.	Price Steps	Rs. 0.05

(1)	*(2)*	*(3)*
6.	Expiration Months	Three near months
7.	Trading Cycle	A maximum of three month trading cycle – the near month (one), the next month (two) and the far month (three). New Contract is introduced on the next trading day following the expiry of near month contract.
8.	Last Trading/Expiration Day	Last Thursday of the expiry month or the preceding trading day, if last Thursday is a trading holiday.
9.	Price Bands	Upper operating range +99% of base price or Rs. 20, whichever is higher; lower operating range Rs. 0.05.
10.	No. of Strike Prices	Minimum of 5 (two "in the money", one "at the money" and two "out of the money") for every option type, i.e. call and put.
11.	Strike Price Interval (Rs.)	20
12.	Settlement	In Cash on T+1 basis
13.	Daily Settlement Price	Premium Value (net)
14.	Final Settlement Price	Closing value of index on expiry day.
15.	Settlement Day	Last trading day
16.	Margins	Up – front initial margin on daily basis

(D) Option on Individual Securities

Sr. No.	*Item*	*Particulars*
(1)	*(2)*	*(3)*
1.	Security Description	OPTSTK
2.	Underlying	267 Securities
3.	Style of Option	American
4.	Contract Size	Multiples of 100, as may be specified by NSE
5.	Price Steps	Rs. 0.05
6.	Expiration Months	Three near months
7.	Trading Cycle	A maximum of three month trading cycle – the near month (one), the next month (two) and the far month (three).
8.	Last Trading/Expiration Day	Last Thursday of the expiry month or the preceding trading day, if last Thursday is a trading holiday.

(1)	*(2)*	*(3)*
9.	Price Bands	Upper operating range +99% of base price or Rs. 20, whichever is higher; lower operating range Rs. 0.05.
10.	No. of Strike Prices	Minimum of 5 (two "in the money", one "at the money" and two "out of the money") for every option type, i.e. call and put.
11.	Strike Price Interval (Rs.)	Depending on the price of the underlying
12.	Settlement	Daily settlement on T+1 basis and final settlement on T+3 basis
13.	Daily Settlement Price	Premium Value (net)
14.	Final Settlement Price	Closing price of security on exercise day or expiry day.
15.	Settlement Day	Last trading day
16.	Margins	Up – front initial margin on daily basis

The index futures and index options contracts traded on NSE are based on S&P CNX Nifty Index and the CNX IT Index, while stock futures and options are based on individual securities. Presently stock futures and options are available on 119 securities. While the index options are European style, stock options are American style. There are a minimum of 7 strike prices, 'three-in-the-money', one 'at-the-money' and three 'out-of-money' for every call and put option. The strike price is the price at which the buyer has a right to purchase or sell the underlying.

In respect of equity derivatives, at any point of time there are only three contracts available for trading, with 1 month, 2 months and 3 months to expiry. These contracts expire on last Thursday of their respective expiry months. A new contract is introduced on the next trading day following the expiry of the near month contract. All the derivatives contracts are presently cash settled.

Turnover

The F&O segment of NSE reported a total turnover of Rs. 25,470,526 million during 2004–2005 as against Rs. 21,306,492 million during the preceding year. The turnover witnessed a sharp rise with the introduction of stock futures in November 2001.

Transaction Charges

The maximum brokerage chargeable by a trading member in relation to trades effected in the contracts admitted to dealing on the F&O segment of NSE is fixed at 2.5% of the contract value in case of index futures and stock futures. In case of index options and stock options it is 2.5% of notional value of the contract (Strike price + Premium) $\times$ Quantity), exclusive of statutory levies.

The transaction charges payable to the exchange by the trading member for the trades executed by him on the F&O segment are fixed at the rate of Rs. 2 per lakh of

turnover (0.002%) subject to a minimum of Rs.1,00,000 per year. The minimum of Rs. 1,00,000 was, however, waived up to end March 2002. However, for the transactions in the options sub-segment the transaction charges will be levied on the premium value at the rate of 0.05 (each side) instead of on the strike price as levied earlier.

The trading members contribute to Investor Protection Fund of F&O segment at the rate of Rs. 10 per crore of turnover (0.0001%).

The trading members are also required to pay Securities Transaction Tax on non-delivery transactions at the rate of 0.0133% w.e.f. June 1, 2005.

Clearing and Settlement

National Securities Clearing Corporation Ltd. (NSCCL) undertakes clearing and settlement of all trades executed on the F&O segment of the Exchange. It also acts as legal counter-party to all trades on this segment and guarantees their financial settlement. The Clearing and Settlement process comprises of three main activities, viz., Clearing, Settlement and Risk Management.

Clearing Mechanism

The first step in clearing process is working out open positions and obligations of clearing (self clearing/trading-cum-clearing/professional clearing) members (CMs). The open positions of a CM is arrived at by aggregating the open positions of all the trading members (TMs) and all custodial participants (CPs) clearing through him, in the contracts which they have traded. The open position of a TM is arrived at by summing up his proprietary open position and clients' open positions. Proprietary positions are calculated on net basis for each contract and that of clients are arrived at by summing together net positions of each individual client. A TM's open position is the sum of proprietary open position, client open long position and client open short position.

Settlement Mechanism

All futures and options contracts are cash settled, i.e. through exchange of cash. The underlying for index futures/options of the Nifty index cannot be delivered. These contracts, therefore, have to be settled in cash. Stock futures and stock options can be delivered as in the spot market. However, it has been currently mandated that Stock Options and Futures would be cash settled. The settlement amount for a CM in netted across all their TMs/clients, across various settlements. For the purpose of settlement, all CMs are required to open a separate bank account with NSCCL designated clearing banks for F&O segment.

Settlement of Futures Contracts

Future contracts have two types of settlements — MTM settlement and the final settlement.

MTM Settlement for Futures: All futures contracts for each member are marked-to-market to the daily settlement price of the relevant futures contract at the end of each day. The profits/losses are computed as the difference between:

(i) the trade price and the day's settlement price in respect of contracts executed during the day but not squared up,

(ii) the previous day's settlement price and the current day's settlement price in respect of brought forward contracts,

(iii) the buy price and the sell price in respect of contracts executed during the day and squared-up.

The CMs who have suffered a loss are required to pay the mark-to-market (MTM) loss amount in cash which is in turn passed on to the CMs who have made a MTM profit. This is known as daily mark-to-market settlement. CMs are responsible to collect and settle the daily MTM profits/losses incurred by the TMs and their clients clearing and settling through them. Similarly, TMs are responsible to collect/pay losses/profits from/to their clients by the next day. The pay-in and pay-out of the mark-to-market settlement are effected on the day following the trade day.

After completion of daily settlement computation, all the open positions are reset to the daily settlement price. Such position become the open positions for the next day.

— *Final Settlement for Futures:* On the expiry day of the futures contracts, after the close of trading hours, NSCCL marks all positions of a CM to the final settlement price and the resulting profit/loss is settled in cash. Final settlement loss/profit amount is debited/credited to the relevant CM's clearing bank account on the day following expiry day of the contract.

— *Settlement Prices for Futures:* Daily settlement price on a trading day is the closing price of the respective futures contracts on such day. The closing price for a futures contract is currently calculated as the last half an hour weighted average price of the contract executed in the last half an hour of trading hours. In case future contract is not traded in the last half an hour, the theoretical future price is computed and used as daily settlement price in the F&O segment of NSE. Final settlement price is the closing price of the relevant underlying index/security in the Capital market segment of NSE, on the last trading day of the contract. The closing price of the underlying Index/security is currently its last half an hour weighted average value in the Capital Market Segment of NSE.

Settlement of Options Contracts

— *Daily Premium Settlement for Options:* Buyer of an option is obligated to pay the premium towards the options purchased by him. Similarly, the seller of an option is entitled to receive the premium for the option sold by him. The premium payable amount and the premium receivable amount are netted to compute the net premium payable or receivable amount for each client for each option contract.

— *Interim Exercise Settlement:* Interim exercise settlement takes place only for option contracts on securities. An investor can exercise his in-the-money options at any time during trading hours, through his trading member. Interim exercise settlement is effected for such options at the close of the trading hours, on the day of exercise. Valid exercised option contracts are assigned to short positions in the option contract with the same series (i.e. having the same underlying, same expiry date and same strike price), on a random basis, at the client level.

The CM who has exercised the option receives the exercise settlement value per unit of the option from the CM who has been assigned the option contract.

— *Final Exercise Settlement:* Final Exercise settlement is effected for all open long in-the-money strike price options existing at the close of trading hours, on the expiration day of an option contract. All such long positions are exercised and automatically assigned to short positions in option contracts with the same series, on a random basis.

The investor who has long in the money options on the expiry date will receive the exercise settlement value per unit of the option from the investor who has been assigned the option contract.

Settlement Statistics

All derivative contracts are currently cash settled. The participants discharge their obligations through payment/receipt of cash. During the year, 2004–2005, such cash settlement amounted to Rs. 146,486.15 million. The settlement of futures and of options involved Rs. 132,516.81 million and Rs. 13969.34 millions respectively.

RISK MANAGEMENT SYSTEM

NSCCL has developed a comprehensive risk containment mechanism for the F&O segment. The salient features of risk containment measures on the F&O segment are:

— The final soundness of the members is the key to risk management. Therefore, the requirements for membership in terms of capital adequacy (net worth, security deposits) are quite stringent.

— NSCCL charges an upfront initial margin for all the open positions of a CM. It specifies the initial margin requirements for each futures/options contract on a daily basis. It also follows VAR-based margining computed through SPAN. The CM in turn collects the intitial margin from the TMs and their respective clients.

— The open positions of the members are marked to market based on contract settlement price for each contract. The difference is settled in cash on a T +1 basis.

— NSCCL's on-line position monitoring system monitors a CM's open position on a real-time basis. Limits are set for each CM based on his base capital. The on-line position monitoring system generates alerts whenever a CM reaches a position limit set up by NSCCL. NSCCL monitors the CMs for MTM value violation, while TMs are monitored for contract wise position limits violation.

— CMs are provided a trading terminal for the purpose of monitoring the open positions of all the TMs clearing and settling through him. A CM may set exposure limits for a TM clearing and settling through him. NSCCL assists the CM to minor the intra-day-exposure limits set up by a CM and whenever a TM exceed the limits, it stops that particular TM from further trading.

— A member is alerted of his position to enable him to adjust his exposure or bring in additional capital. Position violations result in disablement of trading facility for all TMs of a CM in case of a violation by the CM.

— A separate Settlement Guarantee Fund for this segment has been created out of the base capital of members. The fund had a balance of Rs. 648 crore at the end of March 2002.

The most critical component of risk containment mechanism for F & O segment is the margining system and on-line position monitoring. The actual position monitoring and margining is carried out on-line through Parallel Risk Management System (PRISM) using SPAN (Standard Portfolio Analysis of Risk) system for the purpose of computation of on-line margins, based on the parameters defined by SEBI.

Settlement of Interest Rate Futures

Daily and final mark to market settlement in respect of admitted deals in the interest rate futures contracts are cash settled. All positions (brought forward created during the day, closed out during the day) in futures contracts, at the end of trading hours, should be marked to market at the Daily Settlement Price. And on the last trading day it should be market to market at Final Settlement Price for settlement. Daily settlement price should be the closing price of the relevant futures contract for the trading day. Final settlement price should be based on the value of the notional bond determined using the ZCYC computed by the Exchange.

— *Daily Settlement Price:* Daily settlement price is the closing price of the interest rate futures contract on the trading day. The closing price for the contract is calculated on the basis of the weighted average price of the contracts executed in the last half an hour of trading in these contracts. In absence of trading in the half an hour, the theoretical price is taken or such other price as may be decided by the relevant authority from time to time.

  Theoretically, the daily settlement price for unexpired futures contracts should be the futures prices computed using the (price of he notional bond) spot prices arrived at from the applicable ZCYC Curve. The ZCYC should be computed by the Exchange or by ay other approved agency from the prices of securities either traded on the Exchange or reported on the Negotiated Dealing System of RBI or both taking trades of T+1 settlement.

  For zero coupon notional bonds, the price should be the present value of the principal payment discounted using discrete discounting for the specified period at the respective zero coupon yield. The settlement price for the notional T-bill should be 100 minus the annualized yield for the specified period using the zero coupon yield curve. In respect of coupon bearing notional bond, the present value should be obtained as the sum of present value of the principal payment discounted at the relevant zero coupon yield and the present values of the coupons obtained by discounting each notional coupon payment at the relevant zero coupon yield for that maturity. For this purpose the notional coupon payment date should be half yearly and commencing from the date of expiry of the relevant futures contract. For computation of futures prices, the rate of interest to be used may be the relevant MIBOR rate or such other rate as may be specified from time to time.

— *Final Settlement Price:* Final settlement price for an interest rate futures contracts on zero coupon notional and coupon bearing bond is based on the price of the bond determined using the zero coupon yield curve. In respect of notional T-bill it should be 100 minus the annualized yield for the specified period computed using the ZCYC.

— Since the T-bill are priced at 100 *minus* the relevant annualized yield, the settlement value should be arrived at using the relevant multiplier factor.

Settlement of Custodial Participant (CP) Deals

NSCCL provides a facility to entities like institutions/foreign institutional investors (FIIs)/MFs to execute trades through any TM, which may be cleared and settled by their own CM. These entities are known as Custodial Participants (CPs). To avail of this facility, a CP is required to register with NSCCL through his CM. A unique CP code is allotted to him by NSCCL. All trades executed by a CP through any TM are required to have the CP code in the relevant field on the trading system at the time of order entry itself. These trades have to be confirmed by their own CM within the time specified by the NSE through the on-line confirmation facility on the same day. Only then he is responsible for clearing and settling of deals of such custodial clients. Unless CP confirms the trade, the same is considered as a trade of the TM and the responsibility of settlement of such trade vests with CM of the TM.

FIIs have been permitted to trade in all the exchange traded derivative contracts within the position limits prescribed for them and their sub-accounts. A FII/a sub-account of the FII, intending to trade in the F&O segment of the exchange, are required to obtain a unique Custodial Participation (CP) code from the NSCCL. The FII/sub-account of FII should ensure that all orders placed by then on the Exchange carry the relevant CP code allotted by NSCCL.

Risk Management for Interest Rate Futures

Initial margin should be payable on real time basis on all open positions of Clearing Members in accordance with the system adopted by Clearing Corporation. Presently, he initial margins are based on the zero coupon yield curve computed at the end of the day. However, in case of large deviation between the yields generated using only t = 0 trades and all trades, initial margins are to be revised accordingly.

Initial Margin should include SPAN margins and any other additional margins that may be specified by Clearing Corporation. Clearing Corporation has to adopt SPAN (Standard Portfolio Analysis of Risk) system or nay other system for the purpose of real time initial margin computation.

Initial margin requirements should be based on 99% VaR over a one day time horizon. In case of futures contracts, if it may not be possible to collect mark to market settlement value, before the commencement of trading on the next day, the initial margin may be computed over a two day time horizon. The methodology for computation of VaR percentage should be as per the recommendations of SEBI.

The initial margin for a member is to be computed taking into consideration requirements such as: (a) client positions should be netted at the level of individual client and grossed across all clients for the Trading/Clearing Member, however, without any setoffs between clients (b) proprietary positions should be netted at Trading/ Clearing Member level without any set offs between client and proprietary positions.

For this purpose, various parameters should be specified hereunder:

(a) *Price scan range:* In the case of Notional Bond Futures, the price scan range should be 3.5 Standard Deviation (3.5 sigma) and in no case the initial margin should be less than 2% of the notional value of the Futures Contracts, which should be scaled up by look ahead period. For Notional T-Bill Futures, the price scan range should be same as for notional bond futures, but in no

case the initial margin should be less than 0.2% of the notional value of the futures contract.

(b) *Calendar Spread Charge:* The margin on calendar spread should be calculated at a flat rate of 0.125% per month of spread on the far month contract subject to a minimum margin of 0.25% and a maximum margin of 0.75% on the far side of the spread with legs upto 1 year apart. A Calendar spread positions will be treated as non-spread (naked) positions in the far month contract, 3 trading days prior to expiration of the near month contract.

Exposure Limits (2nd line of defense): Clearing Members should be subject to Exposure limits in addition to initial margins. Exposure Limit should be 100 times the liquid net worth i.e. 1% of the notional value of the gross open positions in Notional 10 year bond futures (both coupon bearing and zero coupon) and should be 1000 times the liquid net worth i.e. 0.1% of the gross open positions in notional 91 day T-Bill futures. Exposure limit for calendar spreads should be regarded as an open position of one third of the mark to market value of the far month contract. As the near month contract approaches expiry, the spread should be treated as a naked position in the far month contract three days prior to the expiry of the near month contract.

Trading Member wise/Custodial Participant wise Position Limit: Each Trading Member/Custodial Participant should ensure that his clients do not exceed the specified position limit. The position limits at the client level for near month contracts should be 15% of the open interest or Rs. 100 crore, whichever is higher. For futures contracts open interest should be equivalent to the open positions in that futures contract multiplied by its last available closing price.

NSE-SPAN

The objective of NSE-SPAN is to identify overall risk in a portfolio of all futures and options contracts for each member. The system treats futures and options contracts uniformly, while at the same time recognizing the unique exposures associated with options portfolios, like extremely deep out-out-the-money short positions and inter-month risk.

Its over-riding objective is to determine the largest loss that a portfolio might reasonably be expected to suffer from one day to the next day based on 99% VAR methodology.

SPAN considers uniqueness of option portfolios. The following factors affect the value of an option:

(i) Underlying market price

(ii) Volatility (variability) of underlying instrument, and

(iii) Time to expiration.

(iv) Interest rate

(v) Strike price

As these factors change, the value of options maintained within a portfolio also changes. Thus, SPAN constructs scenarios of probable changes in underlying prices

and volatilities in order to identify the largest loss a portfolio might suffer from one day to the next. It then sets the margin requirement to cover this one-day loss.

The complex calculations (e.g. the pricing of options) in SPAN are executed by NSCCL. The results of these calculations are called risk arrays. Risk arrays, and other necessary data inputs for margin calculation are provided to members daily in a file called the SPAN Risk Parameter file. Members can apply the data contained in the Risk Parameter files, to their specific portfolios of futures and options contracts, to determine their SPAN margin requirements.

Hence, members need not execute complex option pricing calculations, which is performed by NSCCL. SPAN has the ability to estimate risk for combined futures and options portfolios, and also re-value the same under various scenarios of changing market conditions.

Margins

- Initial Margin: Margin in the F&O segment is computed by NSCCL upto client level for open positions of CMs/TMs. These are required to be paid up-front on gross basis at individual client level for client positions and on net basis for proprietary positions. NSCCL collects initial margin for all the open positions of a CM as computed by NSE-SPAN. A CM is required to ensure collection of adequate initial margin from his TMs up-front, in turn the TM collects it from his clients.
- Premium Margin: In addition to initial margin, premium margin is charged at client level. This margin is required to be paid by a buyer of an option till the premium settlement is complete.
- Assignment Margin for Options on Securities: Assignment margin is levied in addition to initial margin and premium margin. It is required to be paid on assigned positions of CMs towards interim and final exercise settlement obligations for option contracts on individual securities, till such obligations are fulfilled. The margin is charged on the net exercise settlement value payable by a CM towards interim and final exercise settlement.
- Client Margins: NSCCL intimates all members of the margin liability of each of their client. Additionally members are also required to report details of margins collected from clients to NSCCL, which holds in trust client margin monies to the extent reported by the member as having been collected from their respective clients.

PARALLEL RISK MANAGEMENT SYSTEM (PRISM)

PRISM, the Parallel Risk Management System, is the real-time position monitoring and risk management system for the F&O market segment. The risk of each trading and clearing member is monitored on a real time basis by generating various alerts whenever a CM exceeds any limit set up by NSCCL. These are detailed below:

- *Initial Margin Violation:* The initial margin is computed on a real time basis i.e. for each trade the amount of initial margin is reduced from the effective deposits of the CM held with the clearing corporation. For this purpose, effective deposits are computed by reducing the total deposits of the CM by

Rs. 50 lakh (referred to as minimum liquid net worth). The CM receives warning messages on his terminal when 70%, 80% and 90% of the effective deposits are utilized. At 100% the clearing facility provided to a CM is automatically withdrawn. Withdrawal of clearing facility of a CM in case of a violation leads to automatic withdrawal of trading facility for all TMs and/or custodial participants clearing and settling through such CM.

Similarly, the initial margins on positions taken by a TM is also computed on a real time basis and compared with the TM limits set by his CM. As the TM limit is used up to 70%, 80%, and 90%, the member receives a warning message on his terminal. At 100%, the trading facility provided to the TM is automatically withdrawn.

A member is provided with adequate warnings on the violation before his trading clearing facility is withdrawn. A CM may appropriately reduce his exposure to contain the violation or alternately bring in additional base capital.

— *Member-wise Position Limit Violation (Future and Option contracts on Equity index):* The member-wise position limit on open position of a TM is supervised by PRISM. The open position in all index futures in index option contracts of any TM, cannot exceed 15% of the total open interest of the market or Rs. 250 crore, whichever is higher at any time, including trading hours. This limit shall be applicable on open positions in all option contracts on a particular underlying index.

— *Member-wise Position Limit Violation (Future and Option contracts on Individual Securities):* The TM position limits in equity index futures contracts shall be higher of Rs. 250 crore or 15% of the total open interest in the market in equity index futures contracts. This limit would be applicable on open positions in all future contracts on a particular underlying index.

— *Exposure Limit Violation:* PRISM monitors exposure of members on all futures and option contracts, which cannot exceed 33.33 times the liquid net worth for index options and index futures contracts. For option and futures contract on individual securities, the exposure limits of, which is higher, 5% or 1.5 standard deviation of the notional value of gross open position in futures on individual securities and gross short open positions in options on individual securities in a particular underlying should be collected/adjusted from the liquid networth of a member on a real time basis.

— *Market-wide Position Limit Violation:* PRISM monitors market wide position limits for futures and option contracts on individual securities. The open position across all members, across all contracts cannot exceed lower of the following limits; 30 times the average number of shares traded daily in the previous calendar month or 20% of the number of shares held by non-promoters in the relevant underlying security i.e. 20% of the free float in terms of the number of shares of a company. When the total open interest in an option contract, across all members, reaches 60% of the market wide position limit for a contract, the price scan range and volatility scan range (for SPAN margin) are doubled. NSCCL specifies the market-wide position limits once every month, at the beginning of the month, which is applicable for the subsequent month.

— *Client-wise Position Limit Violation:* Whenever the open position of any client exceeds 1% of the free float market capitalization (in terms of no. of shares0 or 5% of the open interest (in terms of number of shares) whichever is higher, in all the futures and option contracts on the same underlying security, then it is termed as client-wise position limit violation. The TM/CM through whom the client trades/clears his deals should be liable for such violation and penalty may be levied on such TM/CM which he may in turn recover from the client. In the event of such a violation, TM/CM should immediately ensure that the client does not take fresh positions and reduce the position of those clients within the permissible limit.

— *Misutilisation of TM/Constituent's Collateral and/or Deposit:* it is violation, if a CM utilizes the collateral of one TM and/or constituent towards the exposure and/or obligations of a TM and/or constituent.

— *Violation of Exercised Position:* When option contracts are exercised by a CM, where no open long positions for such CM/tm and/or constituent exist at the end of the day, at the time the exercise processing is carried out, it is termed as violation of exercised position.

SWAPS

A swap can be defined as the exchange of one stream of future cash flows with another stream of cash flows with different characteristics.

A swap is an agreement between two or more people/parties to exchange sets of cash flows over a period in future. Swaps can be divided into two types viz., (a) Currency Swaps, (b) Interest Rate Swaps.

Currency Swaps: The currency swap is an agreement between two parties to exchange (swap) payments or receipts in one currency for payment or receipts in other currency. Suppose if two entities are trading in currency, the rationale for currency swap between them lies in the fact that one borrower has a comparative advantage in borrowing in one currency, while the other borrower has an advantage in borrowing in another currency.

Interest Rate Swaps: An interest rate swap is an agreement whereby one party exchanges one set of interest rate payment for another rate over a time period. The most common arrangement is an exchange of fixed interest rate payment for another rate over a time period. The interest rates are calculated on notional values of principals.

In finance, a swap is a derivative in which two counterparties agree to exchange one stream of cash flows against another stream. These streams are called the legs of the swap.

The cash flows are calculated over a notional principal amount, which is usually not exchanged between counterparties. Consequently, swaps can be used to create unfunded exposures to an underlying asset, since counterparties can earn the profit or loss from movements in price without having to post the notional amount in cash or collateral.

Swaps can be used to hedge certain risks such as interest rate risk, or to speculate on changes in the underlying.

Most swaps are traded Over The Counter (OTC), 'tailor-made' for the counter parties. Some types of swaps are also exchanged on future markets, for instance Chicago Mercantile Exchange Holdings Inc., the largest US futures market, the Chicago Board Options Exchange and Frankfurt-based Eurex AG.

SWAPTION

A swaption is an option granting its owner the right but not the obligation to enter into an underlying swap. While options can be traded on a variety of swaps, the term "swaption" typically refers to options on interest rate swaps.

Properties of Swaption

Unlike ordinary swaps, a swaption not only hedges the buyer against downside risk, also lets the buyer take advantage of any upside benefits. Like any other option, if the swaption is not exercised by maturity, it expires worthless.

If the strike rate of the swap is more favourable than the prevailing market swap rate, then the swaption will be exercised as detailed in the swaption agreement.

— It is designed to give the holder the benefit of the agreed upon strike rate if the market rates are higher, with the flexibility to enter into the current market swap rate if they are lower.

— The converse is true if the holder of the swaption receives the fixed rate under the swap agreement. Investors can also use swaptions to trade the volatility of the underlying swap rate.

COMMODITIES MARKET

India, a commodity based economy where two-third of the one billion population depends on agricultural commodities, surprisingly has an under developed commodity market. Unlike the physical market, futures markets trades in commodity are largely used as risk management (hedging) mechanism on either physical commodity itself or open positions in commodity stock.

For instance, a jeweller can hedge his inventory against perceived short-term downturn in gold prices by going short in the future markets.

The article aims at knowhow of the commodities market and how the commodities traded on the exchange. The idea is to understand the importance of commodity derivatives and learn about the market from Indian point of view. In fact it was one of the most vibrant markets till early 70s. Its development and growth was shunted due to numerous restrictions earlier. Now, with most of these restrictions being removed, there is tremendous potential for growth of this market in the country.

A commodity may be defined as an article, a product or material that is bought and sold. It can be classified as every kind of movable property, except Actionable Claims, Money & Securities.

Commodities actually offer immense potential to become a separate asset class for market-savvy investors, arbitrageurs and speculators. Retail investors, who claim to understand the equity markets, may find commodities an unfathomable market. But commodities are easy to understand as far as fundamentals of demand and supply are concerned. Retail investors should understand the risks and advantages of trading in commodities futures before taking a leap. Historically, pricing in commodities futures has been less volatile compared with equity and bonds, thus providing an efficient portfolio diversification option.

Commodity market is an important constituent of the financial markets of any country. It is the market where a wide range of products, viz., precious metals, base metals, crude oil, energy and soft commodities like palm oil, coffee etc. are traded. It is important to develop a vibrant, active and liquid commodity market. This would help investors hedge their commodity risk, take speculative positions in commodities and exploit arbitrage opportunities in the market.

A Advantages of Commodity Trading

— A good low-risk portfolio diversifier.

— A highly liquid asset class, acting as a counterweight to stocks, bonds and real estate.

— Less volatile, compared with, equities and bonds.

— Investors can leverage their investments and multiply potential earnings.

— Better risk-adjusted returns.

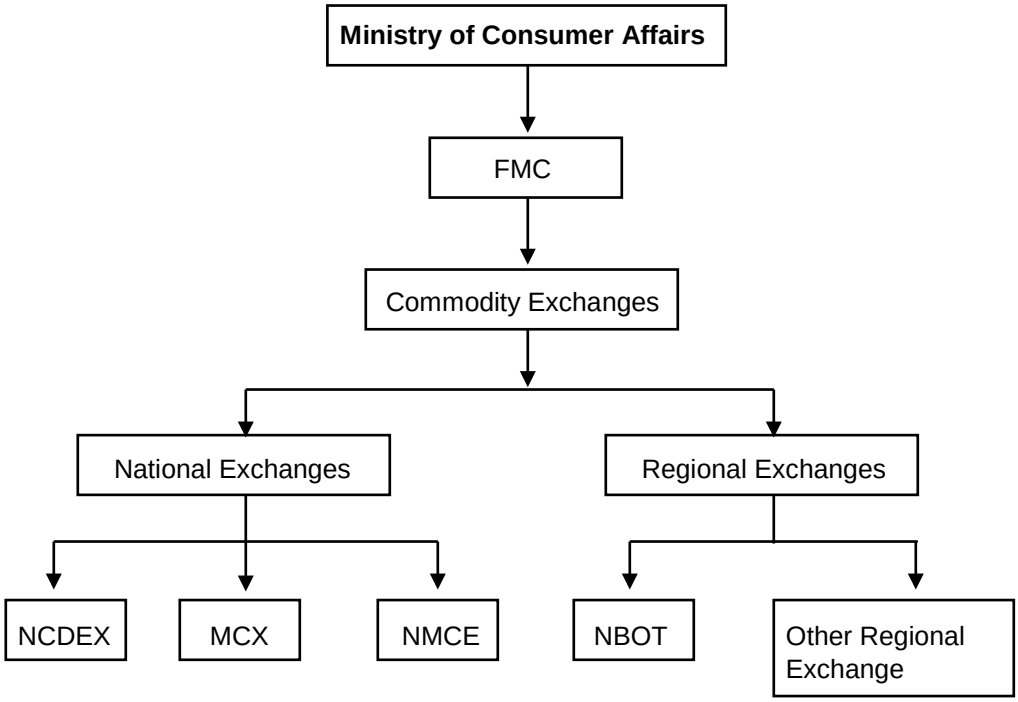
— A good hedge against any downturn in equities or bonds as there is little correlation with equity and bond markets.

— High co-relation with changes in inflation.

EVOLUTION OF COMMODITY MARKETS IN INDIA

Bombay Cotton Trade Association Ltd., set up in 1875, was the first organized futures market. Bombay Cotton Exchange Ltd. was established in 1893 following the widespread discontent amongst leading cotton mill owners and merchants over functioning of Bombay Cotton Trade Association. The Futures trading in oilseeds started in 1900 with the establishment of the Gujarati Vyapari Mandali, which carried on futures trading in groundnut, castor seed and cotton. Futures' trading in wheat was existent at several places in Punjab and Uttar Pradesh. But the most notable futures exchange for wheat was chamber of commerce at Hapur set up in 1913. Futures trading in bullion began in Mumbai in 1920. Calcutta Hessian Exchange Ltd. was established in 1919 for futures trading in raw jute and jute goods. But organized futures trading in raw jute began only in 1927 with the establishment of East Indian Jute Association Ltd. These two associations amalgamated in 1945 to form the East India Jute & Hessian Ltd. to conduct organized trading in both Raw Jute and Jute goods. Forward Contracts (Regulation) Act was enacted in 1952 and the Forwards Markets Commission (FMC) was established in 1953 under the Ministry of Consumer Affairs and Public Distribution. In due course, several other exchanges were created in the country to trade in diverse commodities.

Structure of Commodity Market



Different types of commodities traded

World-over one will find that a market exits for almost all the commodities known to us. These commodities can be broadly classified into the following:

Precious Metals: Gold, Silver, Platinum etc

Other Metals: Nickel, Aluminum, Copper etc

Agro-Based Commodities: Wheat, Corn, Cotton, Oils, Oilseeds.

Soft Commodities: Coffee, Cocoa, Sugar etc

Live-Stock: Live Cattle, Pork Bellies etc

Energy: Crude Oil, Natural Gas, Gasoline etc

Leading Commodity Exchanges in India

The government has now allowed national commodity exchanges, similar to the BSE & NSE, to come up and let them deal in commodity derivatives in an electronic trading environment. These exchanges are expected to offer a nation-wide anonymous, order driven, screen based trading system for trading. The Forward Markets Commission (FMC) will regulate these exchanges.

Consequently four commodity exchanges have been approved to commence business in this regard. They are:

Multi Commodity Exchange (MCX) located at Mumbai.

National Commodity and Derivatives Exchange Ltd (NCDEX) located at Mumbai.

National Board of Trade (NBOT) located at Indore.

National Multi Commodity Exchange (NMCE) located at Ahmedabad.

Participants in Commodity Futures

- Farmers/ Producers
- Merchandisers/ Traders
- Importers
- Exporters
- Consumers/ Industry
- Commodity Financers
- Agriculture Credit providing agencies
- Corporate having price risk exposure in commodities

Commodity Futures Trading in India

Derivatives as a tool for managing risk first originated in the Commodities markets. They were then found useful as a hedging tool in financial markets as well. The basic concept of a derivative contract remains the same whether the underlying happens to be a commodity or a financial asset. However there are some features, which are very peculiar to commodity derivative markets. In the case of financial derivatives, most of these contracts are cash settled. Even in the case of physical settlement, financial assets are not bulky and do not need special facility for storage. Due to the bulky nature of the underlying assets, physical settlement in commodity derivatives creates the need for warehousing. Similarly, the concept of varying quality of asset does not really exist as far as financial underlyings are concerned. However in the case of commodities, the quality of the asset underlying a contract can vary largely. This becomes an important issue to be managed.

Benefits to Industry from Futures trading

- Hedging the price risk associated with futures contractual commitments.
- Spaced out purchases possible rather than large cash purchases and its storage.
- Efficient price discovery prevents seasonal price volatility.
- Greater flexibility, certainty and transparency in procuring commodities would aid bank lending.
- Facilitate informed lending.
- Hedged positions of producers and processors would reduce the risk of default faced by banks.
- Lending for agricultural sector would go up with greater transparency in pricing and storage.
- Commodity Exchanges to act as distribution network to retail agri-finance from Banks to rural households.
- Provide trading limit finance to Traders in commodities Exchanges.

Benefits to Exchange Member

- Access to a huge potential market much greater than the securities and cash market in commodities.

— Robust, scalable, state-of-art technology deployment.

— Member can trade in multiple commodities from a single point, on real time basis.

— Traders would be trained to be Rural Advisors and Commodity Specialists and through them multiple rural needs would be met, like bank credit, information dissemination, etc.

LESSON ROUND-UP

- According to the Section 2(ac) of Securities Contract (Regulations) Act, 1956, derivatives includes:
  - a security derived from a debt instrument, share, loan, whether secured or unsecured, risk instrument or contract for difference or any other form of security;
  - a contract which derives it value from the prices, or index of the prices, of underlying securities.
- An option represents the right but not the obligation to buy or sell a security or other asset during a given time for a specified price called the “Strike” price. An option to buy is known as a “Call” and an option to sell is called a “Put”.
- In Forward Contract, the purchaser and its counter party are obligated to trade in security or other asset at a specified date in future.
- A Future represents the right to buy or sell a standard quantity and quality of an asset or security at a specified date and price.
- Interest only securities popularly known as IOs, receive the interest portion of the mortgage payment and generally increase in value as interest rates rise and decrease in value as interest rates fall.
- Structured Notes are debt instruments where the principal and/or the interest rate is indexed to an unrelated indicator.
- A swap is a simultaneous buying and selling of the same security or obligation. Interest rate swaps are fairly common in which two parties exchange identical securities having different interest rate structures.
- A Stock Index is a particular kind of index that represents changes in the market values of a number of securities contained in that index.
- Index futures are the future contracts for which the underlying is the cash market index. In India, futures on both BSE Sensex and NSE Nifty are traded
- Value at Risk is a single number which estimate maximum possible loss on an investment. VAR seeks to measure the maximum loss that a portfolio might sustain over a period of time given a set probability level.
- The seller agrees to deliver if the contract owner elects to buy, or to purchase if the contract owner elects to sell. For agreeing to the terms of the contract, the seller receives a fee, which in options is called the premium.
- A class of options consists of all options of the same type (put or call) covering the same underlying security.
- A series of options is all options of the same class having both the same strike price and the same expiration month.
- All futures and options contracts are cash settled, i.e. through exchange of cash. For the purpose of settlement, all CMs are required to open a separate bank account with NSCCL designated clearing banks for F&O segment.
- The actual position monitoring and margining is carried out on-line through

Parallel Risk Management System (PRISM) using SPAN (Standard Portfolio Analysis of Risk) system for the purpose of computation of on-line margins, based on the parameters defined by SEBI.

- Commodity defines as an article, a product or material that is brought and sold. It can be classified as every kind of movable property, except actionable claim, money and security.
- Forward Market Commission (FMC) will regulate commodities exchanges.
- Derivatives as a tool for managing risk first originated in the commodities markets in India.
- A strong and vibrant cash market is a pre-condition for a successful and transparent future market.
- Adoption of risk management or risk mitigation tool is now *sin qua non* for success in business with exposure to commodities.

SELF TEST QUESTIONS

1. Illustrate the difference between spot market and forward market.
2. What do you understand by the term " financial derivatives" ?
3. What is the significance of a Stock Index?
4. What are future contracts and how do they differ from forward contracts?
5. Describe the various kinds of options contracts.
6. Evaluate the growth of derivatives market in India.

Suggested Readings:

(1) *T.V. Somanathan:* "Derivatives", Tata McGraw Hill
(2) *J.L. Stein:* "The Economics of Futures Trading", Basil Blackwell
(3) *B. Bramaiah and P. Subba Rao:* "Financial Futures and Options", Himalaya Publishing House
(4) Annual Report of National Stock Exchange of India
(5) Annual Reports of SEBI and RBI

STUDY XI

TREASURY MANAGEMENT

LEARNING OBJECTIVES

The study will enable the students to understand:

- Objectives of Treasury Management
- Function and scope of Treasury Management
  - Unit level
  - Domestic level
  - International level
- Treasury Management *vis-a-vis* Financial Management
- Role and responsibilities of Treasury Managers
- Tools of Treasury Management
  - Zero based Budgeting
  - Financial Statement Analysis
- Internal Treasury Control
- Environment for Treasury Management

INTRODUCTION

Treasury management is the science of managing treasury operations of a firm. Treasury in its literal sense refers to treasure or valuables of the Government. The valuables are nothing but the coins and the currency which are the medium of financial transactions in the country. In the earlier days when the level of governmental operations was comparatively smaller, there used to be a centralized treasury into which the revenue receipts of the government were credited and from which the payments of the government were withdrawn. In a federal set-up, both the central govt. and the state govts. had their treasuries for managing the inflows and outflows of government finances.

As the size and spread of government revenues grew, it became difficult to manage the flows of cash into a centralized treasury. The function of collecting revenues on behalf of the government was gradually shifted to State Bank of India and other nationalised banks. These banks also started making payments on behalf of the state governments through cash counters and through bank accounts of various government departments. Simultaneously with the increase in size of government revenues, the corporate sector in India also grew manifold in operations. There were companies with multi-locational set-up involving receipt and disbursement of cash and cash equivalents at more than one places. In all such companies, the function of treasury management developed analogous to the transfer of government treasury functions to Banks. Along with this growth evolved the concept of profitable treasury management. Hitherto, the treasury management as practiced by the government was a passive concept. The over-riding motive was to provide a platform for transactions and little effort was made to evaluate the costs and expenses associated with managing large amount of currency, cheques and

other liquid instruments. Similarly, the opportunity available for making profits from holding large liquid funds was not recognized. But with the arrival of corporate treasuries, the function of treasury management was established as a profitable venture.

Today when we speak of treasury management, we refer to all activities involving the management of revenues, inflows and outflows of government, banks and corporates etc. It is a general concept applicable to overall fund management.

Government as the sovereign power is the fountainhead of all treasury operations. It creates money by printing currency and minting coins. This money flows into various channels which take money to various users of currency and coinage as a medium of exchange. Thus at the macro level, the treasury operations revolve around Reserve Bank of India. RBI as a banker to the govt. creates the currency on behalf of the govt. and manages public debt. It is also a banker to the banks and in this role, it controls the credit creation of banks.

At the micro level the concept of treasury and its management is mirrored in small corporate units which manage the cash flows on a daily basis. As we move from the macro level to the micro level, the nomenclature of treasury management becomes diffused. The terms treasury management and fund management are used almost synonymously. Conceptually, the latter is a general term, applicable to the business sector, while treasury management refers to the management of cash, currency and credit of sovereign power of the country. The term currency here includes both national currency and the foreign currencies dealt with by the government.

Historically, the treasury of a sovereign included gold, silver and other precious metals which were used as a medium of exchange. As a ruler, the sovereign exercised un-challanged rights over all the precious metals extracted from the earth. The booties earned from wars, foreign exploits and domestic plundering kept on adding to the treasure chest of the sovereign. These metals were circulated in the form of coins which became a medium of all commercial transactions in due course, replacing the earlier system of barter. The practice continued till the nineteenth century when paper currency began to be issued.

Reserve Bank of India manages the macro treasury management of the country. This is done through

- Issue of Currency notes
- Distribution of small coins, one, two and five rupee coins and rupee notes on behalf of the government
- Maintenance of currency chests.

The currency is issued by the Reserve Bank of India in terms of the Indian Currency Act whereas the small coins and rupee coins are issued under the provisions of the Indian Coinage Act. The provision of adequate supply of currency and coins is the responsibility of the government which was at first discharged by providing currency chests at the branches of Issue Department of RBI and at branches of Imperial Bank of India (which later became State Bank of India). SBI carried out the business of Government treasury and maintained the currency chests

at all district headquarters. Later on all the nationalized banks were also entrusted with the task of maintenance of currency chests.

The basic objective of keeping the currency chests at various places in India is to facilitate quick disbursement of currency and coins to far flung places and also to facilitate remittance to banks. This way, the banks can remit surplus cash to the currency chests located in their region and avoid transportation of cash over long distances. Also, the banks can draw from the currency chests during time of need. Currency chests are the agents of the Reserve Bank of India for keeping custody of currency and coins. Any deposit of currency and coins into these chests implies that the money circulation has been curtailed to that extent. Similarly, any disbursal from these chests would expand their supply. Thus expansion and contraction of currency takes place on continual basis due to operation of the currency chest.

Government as a sovereign power has control on cash and currency circulated in the country. The issue of currency and coins is based on the treasures of the government in the form of gold and silver stocks which are supposed to back such issue. More recently, government securities and their promissory notes became the basis of such issue. In fact, the coins of gold and silver were first replaced by the paper currency on the one hand and coins of base metals like copper, nickel, bronze, zinc etc., on the other. To supplement the available currency and to facilitate trade and business, credit instruments came into vogue in the form of promissory notes to pay at a future date by the trade and industry. Thus on the one hand, the government promissory notes became the basis for coins and currency rather than precious metals like gold and silver; and on the other hand, the promissory notes of trade and industry became the source of credit instruments. These credit instruments, particularly the safest among them such as government securities, in fact became the medium of parking of liquid funds over a period of time. Thus apart from handling cash and currency and bank funds, the liquid investment in government securities and mutual funds became another function of treasury management.

Treasury function is a part of the total managerial functions. Managerial function set-up can be classified into three broad units, viz. production function, marketing function and finance function. Production function pertains to the building up of capacities and generation of output. Marketing function is concerned with the marketing of the output through establishment of the sales and marketing network. In the finance function, the manager is concerned with financing of inputs and outputs and management of funds during the entire production cycle.

Availability of cash, currency and credit by the government, business and foreign sectors is a must for macro operations of the economy. In broader terms, all financial resources including forex are to be made available to the micro-economic units, i.e. the companies. Similarly, the operations at the national level involve return flow of funds, repayment of loans, taxes, fees etc. to the government, business and foreign sector.

The finance function comes into play when the company is incorporated. With capital restructuring, efforts are made for arriving at least cost combinations of capital for financing of a project and forecasting for working capital. In this function, one has to coordinate with the production and operations manager, sales or marketing

manager and they together constitute the marketing team. Apart from arranging the requisite funds for commencing an activity, the finance function is also concerned with managing the day-to-day finances of the company. Whereas arranging project funds and working capital finance is a one-time assignment, management of funds on daily basis is a much more astute activity requiring forecasting skills and prioritization ability of a high order.

The inflows and outflows of funds, their coordination and synchronization and making arrangements for meeting any gap between them is only one end of the spectrum of finance function. The other end of the spectrum is the management of the surpluses and maximization of returns from short term funds. These two ends of the spectrum form the core of activities of the finance function. But the handling of each of the activities requires further specialization. Arranging of long-term funds is the domain of the proper finance function but the management of funds required in and arising from the day-to-day activities of the firm is the domain of the treasury function. These two have to be viewed together and analysed for overall assessment of financial efficiency. So a finance manager need not have a treasury function or a treasury manager need not be bothered with long term arrangement of funds. The finance manager can be termed as an arranger of funds whereas the treasury manager can be viewed as a manager of funds.

Treasury management has both macro and micro aspects. At the macro level, the inflows and outflows of cash, credit and other financial instruments are the functions of the government and the business sectors. These inflows are arranged by them as borrowing from the public. In these sectors, the ratio of savings to investments is less than one, i.e. the savings are inadequate to fund the investments. Hence the need for borrowing. They accordingly issue securities or promissory notes which are part of the financial system. These borrowings for financial needs are met by surplus savings and funds of the household and the foreign sector, where the ratio of savings to investments is positive. The micro units utilize these inflows and build up their capacities for production of output. This leads to establishment of a production system which logically leads us to the natural consequence, i.e. the establishment of distribution and consumption systems. Once the production, distribution and consumption systems are in place at the micro level, the generation of surpluses at the units begins. These surpluses are channeled back into the macro system as outflows from the micro system. The inflows are the taxes paid to the government and repayment of loans made to the banks and financial institutions. These inflows into the macro level have to be managed by the treasury managers at the macro level.

While arranging funds for the micro unit, the finance manger aims at optimizing the value of his assets or wealth and minimizing the burden of his liabilities. He may seek to maximise his operational profits and seek to maximise the wealth of stakeholders of the micro unit. The basic objectives are economy, efficiency and productivity of assets. These objectives can not be achieved at the one end of the finance spectrum unless the management of funds at the other end of the spectrum, i.e. the treasury segment is equally triggered by the dictums of economy, efficiency and productivity.

OBJECTIVES OF TREASURY MANAGEMENT

We have noted above that the main function of a treasury manager is the management of funds. While managing these funds, the treasury manager seeks to fulfill the under-noted objectives:

1. Availability in right quantity
2. Availability in right time
3. Deployment in right quantity
4. Deployment in right time
5. Profiting from availability and deployment.

Availability in right quantity

The finance manager arranges funds for the unit. It is the duty of the treasury manager to ensure that after the funds have been arranged, these should be available in required quantity. The term quantity refers to the amount of funds required for day to day functioning of the unit. This quantity is available to the firm either as external loans or as internal generation. The loans quantity is arranged in the form of working capital finance.

Working capital finance can be available as finance against any of the current assets, viz. inventory or receivables. In order to ensure that the working capital finance is available in adequate quantity, the treasury manager has to maintain the desired level of security of current assets against which the finance has been provided by the lenders. Maintenance of the security is not a direct function of the treasury manager because the security partly becomes available from the functioning of the production department and partly from the marketing department. The production department is responsible for manufacturing the products and keeping track of the raw material, work-in-process and finished goods. These items form the inventory against which the working capital facility is provided. Similarly the marketing department is responsible for selling the goods and generating account receivables. Working capital finance is also provided by the banks against account receivables. Thus we can say that for maintenance of adequate security, the treasury manager has to coordinate with the production and marketing departments. The consequences of adequate security not being available in quantity can be far reaching.

Let us assume that a firm has a credit facility of Rs. 200 lacs provided by the bank against the security of inventory. It is a condition of the sanction of the loan that a margin of 25% shall be maintained by the firm against the security at all the times. It means that the firm can avail a credit facility of Rs. 200 lacs only if it has a security of around Rs. 275 lacs. The security value is indicated by means of the inventory statement or the list of debtors depending upon whether the finance has been obtained against stocks or against book debts. This statement is provided to the bank on monthly basis usually. In case the statement is not given, the bank determines availability of credit on the basis of previous month's statement. Thus if the statement of inventory and book debts is not provided to the bank well in time in case the value of security is higher than the previous period, then the firm stands to lose out on the availability of the differential amount of credit which it otherwise would have obtained.

From the above illustration we can well imagine the importance of availability of adequate funds for day-to-day functioning of a firm. This function is one of the objectives of treasury management. Alongside, the treasury manager has also to

ensure that the funds are just adequate for the requirements, neither more nor less. In case funds are kept in excess of the requirement, the excess portion imposes an opportunity cost over the system, i.e. the cost represented by the earnings which these funds would have obtained instead of being left idle. Again, the adequacy of funds has to be determined carefully. For this purpose, the cash flows for the relevant period have to be accurately charted out. Cash flows are the actual cash flows in this case and not the projected cash flows. Between the projected cash flows and the actual cash flows, there can be a lag in terms of less realization of the projected flows. Thus actual cash flows only have to be considered while determining adequacy. Further, while actual inflows should be ascertained, as regards outflows a margin of contingency should be maintained to take care of the uncertainties. Cash is understood here to include both cash and bank balances plus that portion of highly liquid securities that can be converted into cash within a stipulated time period.

Availability in right time

The requisite funds for day-to-day working of the firm should be available in time in addition to being available in quantity. By the term “availability in time” we mean that the funds should be available at the right moment, just in time so to say. The right time is the reasonable time taken to procure the funds. Procurement of funds is done by the firm in a number of ways and this activity is akin to the cash inflows. Cash inflows take place on account of (i) Capital receipts like proceeds of loans or sale of assets (ii) Revenue receipts like sale proceeds of finished goods. Capital receipts are not a daily occurrence for the firm and their realization can be anticipated well in advance. The revenue receipts can flow in at a more random pace but with some amount of rigorous cash flow planning, even the trend of revenue inflows can be well anticipated. Once the cash flow both on the capital and revenue account has been planned, the priority of treasury manager remains to ensure that the schedule of conversion of realizations into funds takes place as planned. Realisation of the capital receipts is more related to the domain of the finance manager whereas realization of revenue proceeds falls within the domain of the marketing staff. The treasury manager has thus to coordinate the matter with both the finance manager and the marketing manager in order to ensure that the realizations and receipts are converted into funds.

Timely availability of funds smoothens the operations of the firm and brings about certainty to the quantum of inflows that would be available at a particular point in time. What is timely is a relative matter dependent upon the situation of each case. Again the inflows have to be actual inflows at the determined time and not projected or anticipated flows. This is because the element of uncertainty has to be accorded due consideration. In case of a firm having a large number of transactions, timely availability of funds is extremely important because the execution of many transactions would be dependent upon funds position. This is relevant also for transactions involving foreign exchange. For the purpose of treasury operations, we consider foreign currencies at par with the domestic currency. It is assumed that the regulatory mechanism for holding foreign currency and domestic currency is the same and there is no constraint on holding or converting currencies. For foreign exchange transactions, funds have to be made available for meeting many critical situations. The treasury manager ensures that all the receipts of funds are credited to the account of the firm well in time. Another way of ensuring timely availability of

funds is to park short-time surplus funds in liquid securities which can be sold conveniently and quickly to realize cash. In this way, availability can be ensured without straining other resources.

Deployment in right quantity

Just as procurement of funds in right quantity is important for a treasury manager, equally important is to ensure that the right quantity of funds is deployment. By deployment of funds, we mean earmarking of funds for various expense heads, parking of short-term funds and investing surplus funds.

The expense heads can be capital expenditure and revenue expenditure. Capital expenditure involves allocation of funds for acquisition of fixed assets. Such expenditure is not a routine occurrence. The amount involved per transaction in capital expenditure is large and such expenditure is usually known well in advance. Revenue expenditure on the other hand is routine expenditure for purchase of raw materials and making payment for utilities, wages and other miscellaneous items. The number of transactions for revenue expenditure is large and the amount involved per transaction is smaller as compared to the capital expenditure. Some items of revenue expenditure are in the form of cash payment but the capital expenditure is mainly through bank account.

For deploying the right amount of funds, the treasury manager has to keep track of all receipts of funds. Simultaneously, the time table of deployment of funds is to be drawn up. In this time table, the payees are prioritized according to the urgency of their payments. There are certain expenses like important raw material payments, utility payments etc. which have to be accorded top priority over others. Other payments like payment to capital goods suppliers and financiers have also to be arranged in the right quantity. Apart from these payments, some extra funds have to be kept available for meeting contingencies. The sum of all these deployments makes the right quantum of funds to be deployed. Co-ordination with the purchase department is required for raw material purchases. For fixed assets acquisition and loan repayments, coordination with the finance manager is needed. Liaison with administrative and HRD staff is required for deploying funds for utility and wages payments. Without this type of tie-up, right quantity of funds can not be deployed. If the deployment is not in right quantity, the result can either be under deployment resulting in higher cost of funds or over deployment resulting in funds remaining idle. In case all the requirements of deployment of funds have been met and procurement of funds has been done in the right quantity, there is a possibility that some amount of funds would remain in surplus with the treasury department. This surplus would be in excess of the contingency requirements and as such can be deployed further on short term or long term basis depending upon the quantum of funds. If the quantum of surplus is large enough, some amount from this can be earmarked for long term deployment in investments etc. otherwise the entire surplus can be parked in short term securities. Short-term liquid securities are the Government securities and the schemes of mutual funds. Funds from these investments can be withdrawn at short notice period of 2–3 days as such these are akin to cash holding or bank balance holding.

Deployment of the right quantity of funds can not be achieved in case the procurement of funds has not been done in right quantity in the first place. This is

because ultimately the inflows of funds shall be utilized for feeding the outflows on whatsoever account. If the deployment has been done rightly, there shall be no bottlenecks in the funds flow of the firm. The allocation and use of funds follow each other in a cyclical manner and both have to be done in the right quantity for optimal use of the funds.

Deployment at right time

A logical corollary of sourcing funds at the right time is that the funds should be deployed at the right time. The description of the right time is a relative term and what amount of time is appropriate varies from firm to firm. The span of time varies from a week to a month in case of purchase of fixed assets. However, in working capital deployment, the range of time allowed may be quite narrow – say 2–3 days only. The treasury manager has to honour the outstanding commitments on working capital account within this short span of time. Payment for wages and utilities etc. has to be made in time to avoid any defaults. Similarly, payment to trade creditors, domestic and overseas, has to be made within a stipulated short period of time for avoiding interest payments etc. With the advancement in accounting systems aided by technological progress, it is now possible to send global remittances within no time. Funds can be procured more quickly than in the past, spanning the spatial barriers. The compulsion for online deployment is all the more pressing currently.

The treasury manager seeks to prioritise the deployments according to the ease of payment within the time horizon selected for planning deployment. Online payment of funds is ensured through offsite debits from a centralized pool banking account. Where such payments are not possible, bank drafts or pay orders are purchased to ensure timely payment to pressing creditors. Timely disbursement ensures that the funds are not left idle for the shortest span of time. In case the sourcing and deployment of funds is well organized, surplus of funds shall soon start emerging which can be deployed in short term liquid investments.

However, if the inflow and outflow of funds is not evenly matched in the time dimension, bottlenecks and mismatch of funds are sure to emerge. Apart from causing administrative problems and rationing of funds, such a situation also leads to increase in cost of funds. Thus the treasury manager seeks to avoid such situations. Timely deployment of funds is a well planned activity requiring intra-organisation co-ordination and liaison with banks and financial institutions apart from forex dealers.

Profiting from availability and deployment

One of the prime objectives of a treasury manager is to ensure timely procurement of right amount of funds and timely deployment of right amount of funds. This objective results in administrative smoothening and paves way for easier achievement of performance targets of the firm. Modern day treasury manager has another objective, which is to profit from such sourcing and deployment. Profit from this function is derived as under:

Sourcing of funds at the right time and in right quantity is a result of realization of debtors and financing of borrowings. Realisation of debtors in time has a direct impact upon profitability of the firm through decrease in cost of holding debtors. Financing of borrowings is a capital structure decision but the actual availment of these borrowings is the domain of the treasury manager. Adequate and timely

utilization of the borrowed funds results in the avoidance of strain on other sources of funds.

Once the funds have been sourced in correct measure, the deployment adds further to the profitability of the firm it has been done in tandem with the pace of sourcing. Correct deployment ensures that there is no unnecessary accumulation of funds in the firm at any point in time. Needs of every department are met as per schedule. This action results in avoidance of special and extraordinary costs, interests and the like. With costs being in control, surplus funds emerge from the system which are deployed profitably either as long term investments or as short-term parking tools. Both ways, the net result for the firm is an addition to profits.

FUNCTIONS AND SCOPE OF TREASURY MANAGEMENT

Government sector, business sector and the foreign sector are the major sectors of country's economy. For macro operations of these sectors, there is requirement of cash, currency and credit. In broader terms, all financial resources including foreign exchange are to be made available to the industrial or business units. Similarly, at the macro level return flow of funds in the form of taxes and repayment of loans is needed. Such to and from movement of funds is part of the financial functioning.

Any business enterprise requires finance to start business operations. The first requirement is in the form of capital for setting up of the project. Project finance needs long term funds. These funds can be obtained from equity and debt both. Equity and internal accruals are considered the owners' contribution whereas debt is treated as the outsiders' stake in the project. Once the company starts operations of production and manufacture, it needs working capital funds also. These funds are required to meet the payments for raw materials and other inputs, spares, utilities etc. The quantum of funds needed for working capital depends upon nature of the company's business and nature of its products or services.

The function of treasury management is concerned with both macro and micro facets of the economy. At the macro level, the pumping in and out of cash, credit and other financial instruments are the functions of the government and business sectors, which borrow from the public. These two sectors spend more than their means and have to borrow in order to finance their ever-growing operations. They accordingly issue securities in the form of equity or debt instruments. The latter are securities including promissory notes and treasury bills which are redeemable after a stipulated time period. Such borrowings for financing the needs of the government and the business sector are met by surplus funds and savings of the household sector and the external sector. These two sectors have a surplus of incomes over expenditure. The micro units utilize these surpluses and build up their capacities for production of output and this leads to the productive system and distribution and consumption systems.

No company can operate in a vacuum. Its assets are both financial and human. As such, there are both quantifiable and non-quantifiable factors involved in financial performance, forecasting and achievement of targets. The company's treasury manager is the pivot around which day to day operations of the company revolve. His operations and performance have an impact on the company itself and the financial system and the economy in the broad sense. An analysis of the sources of funds of

business units reveals that broadly there are three categories of resources – internal accruals of the unit, external sources from the capital and the money market and the external sources. The same analysis holds good at the sectoral and national level. In fact, the emergence of international financial markets can be traced to this sectoral inter-dependence, including the foreign sector and intra-national dependence. Basically, as no country is self-sufficient, international economic and economic relations emerge.

In a similar fashion, it would be appropriate to set out the pattern of use of funds of any company into various sectors of the economy, including the foreign sector. Dispensation of funds for current or capital expenditures in domestic and international markets can be separately set out. Such an analysis is particularly more relevant to multinational corporations and branches or subsidiaries of foreign companies in whose case foreign markets and foreign sources of supply play an important part. The head office or the holding company may spend apart of its funds in investment in the host country, make inward remittances for working capital or investment purposes and outward remittances for royalty and dividend payments or technical fees.

International financial markets emerged out of the need to facilitate operations of nations arising out of commercial and financial transactions with the rest of the world. This emergence can be attributed logically to the inter-relations of the economic unit with the corporate sector and of the latter with the other sectors of the economy, including the foreign sector. It would be apt to set out here the inter-relations between micro level operations of a treasury manager with the macro level working of the corporate sector and foreign sector. A treasury manager is a micro unit in the financial sector. The environment he faces is competition from other similar units in the corporate sector. Besides this, the corporate sector, in turn, is inter-linked with all other sectors of the economy. The treasury manager is thus faced with a total environment of the economy which includes foreign sector and it is thus necessary for him to be familiar with the international financial system, as much as to the domestic financial system.

Scope of treasury management can be broadly classified at the following levels as under:

- Unit level
- Domestic level
- International level

Unit level

At the unit level, the treasury manager's activities encompass all other management functions. The performance of production, marketing and HRD functions is dependent upon the performance of the treasury department. The lubricant for day-to-day functioning of a unit is money or funds and these funds are arranged by the treasury manager. The treasury is involved in all the budgeting activities of the unit, whether these are financial budget, costing budget, the marketing budget or the HRD budget. The feedback available from interactions with the various departments of the company is utilized by the treasury department to fine tune the overall performance targets of the company within the constraints of availability of currency, cash and cash equivalents.

Treasury manager also monitors the cash flows of the unit on a continual basis. It is ensured by him that adequate funds are made available for day-to-day working of the unit. In case there is genuine shortfall in cash flows, the outflows are made in an order of priority with the more urgent payments being made first. The treasury manager has two duties of taking decisions both in the areas of cash inflows and outflows. He has to integrate the treasury function with with the production and marketing functions. The scope of the treasury management function at the unit level can be better described in the following routine duties of the treasury manager:

1. Keeping a track, on monthly, fortnightly or weekly basis, of all cash inflows and outflows and their variance with budget projections.
2. Maintaining a record of all receivables and payables, credit instruments, credit sales, deposits, loans and advances etc.
3. Study regularly the quantity and quality of current assets and liabilities and position of current liquidity.
4. Assess from time to time the long-term and short-term solvency of the company and its overall solvency position.
5. Keep liaison with stock exchanges, where the shares of the company are listed for a study of the share price movements.
6. Keep liaison with banks and financial institutions for ant change in borrowing limits or to inform them of any imminent changes in company's financial position or policies. Payments of interest and instalment of principal are to be arranged at the right times.
7. Keep liaison with Registrar of Companies and government departments concerned with the investment and financing decisions for any information regarding policy changes.
8. Keep abreast with all legal and procedural requirements for raising funds and investment decisions.
9. Keep the top management or the board informed of any likely changes in the financial position of the company due to internal factors.

Domestic level

At the domestic or national level, the scope of treasury management function is to channelise the savings of the community into profitable investment avenues. This job is performed by the commercial banks. Treasury management is a crucial activity in banks and financial institutions as they deal with the funds, borrowing and lending and investments. By nature of their activity, they earn their profits through operations in money or near money claims. They borrow from the public in the form of deposits which along with other borrowings constitute their liabilities. Their assets are mostly in the form of loans, advances and investments. As their liabilities are mostly of short and medium term nature, funds management becomes critical for ensuring a proper matching of assets and liabilities according to the maturity of each and their costing. Commercial banks being the creators of credit have an additional responsibility of maintaining their image of creditworthiness, safety and integrity.

Commercial banks are also required to observe capital adequacy norms and provide for non-performing assets on a strict basis. Thus there are limits to which the banks can expand their credit portfolio. Banks are also enjoined by regulations to

maintain Cash Reserve Ratio (CRR) of a minimum of 3% and Statutory Liquid Ratio (SLR) of 25% of their net demand and time liabilities. While the CRR is required to be maintained with the RBI in the form of cash balances, the SLR is to be maintained in the form of investment in central and state government securities. It has been observed that during times of slack credit demand, banks invest in govt. securities to a higher extent than the statutory requirement of 25% of net DTL. This activity is more pronounced when the interest rates are falling because the yields on govt. securities fall in such a period, driving up their prices. Banks, which do their treasury management astutely, stand to gain tremendously during such periods.

The gilt edged market has two forms—primary and secondary. The primary market is a wholesale market where RBI is the underwriter and allots the securities to applicants on behalf of the government. On the same basis, the RBI sells the repos (or repurchase agreements) of government securities to the institutions, banks, etc. to meet the market demands. The interest rates are decided by the discounts quoted in these bids and these are market related rates. In the primary market, RBI sells securities to banks, FIs, PF trusts, etc. RBI as the underwriter of of government securities, makes up for any shortfall in subscription for them. But in the case of state government securities, it only arranges for subscription.

The main features of the primary market are listed below:

— New borrowings to be made on behalf of govt. is decided by RBI and terms such as tenor and coupon rates are announced.

— The RBI acts as underwriter and contributes to the loans unsubscribed by the public. Work of the RBI is shared with a class of primary dealers.

— The timing and conditions, and the amounts involved are discussed by RBI with banks and FIs and sometimes prior commitments are enlisted.

— The floatation of bonds is effected throughout the year depending on the conditions of the market and requirements of the government.

— The timing and quantum is also adjusted having regard to overall liquidity in the market.

— The subscription to the loans can be in cash as also in the form of rolling over of existing securities which have fallen due for repayment.

In the secondary market, which is a retail market, trading is over the counter. Main operators in the secondary market are the Discount and Finance House of India (DFHI), banks, FIs, PFs etc. This market is an over-the counter (OTC) market where trading is done through phones, fax etc.

The concept of yields is important for understanding of the government securities market. Yield, as we know, is the rate of return on an investment. In case of lending made by the banks, they stipulate a rate of interest per annum which becomes the benchmark for their return. The actual yield may vary from the benchmark depending upon whether the periodicity of interest is monthly, quarterly or half yearly basis. In case of government securities, however, the yields are determined on the basis of the price at which the security is auctioned in the primary market or the prices determined in the secondary market through sale and purchase.

Nominal Yield

Coupon rate is the rate of interest payable per annum per Rs. 100/- or the face value. If the purchase price is different from the face value then the return is equal to (coupon rate/purchase price) × 100. This return is called the normal yield.

Real Yield

Nominal yields deflated by the index of inflation rate, such as WPI or CPI will give real yields, which reflect the true purchasing power of the return on these securities.

Net Yield

Nominal yields adjusted for the tax rate or payment of relevant taxes at which deduction of tax at source takes place are called the net yield.

Current Yield

Coupon rate is the rate at which the bond carries interest. This is the nominal yield payable on on the face value of the bond regularly and remains unaltered, say, for example 7.75% loan 2005. Current yield is equal to (coupon rate × face value)/ cost or market price.

Redemption yield or yield to maturity

This takes into account the price paid for the bond, length of time to maturity and the coupon rate of the bond. This is the yield which the holder gets per annum if he holds it until maturity and is the same as current yield if the bond is purchased at par. Redemption yield is equal to current yield +/– average annual capital gain or loss (for the bond purchased at a discount or premium as the case may be).

RBI is responsible for public debt management of the government. It does this by underwriting and subscription to new issues not subscribed by public, by use of Open Market Operations (OMO) as a technique of sale and purchase of government securities to control the liquidity and the interest rate structure and by use of SLR and CRR as the method of controlling the liquidity of banking system and their contributions to government debt.

FUNCTION OF TREASURY MANAGEMENT AT INTERNATIONAL LEVEL

At the international level, the function of treasury management is concerned with management of funds in the foreign currencies. Foreign exchange as a subject refers to the means and methods by which the rights to income and wealth in one currency are converted into similar rights in terms of another country's currency. Such exchanges may be in the form of one currency to another or of conversion of credit instruments denominated in different currencies such as cheques, drafts, telegraphic transfers, bills of exchange, trade bills or promissory notes. Exchange is done through dealers in foreign exchange regulated by the central bank of a country. Banks are usually the dealers apart from other specialized agencies.

One of the important components of the international financial system is the foreign exchange market. The various trade and commercial transactions between countries result in receipts and payments between them. These transactions are carried out in the currencies of the concerned countries– any one of them or in a

mutually agreed common currency. Either way, the transactions involve the conversion of one currency to the other. The foreign exchange market facilitates such operations. The demand for goods and services from one country to another is the basis for demand for currencies in the market. Thus basically, demand for and supply of foreign currencies arises from exporters or importers or the public having some transactions with foreign countries.

Companies having an import or export component in their business profile have to frequently deal in forex operations. Forex operations in a country being supervised by the central bank, reference to the central bank in one form or the other is necessary to use foreign exchange. If the country on the whole is a net exporter of goods and services, it would have a surplus of foreign exchange. If, on the other hand, it is a net importer then it would have a shortage of foreign exchange. The extent of regulation of the forex market depends upon the availability of foreign exchange in a country. If the forex is scarce, then holding and using it would be subject to a lot of regulatory control. It also matters whether international trade forms a significant percentage of the GDP of a nation. If it is so, then the awareness about forex regulations would be much more widespread as compared to a situation when foreign trade forms an insignificant portion of GDP. Presently, however, with increasing globalisation, forex dealing has become a normal part of treasury operations.

Every foreign exchange transaction involves a two-way conversion – a purchase and sale. Conversion of domestic currency into foreign currency involves purchase of the latter and sale of the former and vice versa. These transactions are routed through the banks. The transactions take the shape of either outright release of foreign currency for meeting travel and related requirements or payments to outside parties in the denominated currency via the medium of correspondent banks. For effecting payment, following instruments are generally used:

Telegraphic transfers (TT)

A TT is a transfer of money by telegram or cable or telex or fax from one center to another in a foreign currency. It is a method used by banks with their own codes and correspondent relations with banks and abroad for transmission of funds. It involves payment of funds on the same day, it is the quickest means of transmission of funds. As there is no loss of interest or capital risk in this mode, it enjoys the best rate for the value of receipts.

Mail Transfers (MT)

It is an order to pay cash to a third party sent by mail by a bank to its correspondent or branch abroad. It is issued in duplicate, one to the party buying it and the other to the correspondent bank. The amount is paid by the correspondent bank to the third party mentioned therein in the transferee country by its own cheque or by crediting the party's account. As the payment is made after the mail advice is received at the other end, which will take a few days, the rate charged to the purchaser is cheaper to the extent of the interest gain to the seller bank.

Drafts and cheques

Draft is a pay order issued by a bank on its own branch or correspondent bank abroad. It is payable on sight but there is always a time lapse in the transit or in post

between the payment by the purchaser of the draft to his bank and the receipt of the money by the seller in the foreign center. As in the case of MT, there is risk of loss of draft in transit or delay in release of payment to the beneficiary and loss of interest in the intervening period.

Bills of exchange

It is an unconditional order in writing addressed by one person to another, requiring the person to whom the order is addressed, to pay certain sum on demand or within a specified time period. If it is payable on demand, it is called a sight bill. If it is payable after a gap of some time, it is called a usance bill. Such bills can be bankers' bills or trade bills. Bankers' bills are drawn on banks abroad while trade bills are made between individual parties.

There are four major components of the forex markets, depending upon the level at which the transactions are put through. These can be either

- Banks with public
- Inter-bank deals
- Deals with correspondents and branches abroad
- Deals with RBI.

In the market, there is no physical exchange of currencies except in small denominations when travelers and tourists carry them across national borders. The medium of exchange is credit instruments or book entries in the books of concerned banks.

Exchange rates can be spot rates or forward rates. If an importer is paying on receipt of documents, then he can buy a foreign currency say dollars on spot basis. It means that the exchange of Indian Rupee and Dollars is proceeding on current basis. But if the importer agrees to pay three or six months hence, his demand for dollars might arise only after three or six months. In such a situation, the transaction is carried out through forward transaction. The exchange of Rupee and Dollar is to take place after the stipulated time period, though the exchange price has been pre-decided.

Just as the banks are buying and selling spot, they also do business in forward currencies. Corresponding to the spot rate of exchange, there is a forward rate for various periods. Currencies sold or bought in forward are subject to the influences of interest rates– both domestic and international. Forward rates also depend upon the elative position of currencies *vis-à-vis* other currencies. Hence there is an implicit risk that the forward rates contracted today may be different from actual spot rates that would prevail three or six months hence. If any bank succeeds in forward purchases with forward sales of the same currency, it avoids exposure to the exchange rate risk. If the forward sales and purchases do not match, the bank may have an uncovered position which it may cover with another bank which has a contrary position. If it fails to cover with a bank, it may still do so with the central bank of the country or with a correspondent bank abroad. If a bank takes a position uncovered, it may take a calculated risk in the hope that the rate may move in its favour or else it may have to bear the exchange rate differential.

When foreign exchange markets operate in a free manner, the assumption is that the exchange rates between various currencies would be quoted at the same level at all the trading centers throughout the world. But it seldom happens and at the best of

times, there are discernible differences in exchange values across centers. Banks and other dealers take advantage of these differences and profit from the rate difference. This operation is called arbitrage. For example, if the Dollar-Euro parity is 1.00 in New York and 1.05 in Frankfurt, then a dealer can sell Euros in Frankfurt, purchase Dollars and with the Dollars, buy Euros again in New York thereby profiting from the deal.

Operations in the forex market are exposed to a number of risks. These risks are as follows:

- Credit risk arising out of lending to a foreign borrower whose credit rating is not known for certainty.
- Currency risk of trading in a currency whose stability and strength is known to fluctuate.
- Country risks involved in dealing in the currency of a country whose political and economic stability is uncertain.
- Solvency risks due to mismatch between current assets and liabilities of dealers and resultant default in meeting forward commitments.

In India, commercial and most of the co-operative banks have been authorized to deal in foreign exchange. Banks finance huge amount of foreign trade. This trade is conducted on daily basis through purchase and sale of foreign currencies. The demand and supply of active currencies is matched by the banks from their own stock. There are cases when the bank needs some currencies or has a surplus of such currencies. These needs are met by buying or selling such currencies to the RBI.

The foreign exchange department of every bank draws up a position sheet for each currency daily in which purchases and sales of the currency are recorded. The banks generally avoid taking any exchange risk by covering uncovered balances at the end of the day. When the purchases exceed sales, the credit balance is plus and the position is overbought. This is to be covered by equal sales of that currency. When the sales exceed purchases, it is a situation of overselling and the same is covered by purchases of that currency.

A typical dealer in Forex may be a bank having the controlling and supervisory authority and the head office. Actual dealings in forex would take place through authorized branches. At these branches, there are dealing rooms and back office operations. Dealing room would perform the following functions normally:

- Quoting, negotiating and fixing rates of exchange for larger sized customer transactions involving purchase or sale of foreign currencies.
- Arranging cover against purchase and sale of foreign currencies.
- Trading on own account, i.e. purchase/sale of foreign currencies for profit.
- Mobilisation of required foreign currency funds by swapping arrangements or purchases from other dealers.
- Accepting customer forward contracts for purchase/sale of foreign currency and arranging cover against the same.

The back office operations would comprise of the following:

- Consolidation of all exchange deals and provide cover operations

- Analysis of the structure of the deals for determining the future rates.
- Processing of inter-bank deals, sending or receiving contract notes or confirmation of deals.
- Follow-up work on contracts
- Transfer of funds to correspondents and their branches.

RELATIONSHIP BETWEEN TREASURY MANAGEMENT AND FINANCIAL MANAGEMENT

Finance function is a key element in the corporate activity. Its main objective is to keep the firm in good financial health. To secure financial health, the finance manager has to perform the following functions:

- Investment functions and decisions
- Financing function and decisions

Investment function elates to the efficient use of funds in alternate activities. The aim is to allocate funds to each activity so as to obtain optimal returns from such allocation. The short-term and long-term investment strategy has to be planned in line with the objective of maximization of wealth of shareholders. The utilization of funds, as and when they accrue, should take care of two prime considerations. The first consideration is that there should not be any idle funds and second consideration is that there should be no threat of liquidity crisis. Idle funds have their own cost and it results in lowering of profitability. Extreme tightness of funds, on the other hand, raises the specter of default and loss of commercial reputation. So a delicate balance between these two conflicting objectives has to be maintained by the finance manager. It is in this context that the function of finance becomes crucial to the survival and growth of a firm.

The financing function refers to the securing of right resources of funds at an appropriate cost and at the right time. Here the decision is to be taken about the least cost combination of funds for capital requirements and for working capital needs. Whether owners' equity should be used for financing or should the firm resort to external financing? If owners' equity is to be arranged, what returns are to be assured? If borrowing has to be done, then what rate of interest is to be paid?

In line with the twin objectives of investment and financing, the finance manager has to take responsibility for all decisions pertaining to these areas. In the finance function, a macro view of the requirements and uses of funds is to be taken. The finance manager has to arrange the funds within the approved capital structure of the firm. The funds may be debt or equity. Once the funds have been arranged, it is left to the treasury function to utilize these funds according to the approved parameters. Financial management is also concerned with the overall solvency and profitability of the firm. By overall solvency, we mean that the funds should be able at all times to meet its liabilities. The liabilities can be short-term or long-term. The long-term liabilities pertain to payment of long-term borrowings. Internal liabilities like payment to shareholders are a matter of consideration once external solvency has been attained by the firm. Profitability means that the firm should run its affairs profitably. It may be possible that some segments of the firm may at times face strain upon their profitability due to macro-economic or internal causes. But the firm should be in a

position to earn reasonable return on its investment on the capital employed. Capital employed, as we know, is the sum of own funds and borrowed funds. Profitability of operations of the firm means that both the own funds and borrowed funds generate adequate surpluses for the firm. This can be ensured by investing the funds in such projects which provide optimal returns.

The treasury function is concerned with management of funds at the micro level. It means that once the funds have been arranged and investments identified, handling of the funds generated from the activities of the firm should be monitored with a view to carry out the operations smoothly. Since funds or cash is the lubricant of all business activity, availability of funds on day to day basis is to be ensured by the treasury manager. The role of treasury management is to manage funds in an efficient manner, so that the operations in the area of finance are facilitated in relation to the business profile of the firm. The treasury function is thus supplemental and complemental to the finance function. As a supplemental function, it reinforces the activities of the finance function by taking care of the finer points while the latter delineates the broad contours. As a complementary function, the treasury manager takes care of even those areas which the finance function does not touch. Looked at from this point of view, the treasury function integrates better with manufacturing and marketing functions than the finance function. This is because the treasury department of a firm is involved in more frequent interaction with other departments. For the purpose of performing this role, the treasury manager operates in various financial markets including the inter-corporate market, money market, G-sec market, forex market etc.

DIFFERENCE BETWEEN FINANCIAL MANAGEMENT AND TREASURY MANAGEMENT

Following differences can be observed between financial management and treasury management:

1. Control Aspects

The objective of financial management is to establish, coordinate and administer as an integral part of the management, an adequate plan for control of operations. Such a plan should provide for capital investment programs, profit budgets, sales forecasts, expenses budgets and cost standards.

The objective of treasury management is to execute the plan of finance function. Execution of the plan takes care of the issues arising in routine operations of the firm which have a bearing upon the funds position.

Thus the finance function of a firm would fix the limit for investment in short term instruments for a firm for example. It is the treasury function that would decide which particular instruments are to be invested in within the overall limit having regard to safety, liquidity and profitability. Again, the finance function would arrange the borrowed funds for the firm but the treasury function would take care of day-to-day monitoring of the funds.

2. Reporting Aspects

Financial management is concerned with the preparation of overall financial reports of the firm such as Profit and Loss account and the Balance Sheet. It also

takes care of the taxation aspects and external audit. Based upon the performance of the firm, budgets for the ensuing years are fixed. The reports are submitted to the top management of the firm.

Treasury management is concerned with monitoring the income and expense budgets on a periodic basis *vis-à-vis* the budgets. The budgets are fixed department/ segment wise so as to dovetail with the overall corporate budgets. Variances from the budgets are analysed by the treasury department on a continual basis for taking corrective measures. The corrective measures that can be taken are pointing out of discrepancies to departmental heads and refuse payments that are not according to approved procedures and guidelines. The treasury department is also involved in the internal audit of the firm.

3. Strategic Aspects

The finance function is involved in formulating overall financial strategy for the firm. The top management chooses the line of activity for the firm. The finance function firms up the investment and financing plans for the activity. The strategic choices before the financial manager are the options of investment and financing. While making these choices, the finance manager is taking a long-term view of the state of affairs. It is just possible that the business of a firm may not be profitable in the initial years but it does not mean that the choice regarding investing has been strategically incorrect. In fact, there are many mega projects where the gestation period is even upto seven years. But given the correctness of the original assumptions, performance of the finance function would be measured by the number of years that gets reduced in breaking even.

Strategy for treasury management is more short-term in nature. The treasury manager has to decide about the tools of accounting and development of systems for generation of controlling reports. The maintenance of proper systems of accounting is one of the objectives of treasury management. Another strategic objective for treasury management would be maintenance of short-term liquidity. This is done through regulation of payments and speedy realization of receivables.

4. Nature of assets

The finance manager is concerned with creation of fixed assets for the firm. Fixed assets are those assets which yield benefit to the firm over a longer period of time. It can be said that the time span of a project coincides with the span of the fixed assets. In case the fixed assets have depreciated physically by a significant measure, then a decision has to be taken for upgradation and replacement of the assets.

The treasury manager is concerned with the net current assets of the firm. Net current assets are the difference between the current assets and current liabilities of the firm, both normally realizable within a period of one year. Current assets should always be more than the current liabilities for ensuring liquidity of the firm. Current assets are the inventory, receivables and cash balances. Current liabilities are the trade creditors, statutory payables and loan repayables within one year. To ensure a healthy level of net current assets, the treasury manager is to ensure that the quality of the assets does not deteriorate.

As regards investments, the finance manager is concerned with long-term and strategic investments. These investments could be funded from borrowed funds or

from internal accruals. The investments are expected to be held over a longer period of time as such day-to-day monitoring of the investments is not required. The treasury manager is concerned with short-term investments. The tenor and quality of these investments has to be constantly monitored by the treasury manager for ensuring safety and profitability.

Treasury Organization: Picking the Right Model

Organisations have extended debates on the kind of treasury they should have. The common themes include services that the treasury should offer, the right size or structure, and the right spread of management control There are many dimensions to the structure of a treasury organisation. Two key dimensions – range of services and extent of centralisation of management control – define resultant organisation models. The relationship between organisation models and factors that influence decisions on the right model to adopt.

There are various definitions of the word treasury. In its strictest sense, it refers to one function: asset liability management, especially when used in the context of banks. In a wider sense, treasury includes a whole range of activities encompassing various markets. A few significant activities are:

Asset liability management:

— Maturity mismatch;

— Interest rate and type mismatch; and

— Currency mismatch.

Sales and trading:

— Currency, interest rate, and credit products;

— Money market and long-tenure instruments; and

— Derivative products.

Risk management

— Back office processing, settlement, and accounting; and

— Customer and regulatory reporting.

Organisation Models: Dimensions

Any organisation can exercise its choice on the scope of the treasury functions it undertakes. In doing this, it may be governed by a variety of considerations:

— It may choose to handle only those needs driven by utilitarian motives such as liquidity support or, on the other hand, it may consider treasury as a “core” organisational process and hence handle the full range of services.

— It may choose to outsource portions of the activities required or it may choose to foster these capabilities in-house.

Independently, an organisation can also decide on the extent of centralisation of treasury management:

— It may be efficient to centralise back office processing, while the front office may need to be decentralized to aid speedy local decision-making.

— It may be important to have a common risk management strategy, while execution may be decentralised.

A study of common practices relating to the two key influencers – the range of activities supported and the degree of centralization or decentralisation – at treasury organisations globally suggests four models.

Full Service Global

Full service refers to a treasury that undertakes most, if not all, of the activities of treasury management. Global treasury refers to one that either operates as the only treasury for all markets across the globe, or ultimately combines all regional or local treasuries (that may exist due to legal or regulatory reasons) into a central treasury for pooling risks, for policies or strategies, or for both these. In this sense, management of the treasury function in this model is very much centralised. Although this model readily lends itself to global organisations, it could also be used by local businesses that need to access global markets.

Full Service Local

In this model, each treasury is a self-contained local unit dictated purely by the needs of the local business. Thus, the treasury management function is, by and large, decentralised. While this sort of treasury is usually the norm for a business with a local or regional spread, it may be adopted for a global organisation that operates as a collection of highly independent business units. Again, the range of services offered is the full gamut, as described in the full service global model above.

Limited Service Global

This model is different from the full service global model in that the range of services offered is limited. This could largely be due to the fact that certain activities are kept outside the purview of treasury and are handled directly by business units because the scale of these activities is not large enough to warrant the attention of the central treasury. Examples are treasuries with limited or no foreign exchange trading activities, with the exposure being either managed directly by the concerned export or import department or not managed at all. For those activities that are included in the treasury in such a model, pooling is at a central level.

Limited Service Local

This model is akin to having virtually little or no treasury activities, beyond local cash and liquidity management. These are very small decentralised treasuries where the concerned managers may also have other responsibilities in the finance department.

ROLE AND RESPONSIBILITIES OF TREASURY MANAGER

The overall finance function starts with capital structuring, scouting for the least cost combination of internal and external capital for financing of the project and forecasting the sources and uses of funds. In this function, one has to coordinate with production and marketing functions and all others that constitute the management team. The inflows and the outflows and their coordination and synchronization and

meeting any gaps are the functions of the finance manager. The treasury manager has a larger role of coordinating the apparently routine, yet significant activities of the firm. The activities are apparently routine because a sense of repetition is involved in these activities. Nevertheless, the activities are significant because smooth functioning of these activities paves the way for eventual solvency and profitability of the firm. The role and responsibilities of the treasury manager may be described as follows:

Role of a treasury manager

A treasury manager has a significant part to play in the overall functioning of the firm. At any point of time he is engaged in a number of roles played. While the production manager or the marketing manager may be involved in limited roles pertaining to their own fields, the roles of treasury manager intermingle with and overlap other role sets. In any business entity which is engaged in marketing, a treasury manager could be performing a variety of roles. The expected roles to be carried out by him would be slightly less in number in case the firm is engaged in service activity but that does not deride the importance of treasury manager for a services organization. The treasury manager has the following roles:

(a) Originating roles

The treasury manager inducts and originates system of accounting for the firm. Routine accounting of the firm is then carried out along these established systems. These systems are the pivot around which the functioning of the unit revolves. For operations of these systems, the treasury manager compiles exhaustive operations manual for the guidance of the users. It is expected that all the users shall comply with all important disclosure requirements for endorsing the integrity and validity of the systems.

(b) Supportive Roles

The second role expected from a treasury manager is a supportive role. In this role, the treasury manager supports the activities of other departments like manufacturing, marketing and HRD. The support is evidenced through a meaningful and constructive coordination with the other departments. While doing this, the treasury manager is acting as an extended arm of the finance manager. Allocation for expenses for every department is made by the finance manager in the annual budget. It is the duty of treasury manager to ensure that each department is able to spend the earmarked amount subject to completion of disclosure and documentation formalities.

(c) Leadership Roles

The treasury manager also has a leadership role to play. This role comes into play during times of exigency. An exigency could occur during times of systems break-down. During such periods, the treasury manager has to make alternative arrangements for transaction processing. While doing this, he has to act like a leader and carry the team along with him. Another example of exigency could be a situation when the firm is face to face with a sudden and unexpected liquidity crunch. During such an eventuality, the treasury manager has to use his ingenuity and leadership skills for tiding over the crunch. These skills could take the shape of postponing and prioritizing payments and expediting recoveries.

(d) Watchdog Roles

The treasury department is the eyes and ears of the management. Every financial transaction passes through his accounting system. As a processor of all the financial transactions, he keeps a watch on suspected bunglings and frauds in the firm. He sets an example for other departments of the firm by adhering to sound accounting practices and transparent dealings.

(e) Learning Roles

The accounting practices all over the world are in a state of constant flux due to evolution of new accounting concepts and technological changes. The treasury manager accepts these changes with an open mind and adopts the changes best suited to the organization. Simultaneously, he educates the other departments of the firm also about the changes.

(f) Informative Roles

The treasury manager is the source of information for the top management regarding performance of the firm *vis-à-vis* the budgets. For conveying this information, he develops a management information system suited for the organization. This system provides concise and timely information on all the relevant parameters which enable the top management to take decisions.

Apart from the above roles, the treasury manager has the under-mentioned responsibilities which he is expected to shoulder along with his roles:

1. Compliance with statutory guidelines

While establishing operational systems for the firm, the treasury manager has a duty to ensure that the systems comply with all statutory and regulatory guidelines. Particularly, he has to take care of provision regarding taxation and other government dues. He must ensure that the system should be simple and not cumbersome. The system should be transparent and it should protect the integrity of the transactions. Moreover, it should be impersonal and capable of being operated on the basis of pre-established guidelines. It should be flexible also to incorporate any subsequent changes in accounting and taxation norms.

2. Equal treatment to all departments

While playing the supportive role, the treasury manager has a responsibility of professionalism and impartiality. In accepting the demands for expenditure from various departments, the treasury manager has to ensure that the role is carried out without any undue favour or bias. He has to keep the interest of the organization in mind and not to promote intra-organisation conflicts. The support that he provides must be detached and objective.

3. Ability to network

While playing the leadership role in case of systems break-down or during periods of cash crunch, the treasury manager should be able to exhibit traits of public relationship and networking. A crisis situation requires level headedness and

ability to think straight. What it also requires is the ability to provide comfort to all users of the system. This can be done by exercising PR skills of a high order. Apart from this, the treasury manager should have networking abilities for outsourcing some of the accounting work to outside agencies during the period of interruption.

4. Integrity and impartial dealings

Since the treasury manager is the watchdog of the management regarding honest and straight dealings, he has to be impartial in his dealings. He must highlight the true state of affairs of the finances to the management. In case of any inadvertent shortcoming on the part of his department, the same should be admitted and the whole matter should be looked at in an impartial manner.

5. Willingness to learn and to teach

The treasury manager is required to keep himself of all the developments in the field. He should be able to pick out the latest developments that are likely to help his organization. He must accept new ideas in an open minded state rather than treating new ideas as a threat to his fiefdom. Simultaneously, he should be willing to teach and inculcate the latest developments among his colleagues.

TOOLS OF TREASURY MANAGEMENT

Treasury manager is required to work in a fast changing and competitive environment. For carrying out his activities, he has resort to certain tools and techniques. Most of the tools originate from the finance department and as such can not be considered to be an exclusive prerogative of the treasury department. Yet it is the treasury manager which is using these tools most extensively. The tools are being described below:

1. Analytic and planning tools

In treasury function, planning and budgeting are essential to achieve targets and to keep effective control on costs. Analysis of the data and information is necessary for planning and budgeting. Performance budgeting is referred to as setting of physical targets for each line of activity. The financial outlay or expenditure needed for each is earmarked to choose the least cost mode of activity to achieve the targets. Productivity and efficiency improves by decentralization of responsibility and that is achieved by performance budgeting, where each department or section is made a profit center and is accountable for its targets, financial involvement and profits in financial terms, relative to the targets in physical terms.

This type of planning involving performance budgeting is best suited for service industry say a financial services company or bank where every department can function in a decentralized manner and achieve the targets.

2. Zero Based Budgeting (ZBB)

Another tool of analysis and performance is ZBB wherein each manager establishes objectives for his function and gain agreement on them with top management. Then alternate ways for achieving these targets are defined and most practical way for achieving the targets is selected. This alternative is then broken into incremental levels of effort required to achieve the objective. For each incremental

level of activity, costs and benefits are assessed. The alternative with the least cost is then selected.

3. Financial Statement Analysis

Financial analysis of a company is necessary to help the treasury manager to decide whether to invest in the company. Such analysis also helps the company in internal controls. The soundness and intrinsic worth of a company is known only by such analysis. The market price of a share depends, among other things on the sound fundamentals of the company, the financial and operational efficiency and the profitability of that company. These factors can be known by a study of financial statements of the company.

Internal Treasury Control

All economic units have the goal of profit maximization or wealth maximization. This objective is achieved by short-term and long-term planning for funds. The plans are incorporated in the budget in the form of activities and corresponding targets are fixed accordingly. The next step in the process is the control function to see that the budgets are being implemented as per plans. Control is thus part of planning and budgeting in any organization.

Control is a process of constant monitoring to ensure that the activities are being carried out as per plans. It is also noticed whether there is any divergence from the plans, what are the reasons for the divergence and what remedial action can be suggested.

Internal treasury control is a process of self improvement. It is concerned with all flows of funds, cash and credit and all financial aspects of operations. From time to time and on regular basis, the internal treasury control is exercised on financial targets. The financial aspects of operations include procuring of inputs, paying creditors, making arrangement for finance against inventory and receivables. The gaps between inflows and outflows are met by planned recourse to low cost mix of financing.

The control aims at operational efficiency and removal of wastages and inefficiencies and promotion of cost effectiveness in the firm. The control is exercised under phases of planning and budgeting. These phases include setting up of targets, laying down financial standards, evaluation of performance as per these norms and reporting in a standard format.

The quarterly and annual budgets would set the targets for each department and financial standards are set out for each activity. Monthly budgets are evaluated by the performance sheets maintained daily and regular reports go to the financial controller. Reporting and evaluation go together and on the basis of information system built in the past, plans are prepared for the next period.

Following principles of internal control need to be mentioned here:

1. Control should be at all levels of management and participation should be from all cadres of personnel. More important are specific levels of operations. The top management should concern itself with strategic controls. The middle management is more concerned with segmental controls whereas the lower management concerns itself with operational controls.

2. The management control can be decentralized or decentralized. In a decentralized form of control, responsibility is given to lower managers to achieve the targets. A margin of deviation from the targets is allowed but the basic objective of control is to see that activities are in the direction of the plan and the budgetary targets are a guide.

3. For effective control, there has to be a system of building up of effective communication from top to bottom and bottom to the top.

4. The control should be built upon the management information system. This function involves the collection of data from all departments on their operations, analysis of operations and suggesting the methods of improving the efficiency and productivity.

Environment for Treasury Management

Treasury management is carried out in the real corporate world and the corporate functioning is carried out in the overall corporate environment. Environment for treasury operations can broadly be classified as under:

(a) Legal environment

By legal environment we refer to the legislations which govern corporate functioning. These legislations are the one pertaining to company law, taxation, industrial regulation etc.

(b) Regulatory environment

The regulatory environment encompasses regulations regarding employment, wages, land laws, promotion of units and closure of units etc.

(c) Financial environment

Financial environment pertains to policies regarding monetary and fiscal control, financial supervision, exchange control etc.

ROLE OF INFORMATION TECHNOLOGY IN TREASURY MANAGEMENT

With the ever increasing pace of change to regulation, compliance and technology in the financial sector, treasury has increasingly become a strategic business partner across all areas of the business, adding value to the operating divisions of the company: for example, working with the sales department to establish good financial contract terms so that any trade discounts offered and the payment method agreed are beneficial to the business. The major role the information technology is playing in effective treasury management is as follows:

1. Automate repetitive tasks

Technology today is being leveraged to automate repetitive tasks such as data gathering, accounting, bank polling, portfolio tracking and reporting. By automating these processes, the delays and the possibility of human error may be minimized. Automation also facilitate information sharing across departments, offices and geographies, and provide an accurate audit trail. Furthermore, automating these

processes enable to focus on more value added tasks, critical to providing effective decision support to management team.

2. Implement internal controls

To ensure compliance with rule and regulations, sound and effective internal controls must be implemented. The focus should not only on system-related controls, but also on clear cut segregation of duties. In treasury workstation, sophisticated rules must be implemented to ensure policy compliance. The solution that has obtained a Internal audit and other compliance activities must be implemented.

3. Time saver and fraud & error detection Methodology

This best practice is a great time saver, especially when it's time to close the books. On the first day of the accounting close, there is a need to balance that day's transactions, not the entire months. In treasury management system, the source of cash transactions is the previous day's bank data. Through the treasury management system, all repetitive transactions are automatically tagged with the correct instructions. Most companies using a treasury management system get 90-95% of their transactions automatically tagged accurately without any manual intervention.

4. Forecast cash flows

Effective forecasting helps manage financial risk by enabling to predict a cash shortfall or liquidity crisis, taking into account interest rate changes and foreign exchange fluctuations. Forecasting also helps to enhance financial returns, enabling to make more effective decisions regarding investments and borrowing needs. Finally, forecasting helps maintain financial control by identifying unexpected occurrences for further review and action.

5. Communicate with operating units

Operating units must be involved while building your forecasts to ensure incorporation of all the necessary and up-to-date information. The past may not be indicative of the present so it's important to have the latest and updated information. There must be benchmarking resulted at the operating unit level, and the cash forecasting results must be published. It's important to keep a two-way flow of information by providing feedback to the operating units based on how the actuals compare to the forecasts. The treasury forecast performance matters must be compared to forecasts generated by other groups and/ or divisions. Significant variances may be indicators that treasury is not yet aware of all the information that should be included in the forecast.

6. Choose a Web-based treasury management system

The full benefits of technology without unnecessary costs or delays may be achieved by selecting a web-based treasury management system. Web-based solutions significantly reduce implementation costs and timeframes, and enable to access the system from anywhere at any time. Furthermore, any enhancements to the system are automatically deployed to all users, thus eliminating the need to spend internal resources on hardware or software acquisition, testing or downloads. To ensure the security of your information, select a system with two factor authentication and encryption technology must be selected.

7. Rethink treasury processes

There should be reassessing of the treasury workstation at transparent intervals to evaluate processes and identify how they can/should be revised to maximize efficiencies. While reevaluating treasury management system, the focus should not only be on data, but on experience and knowledge.

8. Pay for performance

To reinforce the importance of forecasting, portfolio management, cash consolidation, and other value added activities across treasury department, benchmarks should be defined. The proper and effective use of information technology in treasury operation increases the efficiency and effectiveness of corporate officers across the treasury, investor relations, corporate finance and corporate communication function.

LIQUIDITY MANAGEMENT *VIS-À-VIS* TREASURY MANAGEMENT

Liquidity management ensures that the right amount of cash is available, at the right time and in the right place, is firmly positioned as a pivotal task for every treasurer. Over the past few years, many treasurers have made substantial progress towards increasing the visibility of their cash flow and centralising cash within countries or regions. However, industry surveys indicate year on year that liquidity management and particularly cash flow forecasting remain the greatest challenges facing treasurers. With credit more expensive and elusive for many companies, it is now imperative to tackle these challenges effectively. Working capital management of a financial institution or bank or company is some how different to that of other trading units, the process starts with tapping of funds at lower rate in shape of deposits/borrowing and ends with investing the same in higher rate to earn profit out of business with a margin of small portion of cash-in-hand kept to meet day to day operation.

Efficient account and cash pooling structures are key to efficient and cost-effective liquidity management. Every investment has a cost to the company even the shares tapped from the share holders. Deposits are tapped in exchange of payment of interest. Borrowing has cost of payment of interest to creditors. So every fund has dividend/interest payment risks for the banks/company. So if funds tapped are not properly utilized, the banks/company should suffer loss. Idle cash balance in hand has no yield. On the other hand if we do not keep balanced liquid cash-in-hand, we may not be able to pay the demand withdrawal of depositors, as well as, installment of creditors and untimely payment for other contingent liabilities. These will lead overtrading position to the company. So there must be a scientific liquidity management policy for the company/bank/financial institution. Proper liquidity management can increase the turnover of business and also creates additional profit to the company/banks. Liquidity management has great significance in modern days to the company/bankers/financial institution, because they engage not only in retail business, but also deal in wholesale banking and investment banking business.

Overliquidity on the other hand implies excess idle cash balance in hand. So every company should avoid both the position and should manage the company without less/excess funds in hand i.e. just liquid position.

Regulation & Supervision of Treasury Operation

The Treasury Operations Department is responsible for treasury's middle and back office functions, all systems services, and particularly cash management and banking relations services. Treasury operation's cross-functional staffs provide pricing and valuation, performance measurement, transaction and securities processing and compliance support functions. The middle office provides quantitative analytics support and operational risk reporting and coordinates treasury's control risk assessments related to internal corporate governance and risk management functions.

Treasury Operations implements and manages information systems in support of treasury's asset management, funding, pension investment, and cash operations functions.

The role of Treasury Manager, is to manage, mitigate and monitor financial risks arising due to differences in currency basis and timing of pledges from donors, disbursements and debt service. The risk management tools that are used include, among others, currency swaps and currency forwards, interest rate swaps and forward rate agreements .Treasury Manager enters into a master derivatives agreement and hedges risk positions using its counterparties in the market.

Risk management generally incorporates:

— a prudent approach to balance sheet management, with the aim of mitigating and controlling financial risks;

— suitable risk limits and policies and procedures formulated to ensure that the limits are not breached; and

— appropriate systems, controls and reporting mechanisms for measuring and monitoring residual risks.

In this context, the role of treasury manager typically includes:

(a) *Policy Analysis:* develop the risk management framework, taking into account Board's risk preferences, balance sheet dynamics and market limitations, as well as credit, interest rate, operational and foreign currency risks, and the different instruments available for risk transfer.

(b) *Strategy Design:* advise on optimal risk transfer through a broad-based suit of risks to be hedged out and the instruments available, based on modeling and evaluation of risk management options.

(c) *Structuring, Negotiating and Executing transactions:* The treasury manager is responsible to efficiently remove interest rate and foreign currency exposure

based on board-approved risk management strategy; tactical decision-making on overall execution strategy and timing for transacting on the different currencies to accommodate to market and liquidity limitations; benchmark counterpart market quotes based on in-house models to negotiate prices and ensure best execution.

Treasury Control Mechanism

Treasury management relates to most of the highly volatile instrument's market dealing. The volume of transactions involved in the dealings are usually heavy and risk in operation are also heavy. So any unorganisation operation will create heavy loss for the institution. Generally control system may be related to :

(a) Internal control of different, dealing rooms, settlement offices and control offices.

(b) Checking of unhealthy insider trading system.

(c) Mutual and ammicable solution of different conflicts of interest in dealing operation.

Internal Control System: It relates to forming policies to check leakage of profit for the institution. In treasury operation, the role of Central Offices are vital. They should form suitable guidelines for the institution in respect of various treasury dealing operations. There are advice dealing offices to bifract all treasury items into different classes according to risk involvement. As treasury business is a risky business responsible positioned persons should be delegated powers to deal in treasury operation with imposition of different limits on their discretionary power.

Some important area should be taken (i) fixation of rates for each treasury items and (ii) fixing limits for dealers to deal with different counterparties, with proper observation of confidentiality and adherance to best market practice. Treasury executive should be ensured that the transactions were carried in correct manner by cross checking during each dealing day.

For above facts the central offices should develop proper policies and guidelines for treasury operation and should advice the dealers to deal according to policies of the following :

(i) restriction on deal in one's own account.

(ii) timely advice to dealing offices in respect of any adverse transactions received or excess reporting.

(iii) timely submission of returns to different statutory authorities.

(iv) review of security and contingency arrangement of different offices.

(v) proper verification of compliance given by lower offices for irregularities.

Insider Dealings

Insiders are those who are in management including near and dear; and their dealings means-taking advantages of unpublished internal informations of the corporate body. These may create price sensex situation. So these unadvantages dealings should properly efficient internal control system should be taken by the management to eliminate insider dealing by fixing penalties for insider dealers.

Treasury Operations in Banking

All banks/financial institution (core principals and brokers) should ensure that they should try to serve for giving best service in the market operation within code of conduct issued for time to time. Core principals should be conducted non-investment business with private individuals should segregate them into retail or wholesale for smooth function of business within sound guidelines. It is essential that all staff should be familiar to code of conducts, in professional manner while entering into dealing transactions. Banks/financial institution will be responsible for dealing actions of the staff members. So it should be segregated work for the staff members such as no staff member control the full operation. Banks/financial institution should identify any potential or actual conflict of interest that might arise when undertaking wholesale market transactions; and take measures either to eliminate these practices and provide fair treatment to counter parties. Banks/financial institution should know their counter party and their credit worthiness before entering into contract. It is good practice for principals, subject to their own legal advice, to alert counter party to any legal or tax uncertainty which they know are relevant to a proposed relationship or transaction. All principals have the responsibility to assessing the credit worthiness of their counter parties, or potential counter parties whether dealing directly or through a brokers/firms. Bank/financial institution should take measure of risk control and meet proper legal obligation for each contract to minimize the loss. It is better to prepare a dealing mandate for each transaction. The mandate will be helpful to clarify the extent of a relationship between core principals and their customers with responsibility. Banks/financial institutions should observe confidentiality. It is essential for the preservation of reputable and efficient market place for bank/financial institution. The transactions should not be dealt in non-market rates. So this practice should be avoided. Adequate safeguards should be established to prevent abuse of informations by staff members with respect to non-public price-sensitive informations.

Present Status of Treasury Management in India

Treasury management is still in its infancy in India. It is still considered as a sub-function of the financial management. In most of the companies, it is the finance manager which is also taking care of the treasury function. Treasury operations are carried out professionally and systematically by some banks and financial institutions. The first stage of evolution in treasury management is the establishment of a treasury function. The second stage is running it as a profit center. In India, treasury operations at the micro level are expected to grow at a fast pace with increasing integration of the Indian economy with the world economy.

LESSON ROUND-UP

- Treasury management is the science of managing treasury operations of a firm. Treasury in its literal sense refers to treasure or valuables of the Government.
- Macro level: It is the inflows and outflows of cash, credit and other financial instruments are the functions of the government and the business sectors. These inflows are arranged by them as borrowing from the public. In these sectors, the ratio of savings to investments is less than one, i.e. the savings are inadequate to fund the investments.
- At micro level, the finance manger aims at optimizing the value of his assets or wealth and minimizing the burden of his liabilities. He may seek to maximise his operational profits and seek to maximise the wealth of stakeholders of the micro unit.
- The availability of funds in right quantity, Availability in right time, Deployment in right quantity, Deployment in right time and Profiting from availability and deployment are the main objective of the Treasury Management.
- At unit level, treasury manager's activities encompass all other management functions.
- Treasury manager monitors the cash flows of the unit on a continual basis. It is ensured by him that adequate funds are made available for day-to-day working of the unit. In case there is genuine shortfall in cash flows, the outflows are made in an order of priority with the more urgent payments being made.
- At domestic level or national level treasury management function is to channelise the savings of the community into profitable investment avenues.
- At the international level, the function of treasury management is concerned with management of funds in the foreign currencies
- Analytic and planning tools, Zero Based Budgeting and Financial Statement Analysis are the various Tools of treasury management.
- Internal treasury control is a process of self improvement which is concerned with all flows of funds, cash and credit and all financial aspects of operations.
- Environment for treasury management can be broadly classified as Legal environment, Regulatory environment and Financial environment.

SELF-TEST QUESTIONS

1. What do you understand by treasury management? What are its main objectives?
2. What is the significant of treasury management for the top management of a company?
3. Distinguish between treasury management and financial management.
4. Describe the various tools of treasury management.
5. Bring out the importance of control in the treasury function.

Suggested Readings:

(1) *Gardner:* "Treasury Management", Macmillan India

(2) *V.A. Avadhani:* "Treasury Management", Himalaya Publishing House

(3) "Treasury Management in Emerging Markets", ICFAI Press

(4) *Allman Michelle:* "Essentials of Treasury and Cash Management", John Wiley & Sons

STUDY XII

FOREX MANAGEMENT

LEARNING OBJECTIVES

The study will enable the students to understand:

- Concept of Forex Management
- Scope and significance of Forex Management
- Role of Forex Manager
- Foreign Exchange Market
- Determinants of Foreign Exchange Rates
- Exchange Rate Quotes – Direct or Indirect Quotations.
- Risks in Foreign Exchange Markets
- Currency Exposure Management
- Managing Foreign Exchange Rate Risk
- Exchange Rate Forecasting
- Mechanics of Forex Trading
- Capital Account Convertibility
- Foreign Exchange Market in India

INTRODUCTION

FOREX, an acronym for Foreign Exchange, is the largest financial market in the world. With an estimated $1.5 trillion in currencies traded daily, Forex provides income to millions of traders and large banks worldwide.

Forex, unlike other financial markets, is not tied to an actual stock exchange. Currencies are traded directly 4 oreign Exchange Market is, therefore, also referred to as an "Interbank" or "Over the Counter (OTC)" market.

The foreign exchange market is the mechanism by which currencies are valued relative to one another, and exchanged. An individual or institution buys one currency and sells another in a simultaneous transaction. Currency trading always occurs in pairs where one currency is sold for another and is represented in the following notation: EUR/USD or CHF/YEN. The exchange rate is determined through the interaction of market forces dealing with supply and demand.

Traders generate profits, or losses, by speculating whether a currency will rise or fall in value in comparison to another currency. A trader would buy the currency which is anticipated to gain in value, or sell the currency which is anticipated to lose value against another currency. The value of a currency, in the simplest sense, is a

reflection of the condition of that country's economy with respect to other major economies. The Forex market does not rely on any one particular economy. Whether or not an economy is flourishing or falling into a recession, a trader can earn money by either buying or selling the currency. Reactive trading is the buying or selling of currencies in response to economic or political events, while speculative trading is based on a trader anticipating events.

Historically, Forex have been dominated by inter-world investment and commercial banks, money portfolio managers, money brokers, large corporations, and very few private traders. Lately this trend has changed. With the advances in internet technology, plus the industry's unique leveraging options, more and more individual traders are getting involved in the market for the purposes of speculation. While other reasons for participating in the market include facilitating commercial transactions (whether it is an international corporation converting its profits, or hedging against future price drops), speculation for profit has become the most popular motive for Forex trading for both big and small participants.

Whereas there are thousands of securities on the stock market, on the FOREX market most trading takes place in only a few currencies; the U.S. (Dollar) ($), European Currency Unit (Euro) (€), Japanese (Yen) (¥), British (Pound Sterling) (£), Swiss (Franc) (Sf), Canadian (Dollar) (Can$), and to a lesser extent, the Australian and New Zealand (Dollars). These major currencies are most often traded because they represent the countries having similar internationally recognized trading practices and these currencies are backed by their respective Central Banks.

Currencies are also always traded in pairs (i.e. USD/JPY or Dollar/Yen) on a floating exchange rate.

Advantages to FOREX Trading

1. The (spot) FOREX market, unlike the futures market, does not have time value associated with it; therefore, there are no deltas, thetas or intrinsic value to consider.
2. The leverage is very attractive to many investors as it is generally 50:1, although there are some FOREX brokers who offer 100:1.
3. FOREX is the most liquid market in the world.
4. Commissions are eliminated in most cases, as the investor trades directly with the dealers. Many brokers in FOREX will make money on the spread between the bid and ask, rather than charging direct commissions.
5. Because the FOREX market is open continuously, 24 hours a day from Sunday evening to Friday afternoon, it doesn’t see the gaps up or down that are seen at the open or close of the stock market, and investors don’t have to worry about their stop limits being skipped.
6. Equally, the worry of companies posting false information, or money managers or experts offering biased opinions will not have a large impact on a country’s currency.
7. No restrictions on account balances.

FOREX MANAGEMENT

Forex management may be defined as the science of management of

generation, use and storage of foreign currencies in the process of exchange of one currency into other called foreign exchange.

The above definition of forex management has the following essential elements:

(a) It is part of management science

Forex management is part of the broader management science. It is a scientific discipline requiring scientific and analytic orientation. The techniques of management are applied to the broad spectrum of foreign currencies. This broad spectrum refers to all the currencies of the world excluding the domestic currency. These techniques include planning for forex, organization of forex and control of forex. We use the terms forex and foreign exchange interchangeably. The planning part includes budgeting for forex, organization refers to utilization of forex and control part focuses on creation of forex reserves.

The tools of forex management are akin to domestic currency management but the level of analytical skills required for it is slightly higher because of the existence of spot, forwards and futures markets unlike the domestic currency area. Operations in the forex market require quicker response time because of the greater volatility in exchange rates.

(b) It refers to generation of forex

Forex is generated from international trade transactions. When a country exports goods or services, it earns forex. When goods or services are imported by a country, forex is consumed. If the exports of a country are more than the imports, the forex would be accumulated in reserves of the country. If the imports are more than the exports, the result would be a forex deficit which has to be met by international borrowings. Either way, the forex needs to be generated. Generation of forex is a more difficult proposition because of variation in international trade practices and extent of competition.

(c) It pertains to use of forex

Forex management is concerned with use of forex in meeting the requirements of the user group. The tools of cash management come handy in using forex. The process of use of forex involves identification of suppliers of goods and services, negotiation of terms and conditions of the transaction and culmination of transaction with the exchange of goods and services with forex. Because of relative uncertainty about availability of forex and volatility in its rates, advance tie-up of forex is made through forward purchase contracts. In this entire process, close track of exchange rates needs to be maintained.

(d) It covers storage of forex

Forex management involving firm level forex storage could be done through forward purchase contracts or through deposits in foreign currency bank accounts. At the national level, forex storage is done through forex reserves which are held in the form of Gold, Special Drawing Right (SDRs) of IMF and foreign currencies. While some amount of foreign exchange reserves need to be maintained to meet unforeseen contingencies, excessive accretion to reserves involve a cost which is sometimes justified on other economic consideration at the firm's level. Forex is

stored for meeting future import liabilities, whether certain or contingent. While storing forex, it is important to bear in mind the actual cost of storage and the opportunity cost of not using the forex elsewhere. Depending upon availability of forex, if the opportunity cost is more than the cost of storage, then it is better not to store it.

SCOPE OF FOREX MANAGEMENT

Forex management has quite a wide scope of operation. We can cover in its ambit all those transactions which involve use of forex. Let us consider the following illustrations:

- A citizen of India travels abroad on a business visit and purchases foreign currency from an authorized dealer.
- An Indian citizen goes to USA for a period of three years under an employment contract. He periodically remits US Dollars to his bank account in India.
- An Indian student subscribes to a British scientific magazine and pays for it through an international credit card held by him.
- An Indian industrialist imports raw material from Malaysia for his plant under a Letter of Credit arrangement provided by his bank.
- A sports goods manufacturer of India exports his consignment to Europe and gets paid for it in foreign currency received through banking channels.
- Indian subsidiary of a Multinational corporation imports white goods in completely knocked down (CKD) from the Chinese affiliate. After reassembling these goods, the same are exported to Europe.
- The World Bank disburses aid to an Indian State under an infrastructure development project.

The above illustrations show how individuals, companies and states transact in forex. When goods or services are imported into a country, these are paid for in the currency of the country exporting these goods or services. When an Indian traveler goes to a foreign country on a short visit, he needs foreign currency of that country for meeting his expenses. When he stays in that country for a longer duration for employment purpose, he earns foreign currency of that country. When an Indian firm exports goods to Europe, it is earning foreign exchange. Thus when goods and services are sent abroad by India, foreign currencies are earned by them.

Forex management being involved in all the trade and non-trade transactions involving forex, it is essential to have a broad idea of international banking and trading practices. Since the transactions are taking place among counter parties from different countries, a standardized format of documentation is used to minimise errors.

Apart from the transaction value, forex management finds scope as a mode of investment. Because of the frequent and often miniscule fluctuations in forex values, enough arbitrage and speculative opportunities crop up in the forex market for astute investors. There are many expert forex dealers specializing in trading of forex.

SIGNIFICANCE OF FOREX MANAGEMENT

Business operations in countries across the globe have been in existence for

centuries, but an unprecedented growth in world wide production and distribution of a large number of capital, intermediate and consumer goods has been witnessed in the past fifty years. At present most of the countries are economically related to each other through a complex network of trade, foreign investment and international loans.

The emergence of WTO and the process of global integration has reinforced the importance of International trade, cross border financial flows and consequently foreign currency transactions. Each country has its own currency and each currency has different value in relation to a globally accepted standard. The significance of forex management lies in the study and maintenance of the exchange levels.

Every good or service reaching us from abroad involves forex. Knowledge of the forex management can help avoid harmful effects of international events and perhaps even profit from these events. With the advent of globalization and liberalization the scope for international trade and international financing has increased tremendously. International trade has grown more quickly than trade in general. This has put up both benefits and challenges.

The principal benefit for international trade has been in the form of the gain in standard of living it has permitted. The gain has come from exploiting relative efficiencies of production in different countries. The challenges of international trade are the introduction of exchange rate risk and country risk. Various methods and markets have evolved that allow firms to avoid or reduce these risks.

The after effect of development of international trade has been swift movement of funds from one finance centre to the other. There has been investment by multinationals in the third world countries in the form of capital outlays. All this has necessitated the need for a better understanding of the mechanism of forex flows.

Forex management has become a more important subject because of an increased globalization of financial markets. The benefits of the increased flow of capital between nations include a better international allocation of capital and greater opportunities to diversify risk. However, globalisation of investment has meant new risks from exchange rates, political actions and increased interdependence of financial conditions in different countries.

FOREX MANAGER

The developments in international trade have resulted in the emergence of a new brand of manager called the forex manager. The forex manager is a category apart from the finance manager or the treasury manager. He deals in currency and money but not of one country. He has to transact with a number of counter parts both in the domestic country and abroad. He is face to face with special kind of risk. Yet his vocation is full of opportunities and challenges.

For effective management of forex transactions, the forex manager is expected to have the following skills:

(a) Awareness of historical development of world trade

The forex manager must have a fair idea of as to how the world trade has

reached its present status. The shifting power alliances, emergence and decline of economic superpowers, present political situations, trade patterns etc. should be known. This knowledge base enables the manager to view the current situation in proper perspective.

(b) Ability to forecast future trends

The forex manager must be in a position to derive an accurate forecast of the future trends in international trade flows and exchange rate patterns. This forecast helps the manager to prepare his forex budget.

(c) Comparative Analysis skills

The forex manager should be able to carry out a comparative analysis of costs of domestic and imported raw materials, price of local sales and export sales, shipping rates, insurance costs etc. in order to determine whether it is expedient to produce locally or to outsource

(d) In-depth knowledge of forex market

The forex manager is expected to have in-depth knowledge of functioning of foreign exchange markets, their rules and regulations, the size of their operation, the profile of active currencies, strength and weakness of the domestic currency etc. in order to achieve better pricing of deals.

(e) Knowledge of interest rates

Since interest rates have a direct bearing upon exchange values, awareness about domestic and international interest rates enables the forex manager to form an accurate opinion about the forward premia.

(f) Willingness to undertake risk

Armed with the knowledge and awareness about international financial and trade patterns, currency positions and interest rates, the forex manager should have the ability to undertake reasonable level of risks with a view to profit from forex exposures.

(g) Hedging strategies

The forex manager should be in a position to hedge his positions to the best extent possible. To achieve this, a sense of timing is essential in the background of ever changing world of exchange values.

Foreign Exchange Market

The foreign exchange market is a market in which currencies are bought and sold against each other. In other words, foreign exchange market is the market where the currency of one country is exchanged for the currency of another country. It is the largest market in the world having a daily turnover of over US $1.5 trillion. The market is an over the counter market. There is no single market place or an organized exchange (like a stock exchange) where traders meet and exchange currencies. The dealers sit in their dealing room of major commercial banks around

the world and communicate with each other through telephones, computer terminals and SWIFT mechanism. The forex market is a wholesale market called the inter-bank market. Commercial banks are the market makers. Corporations use the foreign exchange market for a variety of purposes relating to their operation like payment for imports, conversion of export receipts, hedging of receivables and payables, payment of interest on foreign currency loans, placement of surplus funds etc.

Forex market operates at three levels. At the first level are the currency dealers or money changers who provide for encashment of travelers cheques and release of small amount of forex to travelers. The money changers quote the buying and selling rates for various currencies. An illustration of the quote is given below.

Far larger than the money changer market is the spot foreign exchange market which is at the second level. This market is involved with the exchange of currencies held in different currency denominated bank accounts. The spot exchange rate, which is determined in the spot market, is the number of units of one currency per unit of another currency, where both currencies are in the form of bank deposits. The deposits are transferred from sellers' to buyers' accounts. "Delivery" or "Value" or actual transfer is "spot" or "immediate". Usually it takes one or two days. This distinguishes the spot market from the forward market. Spot exchange rates are determined by the demand supply equations of the currencies being exchanged.

The inter-bank foreign exchange market is the largest financial market in the world. After adjusting for double counting so that purchase by one bank and the corresponding sale by the second bank is counted only once, average daily turnover is over $ 1 Trillion. The phenomenal size of this market can be put in perspective by noting, for example, that foreign exchange turnover exceeds that of all the world's stock markets combined. Indeed it takes over 2 months average trading on the New York Stock Exchange to match 1 day of trading in forex.

The forex market is an informal arrangement of the larger commercial banks and a number of foreign exchange brokers. The banks and brokers are linked by telephone, telex, computers and a satellite communications network called the Society for Worldwide International Financial Telecommunications (SWFIT). This computer based Communications system, based in Brussels, Belgium links banks and brokers in just about every financial center. The banks and brokers are in almost constant contact, with activity in some financial center or other 24 hours a day. Because of speed of communications, significant events have virtually instantaneous impacts everywhere in the world.

The efficiency of the spot forex market is revealed in the extremely narrow spreads between buying and selling prices. These spreads can be smaller than a tenth of a percent of the value of currency exchanged.

How Trading Works

So how does the actual trading work? A complete transaction is the buying of one currency and selling of another at the same time. In this chapter, we will be focus on spot transactions only and other forms of Forex transaction (i.e. futures, options) are not covered. The technical definition for a spot contract is a transaction at the current market rate with a settlement that takes place within two business days. However, in a practical sense, when trading Forex, a position is opened at the current

rate and can then be closed any time afterwards, at that next moment's rate. Positions that are not closed within the two business days are automatically "rolled over", meaning the Forex dealer with which the position is open will keep automatically renewing your spot contract for you until it is closed.

More Trading Terminology and the Spread

PIP

A change in price of one "point" in Forex trading is referred to as a pip, and it is equivalent to the final number in a currency pair's price. For pairs that involve the Yen (like in our USD/JPY example), a pip is counted from the second decimal place, 120.94. For all pairs that don't involve the Japanese Yen a pip is the fourth decimal place, 1.3279. For the EUR/USD pair that rate would mean that it takes 1.3279 Dollars to get 1 Euro

A **bid** price is the rate at which the market is prepared to buy a specific currency pair in the Forex trading market. This is the price that a trader will receive when selling (shorting) a currency pair. An **ask** price is the rate at which the market is ready to sell a particular currency pair. This is the price that a trader will have to pay in order to buy (long) the currency pair. The bid/ask combination comprises a quotation, which is based on a floating exchange rate. The quotation lists the bid price first, then the ask price. For the USD/JPY pair the quote will be 120.93/96.

The disparity between the bid and ask is known as the spread, which reflects the difference between the rate offered by a market maker such as CMS to sell a currency pair and the rate at which the market maker will buy the pair. The value of the spread is greater for currencies that are traded less frequently on the market than for the cluster of the major trading currencies. Contrary to stock market firms, Forex market makers generally do not charge a commission for every transaction, and instead obtain their compensation from the spread.

FOREIGN EXCHANGE RATES

Exchange rates is the price of one country's money in terms of other country's money. When we say that exchange rate of Indian rupee is 48.40 per US Dollar, we mean than 48.40 Indian Rupees are required to purchase one US Dollar. When this exchange rate becomes 48.90 we say that the value of Indian Rupee has depreciated against the US Dollar. On the other hand when the exchange rate becomes 48.10 we say that Indian Rupee has appreciated against the US dollar. Assuming that there are no exogenous factors restricting the changes in exchange rates, their movement can be traced to pure demand and supply. When Indian rupee depreciates against the US Dollar, it indicates that demand for latter is more than its supply. Similarly when the supply of US dollar is more than its demand, it declines in value against the Indian Rupee.

Currency of a country is used for transactions with foreigners. Each country in the world has its own currency. Theoretically, a country should transact with all foreign entities on a one-to-one basis, i.e. for all imports from a foreign country, a host country should pay in the currency of the former and for all exports, the host country should be paid in its currency. But practically this is not possible because it involves keeping record of a multitude of exchange rates and associated payment problems. Therefore, most of the countries chose a common currency for trade amongst

themselves. The U.S. dollar has emerged as the strongest international currency for the past sixty years and as such is used as the payment medium for most of the world trade. In the European Union the Euro has established itself as the common currency of about 25 countries.

It is clear that the currency of a country is evaluated against a common currency for external transactions. In case of countries having dominant economic power, trade would be held in their currency. Hence a country is required to trade in U.S. dollar or in other dominant currencies like Euro, Pound or the Japanese Yen. Account of a country's external trade is kept in the form of a Balance of payment account which is a double book entry system. Receipts of foreign currencies are credited to this account while payments in foreign currency are debited to this account. The balance in this account shows a positive or a negative figure depending upon whether the receipts of foreign currency are more or less than the payments.

Other things being equal, the presumption is that a country having a deficit balance of payments position would have a weakening national currency and vice versa. A deficit in the balance of payment account results in more demand for foreign currencies. Hence their value *vis-à-vis* the domestic currency increases.

India's balance of payments account for the year 2004-05 is given below as an illustration:

(Rs. Crores)

Items	*2007-08 Preliminary*		
	Credit	*Debit*	*Net*
1	*2*	*3*	*4*
A. Current Account			
I. Merchandise	**637,190**	**999,286**	**–362,096**
II. Invisibles (a+b+c)	**583,424**	**291,685**	**291,739**
(a) Services	352,315	201,392	150,923
(i) Travel	45,524	37,083	8,441
(ii) Transportation	38,156	46,665	–8,509
(iii) Insurance	6,371	4,186	2,185
(iv) G.n.i.e.	1,334	1,544	–210
(v) Miscellaneous	260,930	111,914	149,016
of which:			
Software Services	161,968	13,081	148,887
Business Services	66,78	66,923	–45
Financial Services	12,392	11,438	954
Communication Services	9,797	3,368	6,429
(b) Transfers	173,995	9,334	164,661
(i) Official	3,029	2,077	952
(ii) Private	170,966	7,257	163,709
(c) Income	57,114	80,959	–23,845
(i) Investment Income	55,397	76,543	–21,146
(ii) Compensation of employees	1,717	4,416	–2,699

Total Current Account (I+II)	**1,220,614**	**1,290,971**	**–70,357**
1	*2*	*3*	*4*
B. Capital Account			
1. Foreign Investment (a+b)	**1,084,072**	**903,920**	**180,152**
(a) Foreign Direct Investment (i+ii)	140,240	77,901	62,339
(i) In India	130,252	506	129,746
Equity	101,215	438	100,777
Reinvested Earnings	27,714	—	27,714
Other Capital	1,323	68	1,255
(ii) Abroad	9,988	77,395	–67,407
Equity	9,988	60,167	–50,179
Reinvested Earnings	—	4,363	–4,363
Other Capital	—	12,865	–12,865
(b) Portfolio Investment	943,832	826,019	117,813
In India	942,872	825,718	117,154
Abroad	960	301	659
2. Loans (a+b+c)	**335,471**	**166,843**	**168,628**
(a) External Assistance	17,022	8,557	8,465
(i) By Indian	97	113	–16
(ii) To India	16,925	8,444	8,481
(b) Commercial Borrowings (MT & LT)	120,173	30,856	89,317
(i) By India	6,245	6,303	–58
(ii) To India	113,928	24,553	89,375
(c) Short Term to India	198,276	127,430	70,846
(i) Suppliers' Credit > 180 days & Buyers' Credit	171,182	127,430	43,752
(ii) Suppliers' Credit up to 180 days	27,094	—	27,094
3. Banking Capital (a+b)	**223,654**	**176,507**	**47,147**
(a) Commercial Banks	223,338	174,793	48,545
(i) Assets	78,365	50,733	27,632
(ii) Liabilities	144,973	124,060	20,913
of which: *Non-Resident Deposits*	117,757	117,051	706
(b) Others	316	1,714	–1,398
4. Rupee Debt service	—	**488**	**–488**
5. Other Capital	**75,956**	**37,492**	**38,464**
Total Capital account (1 to 5)	**1,719,153**	**1,285,250**	**433,903**
C. Errors and Omissions	**6,143**	**—**	**6,143**
D. Overall Balance [Total Capital Account, Current Account and Errors and Omissions (A+B+C)]	**2,945,910**	**2,576,221**	**369,689**
E. Monetary Movements (i+ii)	**—**	**369,689**	**–369,689**
(i) I.M.F	—	—	—
(ii) Foreign Exchange Reserves			

(Increase – / Decrease +)	—	369,689	–369,689

Explanatory Notes

Balance of payments is a statistical statement that systematically summarises, for a specific time period, the economic transactions of an economy with the rest of the world.

Merchandise credit relate to export of goods while ***merchandise debit*** represent import of goods.

Travel covers expenditure incurred by non-resident travellers during their stay in the country and expenditure incurred by resident travellers abroad.

Transportation covers receipts and payments on account of international transportation services.

Insurance comprises receipts and payments relating to all types of insurance services as well as reinsurance.

Government not included elsewhere (G.n.i.e.) relates to receipts and payments on government account not included elsewhere as well as receipts and payments on account of maintenance of embassies and diplomatic missions and offices of international institutions.

Miscellaneous covers receipts and payments in respect of all other services such as communication services, construction services, software services, technical know-how, royalties etc.

Transfers (official, private) represent receipts and payments without a quid pro quo.

Investment Income transactions are in the form of interest, dividend, profit and others for servicing of capital transactions. Investment income receipts comprise interest received on loans to non-residents, dividend/profit received by Indians on foreign investment, reinvested earnings of Indian FDI companies abroad, interest received on debentures, floating rate notes (FRNs), Commercial Papers (CPs), fixed deposits and funds held abroad by ADs out of foreign currency loans/export proceeds, payment of taxes by non-residents/refunds of taxes by foreign governments, interest/discount earnings on RBI investment etc. Investment income payments comprise payment of interest on non-resident deposits, payment of interest on loans from non-residents, payment of dividend/profit to non-resident share holders, reinvested earnings of the FDI companies, payment of interest on debentures, FRNs, CPs, fixed deposits, Government securities, charges on Special Drawing Rights (SDRs) etc.

Foreign investment has two components, namely, foreign direct investment and portfolio investment.

Foreign direct investment (FDI) to and by India up to 1999-2000 comprise mainly equity capital. In line with international best practices, the coverage of FDI has been expanded since 2000-01 to include, besides equity capital reinvested earnings (retained earnings of FDI companies) and ‘other direct capital’ (inter-corporate debt

transactions between related entities). Data on equity capital include equity of unincorporated entities (mainly foreign bank branches in India and Indian bank branches operating abroad) besides equity of incorporated bodies. Data on reinvested earnings for the latest year (2002-03) are estimated as average of the previous two years as these data are available with a time lag of one year. In view of the above revision, FDI data are not comparable with similar data for the previous years. In terms of standard practice of BoP compilation, the above revision of FDI data would not affect India's overall BoP position as the accretion to the foreign exchange reserves would not undergo any change. The composition of BoP, however, would undergo changes. These changes relate to investment income, external commercial borrowings and errors and omissions. In case of reinvested earnings, there would be a contra entry (debit) of equal magnitude under investment income in the current account. 'Other Capital' reported as part of FDI inflow has been carved out from the figure reported under external commercial borrowings by the same amount. 'Other Capital' by Indian companies abroad and equity capital of unincorporated entities have been adjusted against the errors and omissions for 2000-01 and 2001-02.

Portfolio investment mainly includes FIIs' investment, funds raised through GDRs/ADRs by Indian companies and through offshore funds. Data on investment abroad, hitherto reported, have been split into equity capital and portfolio investment since 2000-01.

External assistance by India denotes aid extended by India to other foreign Governments under various agreements and repayment of such loans. External Assistance to India denotes multilateral and bilateral loans received under the agreements between Government of India and other Governments/International institutions and repayments of such loans by India, except loan repayment to erstwhile 'Rupee area' countries that are covered under Rupee Debt Service.

Commercial borrowings covers all medium/long term loans. Commercial Borrowings by India denotes loans extended by the Export Import Bank of India (EXIM bank) to various countries and repayment of such loans. Commercial Borrowings to India denotes drawls/repayment of loans including buyers credit, suppliers credit, floating rate notes (FRNs), commercial paper (CP) bonds, foreign currency convertible bonds (FCCBs) issued abroad by the Indian corporate etc. It also includes India Development Bonds (IDBs), Resurgent India Bonds (RIBs), India Millennium Deposits (IMDs).

Short term loans denotes drawls in respect of loans, utilized and repayments with a maturity of less than one year.

Banking capital comprises of three components: (a) foreign assets of commercial banks (ADs), (b) foreign liabilities of commercial banks (Ads), and (c) others. 'Foreign assets' of commercial banks consists of (i) foreign currency holdings, and (ii) rupee overdrafts to non-resident banks. 'Foreign liabilities' of commercial banks consists of (i) Non-resident deposits, which comprises receipt and redemption of various non-resident deposit schemes, and (ii) liabilities other than non-resident deposits which comprises rupee and foreign currency liabilities to non-resident banks and official and semi-official institutions. 'Others' under banking capital include movement in balances of foreign central banks and international institutions like

IBRD, IDA, ADB, IFC, IFAD etc. maintained with RBI as well as movement in balances held abroad by the embassies of India in London and Tokyo.

Rupee debt service includes principal repayments on account of civilian and non civilian debt in respect of Rupee Payment Area (RPA) and interest payment thereof.

Other capital comprises mainly the leads and lags in export receipts (difference between the custom data and the banking channel data). Besides this, other items included are funds held abroad, India's subscription to international institutions, quota payments to IMF, remittances towards recouping the losses of branches/subsidiaries and residual item of other capital transaction not included elsewhere.

Movement in reserves comprises changes in the foreign currency assets held by the RBI and SDR balances held by the Government of India. These are recorded after excluding changes on account of valuation. Valuation changes arise because foreign currency assets are expressed in US dollar terms and they include the effect of appreciation/depreciation of non-US currencies (such as Euro, Sterling, Yen) held in reserves.

Apart from the fundamental demand and supply equation that determines exchange values, there are other determinants of exchange rates. Some of these factors are discussed below:

FACTORS AFFECTING FOREIGN EXCHANGE RATES

Foreign Exchange being a commodity likes any other commodities the exchange rates tend to fluctuate from time to time. There are various factors that cause the fluctuations in the rates of exchange. These factors can be divided into several following groups. These groups can affect the exchange rates on a short term as well as long-term basis.

1. Fundamental Factors

The fundamental factors include all such events that affect the basic economic and fiscal policies of the concerned government. These factors normally affect the long-term exchange rates of any currency. On short-term basis on many occasions, these factors are found to be rather inactive unless the market attention has turned to fundaments. However, in the long run exchange rates of all the currencies are linked to fundamental causes. The fundamental factors are basic economic policies followed by the government in relation to inflation, balance of payment position, unemployment, capacity utilization, trends in import and export, etc. Normally, other things remaining constant the currencies of the countries that follow sound economic policies will always be stronger. Similarly for the countries which are having balance of payments surplus, the exchange rate will always be favorable. Conversely, for countries facing balance of payment deficit, the exchange rate will be adverse. Continuous and ever growing deficit in balance of payment indicates over valuation of the currency concerned and the dis-equilibrium created can be remedied through devaluation.

2. Political and Psychological Factors

Political and psychological factors are believed to have an influence on exchange

rates. Many currencies have a tradition of behaving in a particular way for e.g. Swiss franc as a refuge currency. The US Dollar is also considered a safer haven currency whenever there is a political crisis anywhere in the world.

3. Technical Factors

The various technical factors that affect exchange rates can be mentioned as under:

(a) *Capital Movement:* The phenomenon of capital movement affecting the exchange rate has a very recent origin. Huge surpluses of petroleum exporting countries due to sudden spurt in the oil prices could not be utilised by these countries for home consumption entirely and needed to be invested elsewhere productively. Movement of these petro dollars, started affecting the exchange rates of various currencies. Capital tended to move from lower yielding to higher yielding currencies and as a result the exchange rates moved.

(b) *Relative Inflation Rates:* It was generally believed until recently that one *prima-facie* direction for exchange rates to move was in the direction adjusted to compensate the relative inflation rates. For instance, if a currency is already overvalued, i.e., stronger than what is warranted by relative inflation rates, depreciation sufficient enough to correct that position can be expected and vice versa. It is necessary to note that exchange rate is a relative price and hence the market weighs all the relevant factors in a relative term, (in relation to the counterpart countries). The underlying reasoning behind this conviction was that a relatively high rate of inflation reduces a country's competitiveness in international markets and weakens its ability to sell in foreign markets. This will weaken the expected demand for foreign currency (increase in supply of domestic currency and decrease in supply of foreign currency). But during 1981-85 period exchange rates of major currencies did not confirm the direction of relative inflation rates. The rise of the dollar persistently for such a long period discredited this principle.

(c) *Exchange rate policy and intervention:* Exchange rates are also influenced in no small measure by expectation of changes in regulation relating to exchange markets and official intervention. Official intervention can smoothen an otherwise disorderly market but it is also the experience that if the authorities attempt half-heartedly to counter the market sentiments through intervention in the market, ultimately more steep and sudden exchange rate swings can occur. In the second quarter of 1985 the movement of exchange rates of major currencies reflected the change in the US policy in favour of co-ordinated exchange market intervention as a measure to bring down the value of the dollar.

(d) *Interest rates:* An important factor for movements in exchange rates in recent years has been difference in interest rates; i.e. interest differential between major countries. In this respect the growing integration of the financial markets of major countries, the revolution in telecommunication facilities, the growth of specialized asset managing agencies, the deregulation of financial markets by major countries, the emergence of foreign exchange trading etc. having accelerated the potential for exchange rates volatility.

4. Speculation

Speculation or the anticipation of the market participants many a times is the prime reason for exchange rate movements. The total foreign exchange turnover worldwide is many a times the actual goods and services related turnover indicating the grip of speculators over the market. Those speculators anticipate the events even before the actual data is out and position themselves accordingly to take advantage when the actual data confirms the anticipations. The initial positioning and final profit taking make exchange rates volatile. These speculators many a times concentrate only on one factor affecting the exchange rate and as a result the market psychology tends to concentrate only on that factor neglecting all other factors that have equal bearing on the exchange rate movement. Under these circumstances even when all other factors may indicate negative impact on the exchange rate of the currency if the one factor that the market is concentrating comes out positive the currency strengthens.

5. Others

The turnover of the market is not entirely trade related and hence the funds placed at the disposal of foreign exchange dealers by various banks, the amounts which the dealers can raise in various ways, banks' attitude towards keeping open position during the course of a day, at the end of the day, on the eve of weekends and holidays, window dressing operations as at the end of the half year or year, end of the month considerations to cover operations for the returns that the banks have to submit the central monetary authorities etc. — all affect the exchange rate movement of the currencies.

Calculations of Exchange Rates

Currencies are the backbone of the foreign exchange market. Just like the commodities gold, silver, or grain, currencies are given prices that are representative of their worth. The foreign exchange market's rates, like any other free floating market, are controlled by the forces of supply and demand. Forex trading is a type of investment where a trader speculates on the future movements of different currencies' exchange rates.

Exchange rates come in pairs, where one country's currency is measured against another country's. Exchange rates affect a country's consumers and producers because their economy is engaged in world trade. Most individuals partake in foreign exchange daily, regardless of whether they trade in the forex market, because many common goods like food and clothing are materialized abroad. In order for stores to sell these products, there had to have been a currency transaction between manufacturers abroad and retail sellers at home. The retail store needs to convert some of its revenue into foreign currency in order to pay their foreign suppliers.

Calculations of Exchange Rates

If you are an American traveling to Italy, you too have domestic money that you need converted into a foreign currency. Suppose the currency exchange booth informs you that it costs 1.34 US Dollars to receive 1 Euro. The exchange rate at this time between the two currencies is 1.34 $/€ (dollars/euro).

In Forex notation the currency pairs are flipped when quoted, therefore the above rate is written - 1.3400 EUR/USD. It takes 1.3400 of the bottom currency in a pair

(USD), the "counter currency", to get 1 of the top currency in a pair (EUR), the "base currency".

SUPPLY AND DEMAND

Prices of goods, commodities and exchange rates are determined on open markets under the control of two forces, supply and demand.

The laws of supply and demand show that:

- High supply causes low prices, and high demand causes high prices.
- When there is an abundant supply of a given commodity then the price should fall.
- When there is a scarce supply of a given commodity then the price should increase.
- Therefore, an increase in the demand for a commodity would cause it to appreciate in value, whereas an increase in supply would cause it to depreciate.

The value of a nation's currency, under a floating exchange rate, is determined by the interaction of supply and demand. We will work through some charts and an example to show how these forces work, from a theoretical point of view.

Demand Curve

Figure 1 shows the demand for British pounds in the United States. The curve is a normal downward sloping demand curve, indicating that as the pound depreciates relative to the dollar, the quantity of pounds demanded by Americans increases. Note that we are measuring the price of the pound-the exchange rate-on the vertical axis. Since it is dollars per pound ($/£), it is the price of a pound in terms of dollars and an increase in the exchange rate, R, is a decline in the value of the dollar. In other words, movements up the vertical axis represent an increase in price of the pound, which is equivalent to a fall in the price of the dollar. Similarly, movements down the vertical axis represent a decrease in the price of the pound.

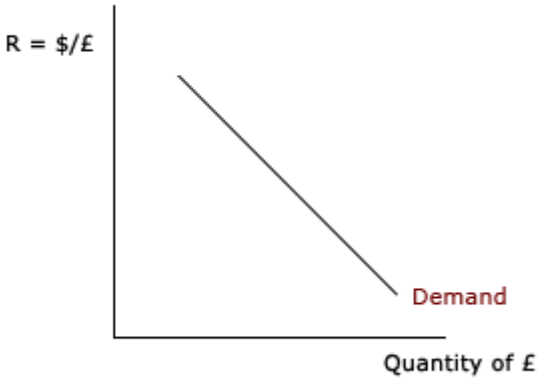


Figure 1 - Demand Graph

For Americans, British goods are less expensive when the pound is cheaper and the dollar is stronger. At depreciated values for the pound, Americans will switch from American-made or third-party suppliers of goods and services to British suppliers. Before they can purchase goods made in Britain, they must exchange dollars for British pounds. Consequently, the increased demand for British goods is

simultaneously an increase in the quantity of British pounds demanded.

Supply Curve

Figure 2 shows the supply side of the picture. The supply curve slopes up because British firms and consumers are willing to buy a greater quantity of American goods as the dollar becomes cheaper (i.e. they receive more dollars per pound). Before British customers can buy American goods, however, they must first convert pounds into dollars, so the increase in the quantity of American goods demanded is simultaneously an increase in the quantity of foreign currency supplied to the United States.

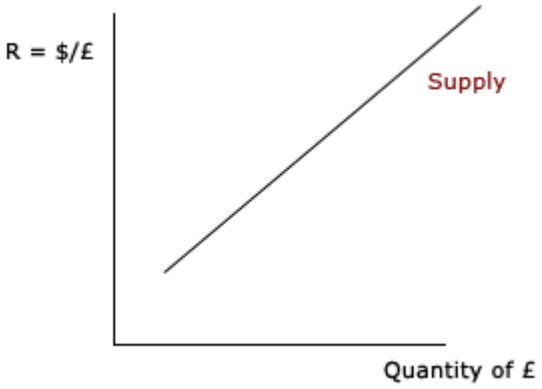


Figure 2 - Supply Graph

Equilibrium Price

Suppliers and consumers meet at a particular quantity and price at which they are both satisfied. Figure 3 combines the supply and demand curves. The intersection determines the market exchange rate and the quantity of dollars supplied to United States. At the exchange rate R_1 the demand and supply of British pounds to the United States is equal which is Q_1 at point E.

This is known as the **equilibrium** or the market's **clearing point**.

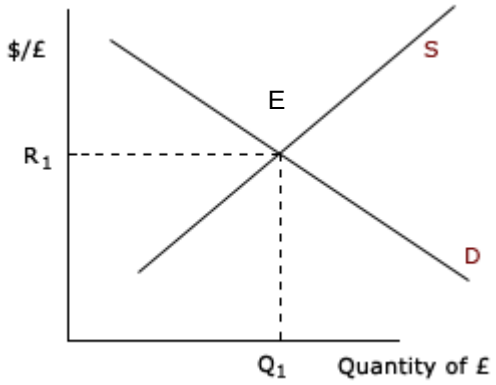


Figure 3 - Graph of Equilibrium

Changes in Demand and Supply

In figure 4, an increase in the US demand for the pound (rightward shift of the demand curve) causes a rise in the exchange rate, an appreciation in the pound, and a depreciation in the dollar. Conversely, a fall in demand would shift the demand curve left and lead to a falling pound and rising dollar. On the supply side, an increase in the supply of pounds to the US market (supply curve shifts right) is illustrated in Figure 5, where a new intersection for supply and demand occurs at a lower exchange rate and an appreciated dollar. A decrease in the supply of pounds shifts the curve leftward, causing the exchange rate to rise and the dollar to depreciate.

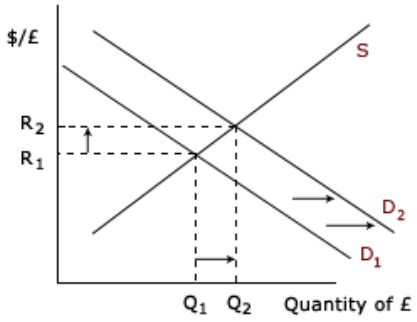


Figure 4 - Increase in Demand

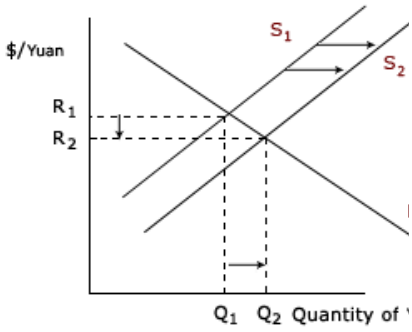


Figure 5 - Increase in Supply

When the forces between supply and demand change, the market moves in ways to clear itself through a change in price.

In international finance markets, if many investors are selling a particular currency, they are making it more readily available and increasing its supply. If there is not an equal amount of buyers, or demand, for that currency, its price will go down in order to strike a new balance between supply and demand.

The direction in which the value of a currency is heading can cause cash to flow into or out of that currency. A currency that is appreciating can cause money to flow into its country's assets as investors and Forex traders want to benefit from buying or taking "long" positions on the currency as the currency's price rises.

A variety of factors cause currencies to experience changes in supply and demand:

— companies that export and import,

— foreign investors and banks,

— speculators who wish to engage in market activity,

— and central banks that control the movement of interest rates.

Who Comprises the Forex market?

Due to its vast volume and large number of participants, no individual or single company has complete control over which way the market will sway. Historically, Forex has been dominated by commercial banks, money portfolio managers, money brokers, large corporations, and very few private traders.

Lately this trend has changed. While there are many reasons for participating in foreign exchange including facilitating commercial transactions, corporations converting its profits, or hedging against future price drops, more and more people are getting involved in the market for the purposes of speculation.

Exporting and Importing Companies

Large multinational corporations influence the foreign exchange market as they purchase and sell goods and materials between different countries.

The first group that has influence in the foreign exchange markets is typified by large, multinational corporations. Imagine a New York City firm exports its products to

a German company. The business transaction will be settled in dollars so the American firm obtains revenue in its own currency and can pay its employees' salaries in dollars.

To facilitate the transaction, the German firm needs to convert some of its capital from euros to dollars on the foreign exchange market. The supply of euros increases leading to an appreciation of the dollar and depreciation of the euro. It can also be said that the German firm increases the demand for dollars, again causing the dollar to appreciate in comparison to the euro. This transaction would have to be for a very large contract in order for the exchange rate to actually move a pip up or down.

If the payment by the German company is coming 6 months later, it introduces the risk that the amount of dollars they would receive for a certain amount of euros today will not be the same in 6 months time. A company may want to limit, or hedge, this exchange rate risk by immediately converting their euro into dollars, or by purchasing forward contracts in the foreign exchange market. A forward contract is a contract to convert euros into dollars at a future date at a set price.

Importing companies affect the demand of a currency as well. For example, an American retailer features Japanese furnishings and pays its suppliers in Japanese yen. If consumers like these products then they will indirectly contribute to an increase in demand for the yen as the American retailer will have to buy more merchandise from Japan. As the retailer purchases the yen and sells the dollar on the exchange market, the yen appreciates.

Foreign Investment Flows

Foreign investment has many aspects, having to do with goods, services, stocks, bonds, or property. Suppose a Canadian company wants to open a factory in America. In order to cover the costs of the land, labour and capital the firm will need dollars. Suppose the company holds most of its reserves in Canadian dollars. It must sell some of its Canadian dollars to buy US dollars.

The supply of Canadian dollars on the foreign exchange market will increase and the supply of US dollars will decrease, which causes the US dollar to appreciate against the Canadian dollar. On the flip side, foreign investors are also increasing or decreasing the demand for the currency of the country in which they are interested in investing.

Banks

For a long time the foreign exchange market has been associated with the term "interbank" market. This term was employed to capture the nature of the foreign exchange market when it predominantly dealt with banks. Banks include central bank, investment banks and commercial banks.

Speculators - *Investment Management Firms, Hedge funds, and Retail Traders*

Many financial institutions use currency exchange as a method to generate income. There are also many individuals who try to do the same thing. The currency markets move in one direction only when many investors act together. An individual investor cannot move the exchange rate of a currency but many traders, investment funds, and banks may collectively move it.

If speculating traders think the Japanese Yen is going to weaken in the near future due to poor economic data or a change in interest rate policy, then they sell the yen on the foreign exchange market relative to another stronger currency. The supply of yen will increase and cause the currency to depreciate. If many investors feel that a particular currency will depreciate in the near future, their collective selling of that currency will move its price down. Similarly, if speculators feel that a currency is going to appreciate in the near future then they will buy that currency today and cause it to experience a higher demand which causes its price to go up. Investors help materialize their predictions by acting in a herd mentality, and in some people's eyes bring about a self fulfilling prophecy.

Going Long or Short

A long position is a situation in which one purchases a currency pair at a certain price and hopes to sell it later at a higher price. This is also referred to as the notion of "buy low, sell high" in various trading markets. In Forex, when one currency in a pair is rising in value, the other currency is declining, and vice versa. If a trader thinks a currency pair will fall he will sell it and hope to buy it back later at a lower price. This is considered a short position, which is the opposite of a long position.

On every exchange, a trader has a long position on one currency of the pair and a short position on the other currency. A trader defines his or her position as an expression of the first currency of the traded pair. The first currency in a pair is known as the base currency. The second currency in the pair is called the counter currency. When a trader buys the base currency he or she takes a long position on a pair, if a trader sells the base currency he or she shorts the pair. Let's look at a Forex chart and visualize this idea.

RISK MANAGEMENT

One should consider the risk involved in trading on the FOREX market. The trader is free to decide whether to take a conservative or a risk-taking approach in making trades. Conservative trading means placing fewer trades over longer periods, with smaller lot sizes, strict risk management, and modest profit targets.

One may use limit and stop orders to decrease the involved risk in trading. When placing a market order, many experienced traders already know the levels at which they will want to exit the trade. The 24 hour nature of the Forex market makes it difficult for a trader to make timely trading decisions, since large market moves may happen while he or she is away. Limit and stop orders automatically close out open positions (or open new ones) when price reaches a certain level.

Limit orders are designed to take gains on a position by closing it out at a predetermined price. For a long position, a limit order is placed above the current price. If a trader holds a short position, then a limit order will be placed below the current price.

A stop order may be used to minimize losses. For a long position, a stop order is placed below the current price. If a trader holds a short position, then a stop order will be placed above the current price. Also known as a "stop-loss order", its purpose is to close out a position in which the market is moving against you, limiting your losses on a trade.

Determination of Exchange Rates

There is no generally accepted theory or model to determine exchange rates. However, there are certain approaches which provide a general frame-work for analysis of exchange rates which are discussed below:

(a) *Balance of payments:* If payments by a country for its imports of goods and services and invisibles are out of step with its receipts for exports of goods and services and invisible, two possibilities arise. One, foreign currency payments exceed receipts and there is a deficit. This puts the home currency of the country under downward pressure against foreign currencies. Two, there is a surplus and there is an upward pressure on the home currency. In the former case, the home currency tends to depreciate, and in the latter to appreciate, against foreign currencies.

(b) *Demand and supply:* The demand for a foreign currency to pay for imports, etc. and the supply of a foreign currency by way of receipts on account of exports, etc. vary at various rates of exchange. The rate which equilibrates the demand and supply should be the rate of exchange.

(c) *Purchasing power parity:* This theory maintains that free international trade equalises prices of tradable goods in different countries. So, a product will sell for the same price in common currency in all countries. Different rates of changes in prices i.e. different inflation rates must eventually induce off-setting changes in exchange rates in order to restore approximate price equality. Mathematically, the rate (or the expected rate) of change of the exchange rate should equal the rate (or the expected rate) of change of the inflation rate. Evidence shows that there do exist disparities between changes in observed exchange rates and those in inflation rates in the short-run. But, the theory should hold in the long-run.

(d) *Interest rate:* Interest rates are often highly related with inflation rates, and interest rate differentials between countries may be the result of inflation rate differentials. Therefore, interest rate differentials are also used as an important determinant of exchange rates.

Interest rates in a country are determined, under free market conditions, by supply of and demand for money. Funds flow across countries in search of opportunities for higher returns. These flows between any two countries cause opposite changes in demand of and supply for their respective currencies. According to the theory of International Fisher Effect, the exchange rate of a currency with higher interest rate will depreciate to offset the interest rate advantage achieved by foreign investments till an equilibrium is achieved.

Investments abroad have to be converted into home currency on maturity. Exchange rate may have changed in the meanwhile. An investor may make a forward sale of funds to be repatriated on maturity. The process of investing abroad for higher returns and making a forward sale of the proceeds is known as covered interest arbitrage. An investment abroad will be undertaken if the return from interest rate differential exceeds the forward margin (difference between the forward and spot exchange rates). In general terms, the forward rate of the foreign currency will contain a discount (premium) if its interest rate is higher (lower) than that of the home currency. Covered interest arbitrages will go on fill the market forces realign the

forward margins with the interest rate differentials.

(e) *Relative income levels:* If income level in a country rises and that in her trading partner remains unchanged, the demand by the former for the goods of the latter may increase. That is, the former would need more units of currency of the latter, while their supply remains unchanged. This would put upward pressure on the exchange rate of the latter. There can be different configurations of the relative income levels and of corresponding exchange rates.

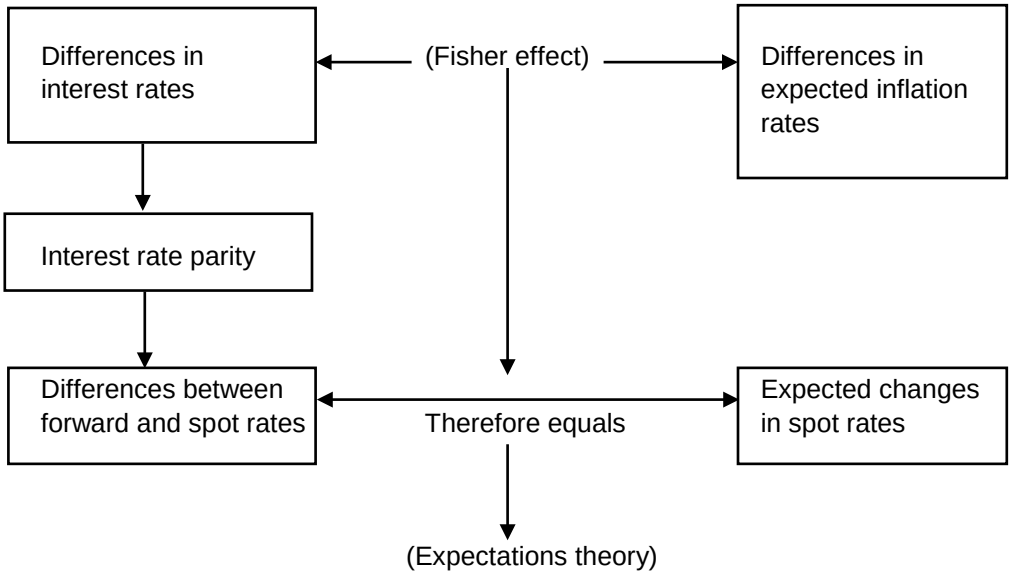
(f) *Market expectations:* Like other financial markets, foreign exchange markets react to any news that may have an effect on exchange rates in future. Expected developments regarding polity, economy etc. of a country are used to figure out how exchange rates would move. These peeps into the future impinge on the present as well as the future spot rates.

Inter-relationship of variables affecting exchange rates

Interest rates, inflation rates, forward margins, exchange rates and expectations across nations are inter-related as shown in the diagram on next page:

The diagram suggests that interest rates vary across countries because of varying expectations with regard to their rates of inflation. Under perfect competition, funds would move to a country where real interest rate (nominal interest rate less inflation rate) is higher, till the forces of demand and supply equiliberate them. In other words, the difference in interest rates between two countries is equal in equilibrium to the expected difference in the inflation rates.

The expected difference in inflation rates between two countries equals, in equilibrium, the expected movement in spot rates. The forward rate for a given period, say 6 months, should equal the spot rate 6 months hence. The difference between the forward rate and the present spot rate represents the interest element for the period of the forward rate. In reality, however, the future spot rate would usually be higher or lower than the forward rate.



Exchange rate movements overtime are influenced by various factors not only

those mentioned above but also by market imperfections arising out of official intervention in markets, exchange control restrictions, customs barriers, etc.

Exchange Rate Quotes

Every firm and individual operating in international environment is concerned with foreign exchange i.e. the exchange of foreign currency into domestic currency and vice-a-versa. Generally, the firm's foreign operations earn income denominated in some foreign currency, however, the shareholders expect payment in domestic currency and therefore, the firm must convert the foreign currency into domestic currency.

The foreign exchange transaction (i.e., for the sale and purchase of foreign currencies) takes place in foreign exchange market, which provides a mechanism for transfer of purchasing power from one currency to another. This market is not a physical entity like the Mumbai stock exchange or a trading center; rather it is network of telephones among banks, foreign exchange dealers and brokers etc.

For example, a trader in Delhi may buy foreign exchange, say U.S. $, from a bank in Mumbai for making payment to a U.S. supplier against the purchases made. The bank in Mumbai, in turn may purchase the U.S. $ from a New York bank, which in turn may purchase from some other bank in New York itself or at some other center and so on. As the foreign exchange market provides transactions in a continuous manner for a large number and volume of sales and purchases, this market is an efficient one. Minute differences in exchange rates at different center may get eliminated without time lag.

In the foreign exchange market, the price of any currency may be quoted in terms of several currencies. It is important to realize that every price or exchange rats is relative. For example, if U.S. $ is worth Rs. 44, then it also implies that Re. 1 is worth $ 1/44. All foreign exchange rates in this way are related to each other in a reciprocal way. In other words, the value of $/Re. is just the reciprocal of the value of Re./$.

Quotations in the foreign exchange market are generally made in terms of local currency or the domestic currency in terms of per unit of a foreign currency. For example, the exchange rates of Re. in India may be quoted in terms of $, say Re./$ = Rs. 44/$. It means that one $ is worth Rs. 44. A change in price of one currency implies, therefore, a change in price of the other currency that appears in the quote. For example, if the price of Re. against the $ moves from Rs. 44/$ to Rs. 43.5/$, one can say that Re. has appreciated relative to the $ by Re. 0.50. This is the same as saying that $ has depreciated relative to the Re.

There are two major ways of offering exchange rate quotes. These are called the direct quote and indirect quote. These quotes are given after the exchange value has been established according to the practice being followed by a country. If the country follows a fixed rate of parity between its currency and a foreign currency, then the changes in parity value of that currency shall determine changes in the value of domestic currency *vis-à-vis* other foreign currencies. These performance of the domestic economy is not reflected in the valuation of its currency. This is one extreme side of absolute rigidity in fixation of exchange rate. The other extreme is allowing the exchange value of the national currency to float independently according to market forces without any intervention from the Central Bank. In between these

two extremes, there are many intermediate arrangements for determination of exchange values. These arrangements are being listed below:

(a) Domestic currency pegged to one foreign currency

Under this arrangement, the exchange rate of one currency is pegged to a dominant foreign currency, usually the U.S. dollar. For example the Argentine Peso was till recently pegged to the US dollar in the ratio of 1:1.

(b) A currency pegged to a basket of currencies

The currency of a country may be pegged to a basket of currencies. The basket is generally formed by the currencies of major trading parties to make the pegged currency more stable than if a single currency peg is used. Trade, services and major capital flows may be used as currency weights while calculating the basket. The Indian Rupee is linked to a basket of currencies.

(c) Flexibility limited in terms of a single currency

In this system, the value of the currency is maintained within certain margins of the peg. Some Middle Eastern countries follow this system and maintain their currency within a limit of the peg against the U.S. dollar.

(d) Pegged to some indicators

Under this arrangement, the currencies adjust more or less automatically to changes in the selected indicators. A common indicator is the real effective exchange rate (REER) that reflects inflation adjusted changes in the currency against major trading parties.

This category also includes cases where the exchange rate is adjusted according to a pre-announced schedule.

(e) Managed Float

Central Bank of a country decides the exchange rate in this system. The rates are revised from time to time depending on forex reserves, developments in parallel exchange markets, the real effective exchange rate etc.

(f) Independent float

In this system market forces determine the exchange rate. Most of the developed countries follow this system of exchange rate.

Currencies in the foreign exchange market may be transacted for immediately delivery or for a postponed delivery and consequently, there are two types of rates in the market. These are Spot Exchange Rates and forward Exchange Rates.

Spot Exchange Rates: A spot exchange rate is a rate at which currencies are being traded for delivery on the same day. For example, an Indian Importer may need U.S. $ to pay for the shipment that has just arrived. He will have to purchase the $ in the market to make payment for the import. The rate at which he will buy the $ in the market is known as the spot exchange rate. He will make the payment in terms of Rs. and gets in turn the U.S. $ which will be paid to the foreign exporter. The spot

exchange rate therefore, for a currency is the current rate at which one currency can be immediately converted into another currency. For example, a spot rate of $ 0.99/Euro indicates that one Euro can be converted into $0.99 in the market place at present. In most of the cases, the spot exchange rates are set by the demand and supply forces in the foreign exchange market.

In the spot exchange market, the quote may be denoted as direct or indirect. A direct quote indicates the number of units of the domestic currency required to buy one unit of foreign currency. That is, in Mumbai, the typical exchange rate quote indicates the number of Re. needed to buy one unit of a foreign currency e.g., Re. per £, Re. per $ or Re. per Euro etc. The quotes in the spot market in New York are given in terms of U.S. dollar and in Tokyo, the rates are given in terms of Yen.

An indirect quote indicates the number of units of foreign currency that can be exchange for one unit of the domestic currency. For example, in New York, the rates may be given as £ per $ or Euro per $ etc. As already stated, that the foreign exchange rates are relative to each other, the direct quote an indirect quote are related to each other in an inverse relationship i.e., an indirect quote is the inverse of a direct quote. So,

$$\text{Indirect Quote} = \frac{1}{\text{Direct Quote}}$$

In international transactions, both the direct quote and indirect quote are used. For example, if the direct quote of Euro in U.S. is Euro/$ = Euro 1.037 and American importer has to pay Euro 1,000 to a German Firm, then how many $ will be required by the American importer ? In this, case, the quote for $/Euro may be obtained as the inverse of Euro/$ i.e., 1/1.037 = 0.9643. So, he will require $0.9643 x 1,000 = $964.32 to pay for the German firm.

Generally, in the spot exchange market, two types of spot rates may be quoted: the Ask price and the Bid price. The Ask Price is the rate at which the foreign exchange dealer ‘asks’ its customers to pay in local currency in exchange of the foreign currency. In other words, ask price is the selling rate or the offer rate and refers to the rate at which the foreign currency can be purchased from the dealer. On the other hand, the Bid price is the rate at which the dealer is ready to buy the foreign currency in exchange for the domestic currency. So, the bid price is the rate which the dealer is ready to pay in domestic currency in exchange for the foreign currency and therefore, it is the buying rate. The dealer sells the foreign currency for more than what they are ready to pay for buying it. Normally, the direct ask price is greater than the direct bid price and the difference between the two is known as the *ask-bid spread.*

The ask-bid spread depends upon the breadth and depth of the market for that currency and the volatility of the currency. In case, when there is a large volume of transactions and the trading is continuous in any currency, the spread is small and may range between 0.1% to 0.5%. The spread is much higher for infrequently traded currencies. This spread compensates the dealer for holding the risky foreign currency and for providing the service of converting currencies. The bid spread is usually stated as a percentage cost of transacting in the foreign exchange market and may be computed as follows:

$$\% \text{ Spread} = \frac{\text{Ask Price - Bid Price}}{\text{Ask Price}} \times 100$$

For example, if the ask price of $/£ is $1.6646 and the bid price is $1.6629, then the % spread may be ascertain as follows :

$$\% \text{ Spread} = \frac{16646 - 16629}{16646} \times 100$$
$$= 0.1\%$$

Cross Rate: The cross rate for a currency is the exchange rate based on the exchange rate of two other currencies. The exchange rate between two currencies calculated on the basis of the rate of these two currencies in terms of a third currency is known as a cross rate. For example, an American trader gives the following quotations in New York: $0.99/Euro and $1.80/£, then the cross rates Euro/£ or £/Euro may be ascertained as follows:

$$\frac{\text{Euro}}{£} = \frac{\text{Euro}}{\$} \times \frac{\$}{£}$$
$$= \frac{1}{0.99} \times 180$$
$$= \text{Euro } 1.818 / £$$

Similarly, $\frac{£}{\text{Euro}} = \frac{£}{\$} \times \frac{\$}{\text{Euro}}$

$$= \frac{1}{180} \times 0.99$$
$$= £\ 0.555/\text{Euro}$$

The forward rate is a price quotation to deliver the currency in future. The exchange rate is determined at the time of concluding the contract, but payment and delivery are not required till maturity. Foreign exchange dealers and banks give the forward rate quotations for delivery in future according to the requirements of their clients. Generally, the forward quotations are given for delivery in 30 days, 90 days, and 180 days, But, the quotations may be given up to 2 years. Sometimes, forward contracts with maturities exceeding two years are also arranged by the dealers to meet specific requirements of their clients. Quotations are normally given for major currencies, but dealers also provide forward quotations for other currencies on the specific request of their clients.

The forward rate for a currency may be higher or lower than the spot rate. Forward rate may be higher than the spot rate if the market participants expect the currency to appreciate *vis-à-vis* the other currency, say US dollar. The currency, in such case is called trading at a forward premium. If the forward rate is lower than the spot rate, the participants expect the currency to depreciate *vis-à-vis* the US dollar. The currency in this case, is said to be 'trading at forward discount'.

Forward premium or discount is generally calculated as percentage per annum. This percentage helps in making a comparative analysis of the interest rate differential between the two countries whose currencies are quoted. The forward premium (or discount) is generally calculated by the following formula:

Forward premium (or discount) in percent per annum

$$= \frac{(\text{Forward Rate} - \text{Spot Rate})}{\text{Spot Rate}} \times \frac{12}{n} \times 100$$

Where 'n' is the number of months till maturity of the forward contract

For example, suppose that the forward rate (60 days) for the Rupee is 49.05/$ whereas the spot rate for it is 48.20/$. The forward discount on Indian Rupee will be

$$= \frac{49.05 - 48.20}{48.20} \times \frac{6}{1} \times 100$$

= 10.58% (discount)

If, on the other hand, the forward rate for the Rupee is 47.80/$, the forward premium on it will be

$$= \frac{47.80 - 48.20}{48.20} \times \frac{6}{1} \times 100$$

= 4.97% (premium)

RELATIONSHIP BETWEEN SPOT AND FORWARD RATES

A study of the relationship between spot and future rates would help in determining the degree and the extent of predictability of the former on the basis of the latter.

The collective judgment of the participants in the exchange market influences the appreciation or depreciation in the future spot price of a currency against other currencies. The forward premium or discount is also affected by the interest rate differential between two countries, differences in the rates of inflation between them, and the degree to which inflation rate differential is translated into interest rate differential in the expected time horizon. Moreover, the relationship between spot and forward rates may be affected by the efficiency of the financial and exchange markets in two countries. Controls, restrictions and other interventions which can affect adjustments in exchange, and interest and inflation rates differential also influences the spot and forward rates.

Theoretically, in the (i) efficient market and (ii) absence of intervention or control in the exchange or financial markets, the forward rate is an accurate predictor of the future spot rate. These requirements are, generally, satisfied if the following three conditions are found:

(i) Interest Rate Parity: According to interest rate parity principle, the forward premium (or discount) on currency of a country *vis-à-vis* the currency of another country will be exactly offset by the interest rate differential between the countries. The currency of the country with lower interest rate is quoted at a forward premium and *vice-versa*.

(ii) Purchasing Power Parity (PPP): According to the PPP Principle, the currency of a country will depreciate *vis-à-vis* the currency of another country on the basis of differential in the rates of inflation between them. The rate of

depreciation in the currency of a country would roughly be equal to the excess inflation rate in the country over the other country.

(iii) International Fisher Effect: The interest rare differential between two countries, according to the Fisher effect, will reflect differences in the inflation rates in them. The high interest country will experience higher inflation rate.

It should, however, be noted that even if these conditions are satisfied, the future spot rate might not be identical to the forward rate. Random differences between the two rates may be found.

RISKS IN FOREIGN EXCHANGE MARKET

It is evident that the foreign exchange rates are subject to change from time to time. Some of the variations may be unanticipated and have nothing to do with the fundamentals. A business firm dealing in import and export has to often deal with the foreign exchange rates and market. Normally, such a firm always has an exposure to such exchange risk, which may arise due to change in exchange rates. Foreign exchange exposure is present whenever a firm's current assets and current liabilities are denominated in terms of currency other than the domestic currency. In case a firm owns assets or has projects that create cash flows in a foreign currency, then change in exchange rates can affect the value of these assets and projects. However, if the cash flows are expressed in local currency, then this type of exchange risk will not be present.

For example, an American firm agrees to buy a machine from another firm in New York for a price $10,000 payable on the delivery of machine which is expected in 90 days from today. The machine is delivered on the specified date and the buyer will make the payment as required. In this case, the buyer knew the exact $ amount to be paid under the contract right from the day when the contract was written. There was no uncertainty about the value of the contract. However, suppose an Indian firm enters into a contract with a U.S. supplier to buy a machine for $10,000 payable at the time of time of delivery, which is to take place after 90 days. In this case, the Indian importer will have to pay $10,000 at the time of delivery of the machine. For this purpose, he will have to buy from the market, $10,000 at the then prevailing rates. Today, at the time of entering into the contract, he is sure of the value in terms of $ but not in term of Rupee. The Indian firm is not certain what its future Re. outflow would be 90 days hence. This uncertainty gives rise to exchange rate risk. In case, the value of Re. declines over the period of 90 days then the payment liability in terms of Re. will increase, through the liability in terms of $ is fixed.

The above example, clearly give the idea of risk in foreign exchange dealings. In the domestic trade contracts the exact Re. amount of the future payment is known with certainty. However, in case of international trade contracts where the contracts are generally written in foreign currency, the exact Re. amount of the contract is not known. The variability of exchange rates induces variability in the future cash flows and hence the emergence of foreign exchange risks. So, the foreign exchange rate risk exists when the contract is written in term of foreign currency or is denominated in a foreign currency.

The process of managing financial affairs to minimize the detrimental effects of fluctuations in exchange rates may be called Foreign Exchange Exposure

Management or Foreign Exchange Risk Management. While dealing with the foreign exchange risk management, a financial manager may be faced with questions namely,

(a) What are the types of risks to which a firm may be exposed as a result of fluctuating exchange rates?

(b) How the risk can be minimized?

Exchange Risk and Currency Exposure Management

1. Objective

The growing trend of international trade for goods and services has made foreign exchange risk a critical factor for firms having international operations. There is an added level of complexity for multi-national firms as the accounts of subsidiaries are maintained in currencies different from that of the parent. Control of foreign exchange risk can be effective if a firm is able to manage the fundamental relationship among inflation, foreign exchange rates and interest rate. Any attempt to define and measure currency exposure must be fully integrated with management's corporate philosophy, strategic planning process, operating decisions etc. Foreign exchange risk is defined as the variance of real value of asets and liabilities or operating income attribute to unanticipated changes in exchange rates. Traditionally, a currency exposure has been defined around one or a combinations of the concepts of transaction exposure translation exposure and economic exposure which are discussed elsewhere in this Chapter.

Development of comprehensive exposure management program must evolve from a thorough understanding of the implications that currency movements have on a firm's financial position-assess the impact of currency fluctuations and institute timely and well-conceived policy measures to preserve the economic health and profitability of the enterprise. The objective in exposure management is two-fold - the minimization of exchange losses as a result of currency movements and the minimization of protection costs. Given its risk or leaving some risk unconcerned. Some of the measures to be taken are internal such as netting, matching, leading and lagging, pricing policies such as assets and liabilities management. Others are external such as forward exchange contracts, borrowings, discounting, factoring/ forfeiting, government exchange risk guarantees. Protection measures could also be classified as (a) general e.g. long-term borrowings and investments, income remittances, working capital policies, invoicing policies, transfer pricing and leading and lagging; and (b) specific e.g. long-term borrowings and investments, and/or lending prepayments, and swaps. Illustratively, some of the aforesaid measures are discussed below.

2. General Protection Measures

The general protection measures are those measures which are implemented on an ongoing basis as a part of a firm's normal operations. The assumption here is that in a multinational setting, the subsidiaries are wholly-owned. If there are shareholders in the host countries of the subsidiaries, these measures could at times conflict with their interests.

(a) *Invoicing Policies:* if a firm has subsidiaries abroad, there may be transaction among them or between a subsidiary and the parent firm. Or, the parent and the

subsidiaries may have transactions in foreign currencies with third parties. The foreign exchange effect on intra-firm payments on a consolidated basis does not depend upon the currency denomination of the invoice. For, a payable in the books of an importing subsidiary is off-set by an exactly equal amount of a receivable in the same currency in the books of the exporting subsidiary. It is immaterial from the parent's point of view whether the invoice is in the currency of the exporting subsidiary of that of the importing subsidiary. Even if the invoice is in a third currency, The foreign exchange risk will be shared by the exporting and importing subsidiaries concerned. When the consolidated position of the firm is not affected, regard should be had of external factors such as tax structure and exchange controls in the countries of the firm and its subsidiaries, and invoicing decisions should be based on the what is advantageous to the firm as a whole. The objective should be to obtain maximum credits upon exchange losses or to minimise tax liabilities on exchange gains. Invoices to third parties abroad should be denominated in the relatively stronger currency. On the other hand, while importing goods etc. from third parties a firm should try to negotiate payments in the weaker currency. Respective bargaining strenghs and the need for good customer relations have a bearing on the invoicing decision.

In India, exchange control does not place restrictions on the choice of a currency for invoicing international transactions, It could be indian rupee, SDR, ECU or any freely convertible currency, or further for certain specified purposes, currencies of the A.C.U. parties undertaking such transactions may also keep in view the availability of forward cover in the currency chosen.

(b) *Transfer Pricing:* It is a mechanism by which profits are transferred through an adjustment of prices on intra-firm transactions. It can be applied to transactions between the parent firm and its subsidiaries or between strong currency and weak currency subsidiaries. Subject to the demands of competition, a parent may charge higher prices to its weak currency subsidiary, thereby increasing its own profit and reducing that of the subsidiary. The taxable income of the subsidiary comes down. Recovering higher level of operating charges from the subsidiaries also serves the same purpose. It is likely that audit profession, exchange controls and customs duties of the host country may supervene to negate this strategy. So, the mechanism may be applied moderately—gradually over a long period, without upsetting the environment in which the subsidiaries operate.

(c) *Leading and Lagging and extension of Trade Credit:* Leading implies speeding up collections on receivables if the foreign currency in which they are invoiced is expected to appreciate. Lagging implies delaying payments of payables invoiced in a foreign currency that is expected to depreciate. At the level of an individual transaction this is a specific protection measure; but at the corporate level this requires forecasting of currency movements, centralisation of information on transactions, and evolving guidelines for subsidiaries. Hence, it has been located here as a general protection measure.

Leading and lagging is primarily an intra-firm measure, because in third party trade there is a clear conflict of interest between buyer and seller. It involve both costs and benefits. There are three elements in this calculation: (i) cash cost/benefit represented by the interest rate differential between the lead and lag countries; (ii) an

expected cash gain/loss to be realised on the altered transactional exposure in the said countries, and (iii) an expected translation gain/loss on the altered translation exposure. The corporate policy should take them into account and also consider effective tax rates in the two countries as also the currency of intra-firm invoicing.

Duration of a trade credit should be decided keeping in view much the same factors discussed above.

(d) *Netting:* All transactions-gross receipts and payments among the parent firm and subsidiaries should be adjusted and only net amounts should be transferred. This technique is called netting. This again involves centralisation of data at the corporate level, selection of the time period at which netting is to be done, and choice of the currency in which netting is to be done. The currency could be the home currency of the firm. Netting reduces costs of remittance of funds, and increases control of intra-firm settlements. It also produces savings in the form of lower float (funds in the pipe-line) and lower exchange costs.

(e) *Matching:* It is a process whereby cash inflows in a foreign currency are matched with cash outflows in the same currency with regard, to as far as possible, amount and maturation. Hedging of exchange risk could be done for the unmatched portion. When there are cash inflows in one foreign currency and cash outflows in another foreign currency, the two could still be matched, provided they are positively correlated i.e. expected to move in tendem. There is the risk of exchange rates going off the expectations.

3. Specific Protection Measures

A firm dealing with foreign exchange may be exposed to three types of risk as follows:

1. *Transaction Exposure:* A transaction exposure occurs when a value of a future transaction, through known with certainty, is denominated in some currency other than the domestic currency. In such cases, the monetary value is fixed in terms of foreign currency at the time of agreement which is completed at a later date.

For example, an Indian exporter is to receive payment in Euros in 90 days time for an export made today. His receipt in Euros is fixed and certain but as far as the Re. value is concerned, it is uncertain and will depend upon the exchange rate prevailing at the time of receipt. All fixed money value transactions such as receivables, payables, fixed price sale and purchase contracts etc. are subject to transaction exposure. The transaction exposure looks at the effects of fluctuations in exchange rates on the transactions that have already been entered into and have been denominated in foreign currency.

Transaction exposure refers to the potential change in the value of a foreign currency denominated transaction due to changes in the exchange rate. Credit purchases and sales as well as borrowing and lending denominated in foreign currencies, and uncovered forward contracts are some examples of transaction exposure.

Transaction exposure basically covers the following:

(a) *Rate Risk:* this will occur

(i) When there is mismatch of maturities and borrowings:

(ii) In foreign exchange, it results in net exchange positions (long or short).

(b) *Credit Risk:* A situation when the borrower is not in a position to pay.

(c) *Liquidity Risk:* Same as in the case of credit risk.

To illustrate, suppose an Indian company, XX India Ltd., contract with a US company, YY US Inc., to sell 1000 sets of machines for delivery one year from now. XX India Ltd. wants to realize Rs. 2000 million from this sale. The US company has indicated that it will enter into the contract if the price is stated in US$. The one-year forward rate is Rs. 49/$1. Hence XX India Ltd. quotes a price of $41 million. The Indian company faces transaction exposure. It may hedge its position or take some other action to guarantee its future rupee proceeds from sale. The company may, otherwise lose on the transaction if the value of the dollar weakens. If, for example, the value of rupee increases to Rs. 47/$1, the Indian company would receive Rs. 1,927 million ($41 million x Rs. 47) rather than Rs, 2000 million which it was expecting. Foreign currency depreciation will result in exchange loss if the exposed receipts are greater than the payments. Foreign currency appreciation, on the other hand, will cause exchange loss if exposed receipts are smaller than exposed payments.

2. Translation Exposure: This is also called the accounting exposure. It refers to and deals with the probability that the firm may suffer a decrease in assets value due to devaluation of a foreign currency even if no foreign exchange transaction has occurred during the year. This exposure needs to be measured so that the financial statements i.e the balance sheet and the income statement reflect the change in value of assets and liabilities. It may be noted that the assets and liabilities are considered exposed to foreign exchange risk if their values are to be translated into parent company currency using the exchange rate effective on the balance sheet date. Other assets and liabilities and the capital that are translated at the historical exchange rates i.e., the rate in effect when these items were first recognized in the balance sheet, are not considered to be exposed.

The translation exposure occurs when the firm's foreign balances are expressed in terms of the domestic currency. Changes in exchange rates can therefore, alter the values of assets, liabilities, expenses and profits of foreign subsidiaries. Two related decision areas are involved in translation exposure management:

(i) Managing balance sheet items to minimize the net exposure,

(ii) Deciding how to hedge against this exposure

Financial managers should attempt to keep a rough balance between exposed assets and liabilities. Such a balance would bring about offsetting changes in values when the balance sheet of a foreign subsidiary is translated. If the value of the currency declines relative to the currency of the home country, then the translated value will be lower and simultaneously the translated liabilities would also be lower. An asset denominated in terms of foreign currency will lose value if that foreign currency declines in value. A firm would normally be interested in its net exposed position for each period in each currency. Although, expected changes in exchange rates can often be included in the cost benefit analysis relating to such transactions,

still there is an unexpected component in exchange rate changes.

This exposure is particularly relevant for the companies which have subsidiaries in other countries. These companies have to translate the financial statements of their subsidiaries that are prepared in a foreign currency into the currency of the home country to prepare the consolidated statements. Foreign currency depreciation results in exchange losses if the exposed assets are greater than exposed liabilities. Foreign currency appreciation, on the other hand, will produce exchange gains.

The calculation of translation gains and losses is an exercise on paper only. These gains and losses do not involve any actual cash flow. Some companies, however, are concerned about this risk because it affects their cost of capital, earnings per share, and the stock price, besides the ability to raise capital in the market.

To illustrate the translation risk, assume that XYZ (India) Ltd., has a wholly owned subsidiary, YZ Inc. in USA. The exposed assets of the subsidiary are $200 million and its exposed liabilities are $100 million. The exchange rate changes from $0.020 per rupee to $0.021 per rupee. The potential foreign exchange gain or loss to the company will be calculated as follows:

In this case, the net exposure is

Exposed assets	=	$200 million		
Exposed liabilities	=	$100 million		
Net exposure	=	$100 million		
Pre-devaluation rate ($0.020 = Re. 1)		$100 million	=	Rs. 2.400 million
Post-devaluation rate ($0.021 = Re.1)		$100 million	=	Rs. 2.500 million
			=	Rs. 0.100 million

If the post-devaluation rate is less than the pre-devaluation rate ($0.20 = Re. 1), the net result will be potential exchange loss. In this case, an unrealized translation loss of Rs. 0.100 million would have been incurred. In the example given above, the transactions are fairly straightforward. But, when different types of assets and liabilities are involved, conceptual problems emerge about the true home-currency value of these items. Four different methods are used to translate assets and liabilities of the subsidiary into the currency of the parent company, namely, current/ non-current method, monetary/non-monetary method, temporal method, and current-rate method.

3. Economic Exposure: The economic exposure refers to the probability that the change in foreign exchange rate will affect the value of the firm. Since the intrinsic value of the firm is equal to the sum of the present values of future cash flows discounted at an appropriate rate of return, the risk contained in economic exposure requires a determination of the effect of changes in exchange rates on each of the expected future cash flows. The firm's economic exposure may be greater or lesser than its translation exposure since the present value of future cash flows can neither be increased nor decreased by a revaluation of the currency. The measurement of economic exposure requires that a detailed analysis of the effects of exchange rates changes on each of the future cash flows should be made.

Economic, operating, competitive, or revenue exposure refers to the immediate and potential effect of change in the exchange rate on the net present value (NPV) of

expected future cash flows generated by the affiliates. The favourable factors in a country like stability, low rates of taxation, easy availability of funds, and favourable balance of payment may change over time because of variations in the economic condition of a country. The local currency may also be devalued or depreciated as a result of changes in the economic forces. The inflationary forces, supply of funds, and price controls may also be affected as a result of change in exchange rates. In fact, the economic exposure encompasses all facets of a company's operations including the effects of exchange rate changes on customers, suppliers, and competitors. The economic exposure is more subjective, difficult to measure, and broader in nature than the translation and the transaction exposures. In fact, the translation and the transaction losses are one-time events, whereas the economic loss is a continuous one. For example, assume that the Danish subsidiary of an Indian company is likely to earn 100 million Kroner each year. The annual depreciation charges are estimated at 10 million Kroner. The exchange rate between the countries is likely to change from Rs. 9.60 per Danish Kroner to Rs. 8.00 per Kroner in the next year. The change in the exchange rate will have the following effect on the cash flows of the parent company:

Profit after taxes	100 million Kroner
Depreciation	10 million Kroner
Cash flow from operations	110 million Kroner
Old rate (Rs. 9.60 per Danish Kroner)	
(110 million Kroner x Rs. 9.60)	Rs. 1056 million
New rate (Rs. 5.00 per Danish Kroner)	
(110 million Kroner x Rs. 8.00)	Rs. 880 million
Exchange loss	Rs. 176 million

Thus, the Indian company loses Rs. 176 million in cash flows over the next one year. If the anticipated business activity would be same for the next five years, the next cash flows would decrease by Rs. 880 million.

The actual impact of economic exposure on the value of the company depends on the distribution of sales between the domestic and export markets, elasticity of demand for the product in each market, and the cost structure of the affiliate.

The major differences among the exposures are given below:

Differences among Translation, Transaction and Economic Exposures

Bases	*Economic Exposure*	*Transaction Exposure*	*Translation Exposure*
Duration	Life of the project	Duration of the contract	At a point of time (conversion)
Gains/Losses	Actual, total value difficult to compute	Actual, total value relatively less difficult to calculate	Paper exercise only easy to work out
Contract	General in nature	Specific in nature	Specific in nature
Measurement	Value depends on	Value depends on	Value depends on

	variation in actual spot rates	changes in actual spot rates	accounting guidelines
Hedging	Difficult because difficult to predict	Relatively easy	Easy
Value	Market value of assets	Contract value of assets and liabilities	Book value of assets and liabilities
Extent of exposure	Guided by the product and factor markets	Determined by the nature	Depends on the accounting rules
Management of exposure	All departments	Treasury department	Treasury department

Thus, the translation exposure is historic in nature. It is basically static. It does not consider the likely change in an exchange rate. Moreover, no cash flow is involved in this exposure. The transaction and economic exposures, on the other hand, consider the impact of an exchange rate change in future.

It may be noted that the firms are exposed to exchange rate changes at every stage in the process of capital budgeting, from developing new products to entering into contracts to sell these products in foreign market. For example, a weakening of the Re. will increase the competition among firms that depend upon the export markets, while hurting those firms that need import as inputs in their production process.

The transaction exposure can result in exchange rate related losses and gains that are already realized and have an impact on the reported income. However, the translation exposure results in exchange rate losses and gains that are reflected in the firm's accounting record and are not realized and hence have no impact on the taxable income. Thus, if the financial market are efficient and the managerial goal is consistent with the wealth maximization, then the firm should not have to waste efforts and real resources hedging against the book value losses caused by translation exposure. However, if the financial market is not efficient, then the firm should find it economical and go for hedge against expected translation exposure. But it is useful for a firm to manage its transaction and economic exposures because they affect the value of the firm directly.

MANAGING FOREIGN EXCHANGE RATE RISK

As already stated that changes in exchange rate give rise to foreign exchange risk, the firms dealing with other currencies usually face foreign exchange risk. Firms that import and export often need to make commitments to buy or sell the goods for delivery at some future time, with the payment to be made in foreign currency. Likewise, firms operating foreign subsidiaries receive payment from these subsidiaries in foreign currency and have to convert this receipt into domestic currency. In addition, the firm may also be exposed to political and regulatory risk of the other countries.

As soon as, a firm enters into a transaction that exposes it to the cash flows in a foreign currency, it is exposed to exchange rate risk. The financial manager can

either leave the firm exposed to these risk and assume that the shareholders would be able to diversify away the risk; or can hedge the risk using a variety of options available. However, the options available to a firm for hedging against exchange risk are subject to the following :

(a) *Shareholders composition:* For the shareholders to be able to diversify away foreign exchange risk that flows to the firm, they must be having internationally diversified portfolio. Thus, an investor who holds shares of the U.S. as well as a British firm may not be affected much by the movements in $/£ rate because of offsetting effects of his investment. If on the other hand, if the shareholders are not internationally diversified, then the firm should try to diversify the risk itself.

(b) *Diversification Across Countries:* Some firms accomplish a diversification of different kind by exposing to many countries and many currencies. For example Coca Cola having operations in a number of countries is less likely to be concerned about the hedging the exchange rate risk.

(c) *Cost of Hedging Risk: The* cost of hedging risk in some currencies is less than hedging in other currencies or cost of hedging for a shorter period may be less than the cost of hedging for a longer period. Other thinks remaining same, the greater the cost of hedging risk, the less likely it is that the firms will be able to hedge.

The introduction of floating exchange rates in the early seventies has motivated companies to develop strategies to protect their bottom line from the adverse consequences of exchange rate fluctuations. An action that removes foreign exchange risk is said to cover that risk. The covering of foreign exchange exposure imposes certain costs on the companies. The companies have to strike a balance between foreign exchange risks and the costs of covering them. The systems to manage foreign exchange risks are guided by many factors in the companies, e.g., degree of centralization of foreign exchange transactions, accounting systems, responsibility for developing and complementing strategies, types of exposures to be managed system of formulation of corporate objectives and the design of the follow-up system to evaluate exchange risk management. Two of these most significant factors are discussed below:

(i) Degree of Centralization

In some of the companies, the policies to manage foreign exchange risk are decided at the head-office and the strategies are developed and implemented at the operating level. In this system, the administrative cost to manage foreign exchange may be low. However, the strategy may not be properly co-ordinated in the absence of perfect inter-divisional netting. In other companies, the policies as well as strategies are formulated at the head quarters. The implementation of the polices, in these companies, is done by the operating units. This system may involve high administrative costs but it is more effective. These companies are able to utilize various exposure management techniques. This system also helps in having maximum centralization of all the activities in the foreign exchange management system. However, it involves, like the first system, higher administrative costs and requires frequent reporting by various operating units.

(ii) Statement of Objectives

The primary objective of foreign exchange risk management is to eliminate or reduce variations in the future earnings of a company due to unexpected currency fluctuations. The companies, to achieve this objective, should identify the types of exposures, which they would like to monitor. Moreover, they should convert this primary objective into a number of specific operational goals related to the types of exposures being managed. The operational objective of translation exposure management, for instance, may be to minimize half-yearly fluctuations in earnings due to exchange rate variation. The acceptable total cost of exposure management (including the cost of management time) should also be included in the statement. Moreover, proper exposure management would save the company from excessive speculation.

EXCHANGE RATE FORECASTING

An exchange rate, as seen above, is the price of one currency expressed in terms of another currency. The exchange rate among countries are affected by a large number of factors like rate of inflation, growth prospects, political stability, and economic policies. Most of these factors are difficult to predict in advance. As a result, the future exchange rates, like most of the events, become uncertain. Participants in the international markets, therefore, face problems, in making decisions which are based on future exchange rates. For example, future exchange rates may be required by the companies to hedge against potential losses, arranging short-and long-term funds, performing investment analysis, and to assess earnings of a foreign subsidiary. The quality of decision, in such cases, depends on the accuracy of exchange rate projections.

The percentage change between the current and the forecasted exchange rates may be calculated to find out appreciation or depreciation in the currency. A positive percentage change represents currency appreciation whereas a negative percentage change a shows depreciation.

The exchange rates may be fixed or floating. Different methods are used to forecast fixed and floating exchange rates. The floating exchange rates, as discussed above, are determined by the market forces of demand and supply. These are not influenced by the government intervention. Fixed exchange rates, on the other hand, are decided by the regulating agencies.

The floating exchange rates may be forecast with the help of various methods. Fundamental and technical analyses are commonly used for this purpose. Fundamental analysis studies the relationship between macro economic variables (such as inflation rates, national income growth, and changes in money supply) and exchange rates to forecast the latter. Technical analysis uses past prices and volume movements to project future currency exchange rates. The technical analysis may produce useful results if the past trend is repeated. The companies normally use technical analysis for short-term forecasts. But, they use fundamental analysis for long-term projections. The primary methods of technical analysis are charting and mechanical rules. The reliability of the forecasts may be found out on the basis of forecasting error which is calculated by root square error. The root square error is computed with the help of the following formula:

$$RSE = \frac{(FV - RV)^2}{RV}$$

Where RSE is the root square error as a percentage of realized value; FV is the forecasted value and RV is the realized value.

Fixed exchange rate forecasts are based on the study of government decision – making structure. Attempt is made to determine the pressure to devalue the currency of the nation and the ability of the government to sustain the disequlibrium.

Forecasting fixed exchange rates requires an assessment of balance-of-payments disequilibrium on the basis of key economic variables such as inflation, money supply, international reserves, gap between official and market rates, and the balance of foreign trade. The change in the exchange rate required to restore the balance of payment equilibrium is estimated with the help of forward exchange rates, free market rates and the purchasing power parity principle. The capacity of the country to resist or postpone the use of corrective measures is evaluated on the basis of the ability to borrow hard currencies and the availability of international reserves. Attempt is also made to project the policies which may be followed by the Government to correct the position of the nation.

Thus, exchange rates are forecasted to make various decisions by the companies which require foreign exchange. These forecasts are made separately for the fixed and floating exchange rates with the help of different methods. Percentage change between forecasted and current exchange rates may be calculated to find out appreciation or depreciation in the currency.

MECHANICS OF FOREX TRADING

Forex trading is an important aspect of forex management. It is basically concerned with various forex operations including purchase and sale of currencies of different countries in order to meet payments and receipts requirements as a result of foreign trade. Forex trading is done either in retail market or in whole sale market (also called inter bank market). Under retail market, the traveler and tourists exchange one currency for another in form of currency notes or traveler cheques. Here, the total turnover and average transaction size are very small. The spread between buying and selling price is large. Whereas wholesale market or inter bank market is a market with huge turnover. The major market participants of this market include commercial banks, corporation and central banks.

In the inter bank market deals are done on the telephone or on electronic media. Suppose bank A wishes to buy the British pound sterling against the US dollar. A trader in bank A might call his counterpart in bank B and ask for a price quotation. If the price is acceptable they will agree to do the deal and both will enter the details the amount bought/sold, the price, the identity of the counter party etc. — in their respective banks' computerized records systems and go on to the next transaction. Subsequently, written confirmations will be sent containing all the details. On the day of settlement, bank A will turn over a US dollar deposit to bank B and B will turn over a sterling deposit to A. The traders are out of the picture once the deal is agreed upon and entered in the record systems. This enables them to do deals very rapidly. At the international level inter-bank settlement is effected through the Clearing House Inter Bank Payment System (CHIPS), located at New York.

When asked to quote a price between a pair of currencies, say pound sterling and dollar, a trader gives a "two-way quote" i.e. he quotes two prices: a price at which

he will buy a sterling in exchange for dollars and a price at which he will sell a sterling for dollars. The enquirer does not have to specify whether he wants to sell or buy pounds against dollars; as mentioned above, the market maker is ready to take either side of the transaction. Thus his quotation can be represented as (the numbers are hypothetical);

$/£: 1.7554-1.7560 or 1:7554/1.7560

The number on the left of the hyphen or the slash is the amount of dollars the trader will pay to buy a pound. This is the trader's bid rate for a pound sterling (against dollar). The number of the right is the amount of dollars the trader will require to sell a pound. This is the trader's ask rate (also called the offer rate). For a quote given above the bid-ask spread is 0.0006 dollar or 0.06 cent per pound. This margin is the market maker's compensation for the costs incurred and normal profit on capital invested in the dealing function.

In a normal two-way market, a trader expects "to be hit" on both sides of his quote in roughly equal amounts. That is, in the pound-dollar case above, on a normal business day the trader expects to buy and sell roughly equal amount of pounds (and of course dollars). The Bank's margin would then be the bid-ask spread.

But suppose during the course of trading a trader finds that he is "being hit" on one side of his quote much more often than the other side. In our pound-dollar example this means that he is either buying many more pounds than he is selling or *vice versa*. This leads to the trader building up "a position". If he has sold (bought) more pounds than he had bought (sold) he is said to have net short position (long position) in pounds. Given the volatility of exchange rates, maintaining a short or long position for too long can be a risky proposition. For instance, suppose that a trader has built up a net short position in pounds of 1,00,000. The pound suddenly appreciates from say $1.7500 to $1.7520. This implies that the bank's liability increases by $2000 ($0.0020 per pound for 1 million pounds). Of course, a pound depreciation would have resulted in a gain. Similarly, a net long position leads to a loss if it has to be covered at a lower price and a gain if at a higher price. (By "covering a position" we mean undertaking transactions that will reduce the net position to zero. A trader net long in pounds must sell pounds to cover; a net short must buy pounds).

The potential gain or loss from a position depends upon the size of the position and the variability of exchange rates. Building and carrying such net positions for long durations would be equivalent to speculation and banks exercise tight control over their traders to prevent such activity. This is done by prescribing the maximum size of net positions a trader can building up during a trading day and how much can be carried overnight.

In an ordinary foreign exchange transaction, no fees are charged. The bid-ask spread itself is the transaction cost. Also, unlike the money or capital markets, where different rates of interest are charged to different borrowers depending on their creditworthiness, in the wholesale foreign exchange market no much distinction is made. Default risk – the possibility that the counter party in a transaction may not deliver on its side of the deal is handled by prescribing limits on the size of positions a trader can take with different corporate customers.

Communications pertaining to international financial transitions are handled mainly by a large network called Society for Worldwide Inter bank Financial Telecommunication (SWIFT). This is a non-profit Belgian cooperative with main and regional centers around the world connected by data transmission lines. Depending on the location, a bank can access a regional processor or a main center which then transmits the information to the appropriate location.

CAPITAL ACCOUNT CONVERTIBILITY

Convertibility of Rupee

Capital account and, by extension, full convertibility of the rupee has emerged as an often debated issue in the context of the liberalisation process in India.

It is worth noting, at the outset, that India is not alone in its endeavour to make its currency convertible, nor is it the only country which is facing the daunting task of overcoming several hurdles on its way to full currency convertibililty. Indeed, only the developed economies of North America, Western Europe, Japan and Australia have joined the race towards full convertibility. A number of Latin American, Central European and Asian countries, however, have joined the race towards full convertibility. Aside from India, the list of these countries include Argentina, China, Chile, Columbia, Indonesia, Malaysia, Philippines, Republic of Korea and Thailand. Importantly, these countries are not at the same stage of currency convertibility. The Korean currency, for example, is much more convertible than the Chinese currency. Indeed, it is important to note at the outset that the issue is not a matter of choice between convertibility and non-convertibility. There exists a wide spectrum between these two extremes, and India and the aforementioned countries lie at various points of this spectrum. The important issue, in other words, is to decide the extent to which a currency (say, the rupee) will be convertible at a point of time, and the pace at which it will attain higher levels of convertibility in the future.

In order to appreciate the meaning and the implication of currency convertribility, however, one has to first take into consideration two different aspects. A currency, it has to be noted, can be convertible on the current account of balance of payments (BOP), and/or on the capital account of BOP. The currency is deemed fully convertible if it is convertible on both these accounts. A clear understanding of the notion of convertibility, therefore, entails an understanding of the current and capital accounts of BOP.

As such, the current account of the BOP comprises trade in goods and services. In other words, the current account balance takes into account exports, imports, and net foreign income from unilateral transfers. The capital account of the BOP, on the other hand, takes into account cross-border flow of funds that are associated with financial or other assets in the trading countries. For example, the direct and portfolio investments made by foreign investors, in India, are captured by the capital account balance of the BOP. The capital account also encompasses foreign investments of Indian companies, foreign aid and bank deposits of Non-resident Indians (NRI).

A currency is deemed convertible on the current account if it can be freely converted into other convertible currencies for purchase and sale of commodities and services. For example, a German company should be able to freely convert the mark

(DM) into rupee to pay an Indian software consultancy firm for its services. It is evident that the ideal of free trade lies at the heart of current account convertibility.

Capital account convertibility, on the other hand, implies the right to transact in financial and other assets with foreign countries without restrictions. For example, if a currency is convertible on the capital account, the residents of the domestic currency can freely convert it into other (convertible) currencies to purchase and maintain bank accounts abroad. Similarly, residents of other countries should also be able to freely convert their currencies into the domestic currency to purchase domestic capital and money market instruments. In other words, capital account convertibility is associated with the vision of free capital mobility.

Convertibility as an issue, and subsequently as a goal, was a priority in the agenda of the member countries of the international Monetary Fund (IMF) which was born out of the Bretton Woods Agreement. During the Bretton Woods period, "the term convertibility was used in two different contexts: convertibility into gold and convertibility into other currencies. Only the United States maintained gold convertibility during Bretton Woods. Convertibility into other currencies for current account transaction was a main goal of Bretton Woods and was reached, to a large extent, early in the system; however, the agreements to the IMF allowed more flexibility with regard to the imposition of exchange controls on capital account transactions. The flexibility was partly a result of a prevailing feeling that short-run speculative capital flows could be potentially destabilising and governments should therefore, have the freedom to restrict them."

Owing to various reasons, developing countries have historically not had convertible currencies. Typically, their currencies have been partially convertible on the current account and the capital account of the BOP, the rationale for the choice being embedded in the macroeconomic realities and the policy perspectives of the countries concerned. In India, the rupee was made convertible on the current account in August 1994. However, the currency as yet has limited convertibility on the capital account, and that indeed is the centre of a countrywide debate. What might be the rationale behind the aforementioned choice: making rupee convertible on the current account while maintaining exchange control for capital account transactions? What, indeed, are the policy implications of free capital mobility that is associated with capital account and have full convertibility? Is India ready for full currency convertibility?

Capital Account Convertibility – Indian Case

Capital Account Convertibility is one of the essential parameter not only for an effective integration of the financial market of domestic economy to the world economy but also for India's maturing as a mega world economic power in the prevailing environment of competition, deregulation and diffusion of information technology. Capital Account Convertibility or full convertibility in simple term refers to an economic tool expected to engender more efficient capital flows and catalyse growth impulses and enable the society to achieve a stable balance between its internal and external prices. The basic objective of capital account convertibility is to:

(a) deepen and integrate financial markets;

(b) raise the access to global savings;

(c) discipline domestic policy markers; and

(d) allow greater freedom to individual decision making.

A more open capital account will facilitate higher availability of larger capital stock, supplementing domestic resources thereby leading to higher growth and reducing the cost of capital and also facilitating access to the international financial market.

In a developing economies aspiring for high rate of econmic growth and development, capital account convertibility brings capital account liberalisation i.e. no restrictions on capital inflows and capital outflows. This exposes the economy to the volatility of cross border capital movements. The experiences of Latin America demonstrates that unless macro-economic fundamentals are in line with those in the rest of the world, such capital account liberalisation is not sustainable. The macro-economic fundamentals include rate of inflation, interest rate, fiscal deficits, balance of payments equilibrium and adequate supervision over bank. India has a long way to go before all this is ensured, primarily because the domestic economic reforms have yet to take full hold. Indian Government have already permitted the full convertibility of rupee on current account. Full convertibility on capital account is yet to be materialised.

The Reserve Bank of India on 29.2.1997, appointed a Committee on Capital Account Convertibility under the Chairman of S.S. Tarapore. The Committee submitted its report for consideration of the Government and Reserve Bank on 30.5.1997.

The Committee on Capital Account Convertibility was given the following terms of reference: (i) to review the International experience in relation to capital account convertibility (CAC), (ii) to recommend measures for achieving CAC, (iii) to specify the sequence and time-frame for such measures, and (iv) to suggest domestic policy measures and changes in institutional framework.

Against the backdrop of stable and sustainable growth in India and the progress achieved in entrenching structural reforms, the Committee has recommended a phased implementation of CAC over a three-year period: Phase I (1997-98), Phase II (1998-99) and Phase III (1999-2000). The committee has suggested that the implementation of measures contemplated for each phase should be on a careful and continuous monitoring of certain preconditions/signposts and certain important attendant variables were identified from the lessons of the international experiences and the specifics of the Indian situation.

The preconditions/signposts recommended by the Committee include: (I) fiscal consolidation in the form of gradual reduction in the Centre's Gross fiscal deficit to GDP ratio to 3.5 per cent in 1999-2000 accompanied by a reduction in the States' deficit as also a reduction in the quasi fiscal deficit, introduction of a Consolidated Sinking Fund (CSF); (ii) mandated inflation rate for the three-year period at an average of 3-5 per cent with an early empowering of the Reserve Bank to have full independence to achieve the inflation rate mandated by the Parliament, (iii) consolidation of financial system with full deregulation in interest rate in 1997-98, gradual reduction in the average effective cash reserve ratio (CRR) to 3 per cent in 1999-2000, reduction in gross non-performing assets (NPAs) to 5 per cent in 1999-

2000 and conversion of the weak banks into narrow banks; (iv) monitoring of attendant macro-economic indicators e.g. the exchange rate, the balance of payments, the adequacy of reserves while determining the appropriate timing and sequencing of CAC and the strengthening of the financial system; and (v) prepare the financial system for CAC in terms of bringing about a level playing field between various participants in the financial system, removing market segmentation, uniform treatment of resident and non-resident liabilities for purposes of reserve requirements, improving risk management systems in the financial system, introduction of more stringent capital adequacy standards and prudential norms, effective supervisory system and greater autonomy for banks and financial institutions.

On the exchange rate policy, the Reserve Bank should have a monitoring band of +/-5 percent around the neutral Real Effective Exchange Rate (REER). While the REER band would be declared, the Reserve Bank should ordinarily intervene as and when the REER is outside the band. In view of growing internationalisation of the Indian economy, over the three-year period, external sector policies should be designed to ensure a rinsing trend in the current recepits (CR) to GDP ratio from the resent level of 15 per cent as well as to reduce the debt-service ratio to 20 percent.

While the operating environment is no doubt relatively more flexible in countries with current account convertibility and open capital accounts, the approach in other countries, has remained cautious with a clear emphasis on the need for safeguards against potential financial instability that could arise due to excessive speculation in the foreign exchange market even when macroeconomic fundamentals are reasonably good. The Indian approach to opening the external sector and developing the foreign exchange market in a phased manner from current account convertibility to the ongoing process of capital account liberalization is now considered a prudent and desirable approach for liberalisation.

Economic and Monetary Union in Europe

The 1992 Maastricht Treaty on European set the framework for forming and Economic and Monetary Union (EMU) with a single currency, the euro and single monetary policy defined by common independent authority, The European Central Bank. EMU creates various operating risks for IBRD because significant changes will have to be implemented including currency conversion, modification of payment and settlement systems, redenomination of currencies and financial report in changes. The main challenge posed by EMU is the extended transition period (three years) when payments can be made in each participating member state in euro and in the previous national currency which remains a sub denomination of the euro during the transition. IBRD has created an international euro task force which is working in conjunction with various business unit groups to identity and address the changes required by the introduction of the euro. Management expects that a plan will be adopted and changes will be International Scenario implemented on a schedule which meets the EMU start date of January 1, 1999.

FOREIGN EXCHANGE MARKET IN INDIA

The Forex market in India is regulated by Reserve Bank of India. Participants in this market are the Authorised Money Changers and the Authorised Dealers.

Authorised Money Changers

In order to provide facilities for encashment of foreign currency to visitors from abroad, especially foreign tourists, Reserve Bank has granted licences to certain established firms, hotels and other organisations permitting them to deal in foreign currency notes, coins and travellers cheques subject to directions issued to them from time to time. These firms and organisations who are generally known as "authorised money changers" fall into two categories, viz. "Full-fledged money changers" who are authorised to undertake both purchase and sale transactions with the public and "Restricted money changers" who are authorised only to purchase foreign currency notes, coins and travellers cheques, subject to the condition that all such collections are surrendered by them in turn to an authorised dealer in foreign exchange/full fledged money changer.

Authorised Dealers in Foreign Exchange

Authorisations in the form of licences to deal in foreign exchange are granted to banks which are well equipped to undertake foreign exchange transactions in India. Authorisations have also been granted to certain financial institutions to undertake specific types of foreign exchange transactions incidental to their main business.

Turnover in the Foreign Exchange market has two components, merchant transactions, i.e. transactions undertaken by importers and exporters and inter-bank transactions. The inter-bank transactions are much larger as compared to the merchant transactions. The transactions are either Foreign Currency/Indian Rupee or Foreign Currency/Foreign Currency.

The nature of transactions in case of merchant transactions is Spot, Forward and Forward Cancellation whereas in case of inter-bank transactions, it is Spot, Swap and Forward.

A specimen of daily transactions is given below:

Turnover in Foreign Exchange Market

(US$ million)

Position Date	*Merchant*						*Inter-Bank*					
	FCY/INR			*FCY/FCY*			*FCY/INR*			*FCY/FCY*		
	Spot	*Fwd*	*FC*	*Spot*	*Fwd*	*FC*	*Spot*	*Swap*	*Fwd*	*Spot*	*Swap*	*Fwd*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*	*(13)*
Purchases for the month of May 2008												
1	40	47	27	—	—	6	37	84	—	115	66	4
2	2438	1452	255	1334	1903	1917	5009	6320	790	5328	2102	890
5	2103	780	411	552	1232	1086	4282	5669	653	3864	1446	449
6	1917	1095	422	660	712	778	4538	5910	526	4366	1000	52
7	1711	1451	369	359	835	2202	5625	4366	494	4363	1496	91
8	2348	1947	742	628	775	841	5765	5446	701	4398	1596	221
9	2446	1730	779	329	823	842	6206	5618	544	3766	1414	220
12	4640	1450	519	423	805	819	5315	6020	307	3810	1435	57
13	1827	1479	588	682	680	645	4911	5618	528	4135	1266	186
14	1986	2111	1196	852	1051	673	6147	5696	721	4000	1741	148
15	2018	1990	808	1135	622	1271	5331	7377	632	4361	1316	89
16	1801	1422	1044	652	1120	903	4989	6351	1869	3331	1938	179

(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*	*(13)*
19	87	62	16	—	2	2	170	100	92	231	230	—
20	2146	1112	589	543	1572	1151	4676	5675	262	5997	2636	217
21	2308	1127	940	511	1048	908	6315	5648	270	3437	1223	144
22	1727	1433	505	249	1228	958	4397	3929	1033	3344	1612	770
23	2030	1371	1025	245	964	817	4952	4427	503	3682	1051	691
26	1189	1502	789	315	331	244	3687	3588	463	1294	532	70
27	1758	927	585	618	870	655	6622	6416	171	2804	1555	360
28	3759	1555	1498	666	1251	1232	5011	6033	732	5281	1954	297
29	2459	1505	386	648	1193	1118	5078	7372	1094	4595	1615	504
30	2067	2695	1465	326	719	654	5727	8449	875	3013	1641	153
Sales for the month of May 2008												
1	35	14	2	—	—	5	45	94	—	116	68	—
2	2142	1549	535	946	1845	2122	4826	6921	970	5363	2102	906
5	2342	811	396	506	1309	1042	4015	5737	652	3881	1382	466
6	2119	1393	536	687	725	764	4566	6109	612	4322	1082	72
7	1796	2214	370	341	822	1107	4943	4618	758	4372	1502	109
8	2718	2496	546	565	736	911	5385	5949	867	4547	1648	198
9	2189	2559	1023	310	1560	704	6495	6102	533	3695	1588	218
12	2029	2148	648	508	693	842	5069	7105	332	3855	1458	47
13	2273	1446	553	537	651	848	4651	5930	573	4008	1412	221
14	1978	2664	602	685	957	949	6008	5237	778	3946	1568	173
15	1989	1918	621	1109	479	1427	5109	6643	668	4396	1249	242
16	1820	2086	635	727	849	1107	4873	6725	1748	3375	1942	186
19	187	53	9	—	1	4	113	135	44	234	228	11
20	2213	1289	451	618	1258	1467	4456	5920	519	6031	2565	202
21	2321	1701	479	432	962	1036	5627	5467	413	3466	1234	169
22	2429	1610	499	254	1046	1148	4135	4171	892	3237	1488	841
23	2284	1150	745	237	997	822	4530	4375	749	3689	1059	755
26	1326	1224	567	263	379	252	4029	3546	467	1332	569	61
27	2706	1009	748	470	667	982	5508	5843	262	2757	1531	336
28	2875	2352	904	673	1034	1279	5210	7162	649	5266	2095	348
29	2373	1402	893	669	1184	1096	4667	7120	1366	4407	1854	559
30	2752	2064	1812	340	563	817	5690	8170	766	3026	2011	153

FCY = Foreign Currency INR – Indian Rupees

(*Source:* Reserve Bank of India, Monthly Bulletin, July 2008)

Forex Management: Developments (2004-08)

The developments in Forex Management in India is undergoing rapid transformation. It is increasingly getting integrated within the broad ambit of financial markets. Over the last fifteen years, momentus changes have happened in the financial sector. The global foreign exchange markets have grown manifold in the recent years. The latest BIS Triennial Central Bank Survey on forex and derivatives markets 2004 indicates a substantial rise in activity in foreign exchange markets across the world. Average daily turnover at US $1.9 trillion in April 2004 showed an increase of 57 per cent and 36 per cent at current and constant exchange rates, respectively compared to April 2001, reversing the fall in global trading volumes between 1998 and 2001. Both global factors, such as search for yield and a secular deepening in Asian financial markets contributed to the strong growth. In this context, it is important to note that the share of trading between banks and financial customers rose significantly from 28 per cent in 2001 to 33 per cent in 2004.

However, the currency composition of turnover has not changed significantly. The US dollar was on one side of 89 per cent of all transactions, followed by the Euro (37 per cent), the Yen (20 per cent) and the Pound Sterling (17 per cent). In terms of currency pairs, US dollar/Euro continued to be by far the most traded currency pair in April 2004, accounting for 28 per cent of global turnover, followed by US dollar/Yen with 17 per cent and US dollar/Pound Sterling with 14 per cent. The percentage share of the Indian rupee, though miniscule in comparison, has almost trebled to constitute 0.3 per cent of total daily turnover.

Indian Forex Market

In an open economy environment, the foreign exchange market assumes critical importance for stability of the financial system since banks' balance sheets are influenced by the foreign capital inflows and various other external transactions directly or indirectly through credit exposures. The Indian forex market has widened and deepened since the 1990s on account of implementation of various measures recommended by the High Level Committee on Balance of Payments in 1993 (Chairman: Dr. C. Rangarajan), the Expert Group on Foreign Exchange Markets in India in 1995 (Chairman: Shri O.P. Sodhani) and the Committee on Capital Accounting Convertibility in 1997 (Chairman: Shri S.S. Tarapore). With the transition to a market-determined exchange rate system in March 1993 and the subsequent gradual liberalization of restrictions on various external transactions, ensuring orderly conditions in the forex market in India has become one of the key objectives. The Reserve Bank has undertaken various measures towards development of spot as well as forward segments of foreign exchange market. As a result, the average gross daily turnover increased to US $ 12.1 billion in 2004-05 (April-March) from US $ 3.7 billion in 1996-97. The top 30 banks in India account for approximately 90 per cent of the overall turnover in the market.

India's forex market may be minuscule when compared to developed economies like the US and UK, but government efforts to ease capital movement has led to the country recording the fastest rise in its turnover growth in the segment over the last three years.

India's share in worldwide foreign exchange market turnover has grown to 0.9 per cent in 2007, marking a three-fold jump from just 0.3 per cent in 2004.

This is the fastest increase in market share for any other country in the world, according to data compiled by Switzerland-based Bank for International Settlement (BIS).

In comparison, world's largest forex market the United Kingdom has recorded a much lower change, in percentage terms, in growth to 34.1 per cent of share in 2007 from 31.3 per cent three years ago.

The US, second largest market, saw a slowdown in its share growth to 16.6 per cent this year from 19.2 per cent in 2004. Japan, third largest market, also saw its market share easing to 6 per cent from 8.3 per cent three years ago.

The growth of India among the emerging nations was notable and reflects the efforts of Indian authorities in recent times to ease control on capital movements.

Besides the highest three-fold jump in market share, India also recorded second highest growth in the daily average forex market turnover after China. India's daily average forex market turnover rose to $34 billion in 2007.

The growth rates were much lower in developed markets. The US saw its turnover rising to $664 billion this year, from $461 billion in 2004, while it rose from $753 billion to $1,359 billion in the UK during the same period.

Indian rupee's market share in the worldwide average daily turnover has also increased to 0.7 per cent in 2007, as against just 0.3 per cent in 2004. Rupee's market share in 1998 and 2001 stood at 0.1 per cent and 0.2 per cent respectively.

Overall, emerging market currencies were involved in almost 20 per cent of all transactions in April 2007. According to the report, there is an unprecedented rise in activity in traditional foreign exchange in the last three years.

Average daily turnover (worldwide) rose to $3.2 trillion in April 2007, an increase of 71 per cent at current exchange rates and 65 per cent at constant exchange rates. This increase was much stronger than the one observed between 2001 and 2004.

Further, in the backdrop of low financial market volatility and risk aversion, there has been a significant expansion in activities of investor groups including hedge funds, which was partly triggered by growth in the use of prime brokerage and retail investors.

Moreover, increased levels of technical trading such as algorithmic trading and institutional investors holding more internationally diversified portfolios are also cited as possible reasons for boosting the foreign exchange market activities.

Foreign Exchange Market Turnover

(US$ billion)

Item	*2007*	*2004*	*2001*
Global Turnover	3,210	1,970	1,420
India's Share in Global Turnover (%)	0.9	0.3	1,420

Source: Triennial Central Bank Survey, December 2007.

LESSON ROUND-UP

- Forex management may be defined as the science of management of generation, use and storage of foreign currencies in the process of exchange of one currency into other called foreign exchange.
- Exchange rate is the price of one country's money in terms of other country's money.
- Factors affecting Foreign Exchange Rates can be grouped into Fundamental Factors, Political and Psychological Factors, Technical Factors such as Capital Movement, Relative Inflation Rates. Exchange rate policy and intervention-Interest rates and Speculation.
- A spot exchange rate is a rate at which currencies are being traded for delivery on the same day.

- A direct quote indicates the number of units of the domestic currency required to buy one unit of foreign currency.
- An indirect quote indicates the number of units of foreign currency that can be exchange for one unit of the domestic currency.
- Ask price is the selling rate or the offer rate and refers to the rate at which the foreign currency can be purchased from the dealer.
- Bid price is the rate at which the dealer is ready to buy the foreign currency in exchange for the domestic currency
- The ask-bid spread depends upon the breadth and depth of the market for that currency and the volatility of the currency.

  $$\% \text{ Spread} = \frac{\text{Ask Price} - \text{Bid Price}}{\text{Ask Price}} \times 100$$

- The exchange rate between two currencies calculated on the basis of the rate of these two currencies in terms of a third currency is known as a cross rate.
- The forward rate is a price quotation to deliver the currency in future. The exchange rate is determined at the time of concluding the contract, but payment and delivery are not required till maturity.
- Transfer Pricing is a mechanism by which profits are transferred through an adjustment of prices on intra-firm transactions.
- Leading implies speeding up collections on receivables if the foreign currency in which they are invoiced is expected to appreciate.
- Lagging implies delaying payments of payables invoiced in a foreign currency that is expected to depreciate.
- Netting implies that all transactions-gross receipts and payments among the parent firm and subsidiaries should be adjusted and only net amounts should be transferred.
- Matching is a process whereby cash inflows in a foreign currency are matched with cash outflows in the same currency with regard, to as far as possible, amount and maturation
- A transaction exposure occurs when a value of a future transaction, through known with certainty, is denominated in some currency other than the domestic currency.
- Translation Exposure is also called the accounting exposure. It refers to and deals with the probability that the firm may suffer a decrease in assets value due to devaluation of a foreign currency even if no foreign exchange transaction has occurred during the year.
- The economic exposure refers to the probability that the change in foreign exchange rate will affect the value of the firm.
- Capital account convertibility implies the right to transact in financial and other assets with foreign countries without restrictions.

SELF-TEST QUESTIONS

1. What is the importance of Foreign Exchange for a country?
2. What do you understand by spot rates and forward rates?
3. What factors determine exchange rates?
4. How can forex risks be managed?

Suggested Readings:

(1) *Alan C. Shapiro:* "Multinational Financial Management", Prentice Hall of India
(2) *Rodriguez and Carter:* "International Financial Management", Prentice Hall of India
(3) *Henning, Piggot and Scott:* "International Financial Management", McGraw Hill
(4) *Maurice D. Levi:* "International Finance", McGraw Hill
(5) Annual Reports of IMF and World Bank
(6) Annual Reports of Reserve Bank of India

STUDY XIII

PRACTICAL PROBLEMS AND CASE STUDIES

CAPITAL BUDGETING

Problem No. 1

Following data in respect of two machines namely 'A' and 'B' are detailed below Depreciation has been charged on straight line basis and estimated life of both machines is five years.

		(In Rupees)
Item	*Machine 'A'*	*Machine 'B'*
Cost	*56,125*	*56,125*
Net income after depreciation and taxes:		
1st Year	*3,375*	*11,375*
2nd Year	*5,375*	*9,375*
3rd Year	*7,375*	*7,375*
4th Year	*9,375*	*5,375*
5th Year	*11,375*	*3,375*
	36,875	*36,875*

Find out—

(a) average rate of return on 'A' and 'B' machines

(b) Which machine is better from the point of view of pay-back period and why?

(c) calculate average rate of return when salvage value of machine 'A' turns out to be Rs. 3,000 and when 'B' machine has zero salvage value.

Answer to Problem No. 1

(a) Average Rate of Return (ARR)

$$\text{ARR} = \frac{\text{average net income after taxes}}{\text{average investment}}$$

Average income of machine 'A' = $\frac{36,875}{5}$ = Rs. 7,375

Average income of machine 'B' = $\frac{36,875}{5}$ = Rs. 7,375

Average investment = $\frac{1}{2}$ (Rs. 56,125) = Rs. 28,062.50

(Average investment of Machine A and Machine B is the same as the cost is same)

ARR for Machine A = $\frac{7,375}{28,062.50} \times 100 = 26.28\%$

ARR for Machine B = $\frac{7,375}{28,062.50} \times 100 = 26.28\%$

(b) From the Point of View of Pay-back Period

From this point of view, Machine B 476 as the initial inflow is much higher compared to Machine A and hence Mac ıvides large liquidity of funds.

(c) Average Rate of Return when Salvage Value of Machine A is Rs. 3,000

Average Investment = Rs. 3,000 + 1/2 (56,125 – 3000)
= Rs. 3,000 + 26,563 (approximately)
= Rs. 29,563 (approximately)

$$ARR = \frac{\text{Average income}}{\text{Average investment}}$$

$$= \frac{7,375}{29,563} \times 100$$

= 24.95%

ARR of Machine A = 24.95%

As Machine B does not have any salvage value, the ARR for Machine B will remain the same, i.e. 26.28% (as calculated in (a) above).

Problem No. 2

A Company is contemplating to purchase a machine. Two machines A and B are available, each costing Rs. 5,00,000. In comparing the profitability of the machines, a discounted rate of 10% is to be used. Earnings after taxation are expected as follows:

CASH FLOW

Year	*Machine 'A' (Rs.)*	*Machine 'B' (Rs.)*
I	*1,50,000*	*50,000*
II	*2,00,000*	*1,50,000*
III	*2,50,000*	*2,00,000*
IV	*1,50,000*	*3,00,000*
V	*1,00,000*	*2,00,000*

Indicate which of the machines would be profitable using the following methods of ranking investments proposals:

(i) Pay back method
(ii) Net present value method
(iii) Post pay back profitability
(iv) Average rate of return.

This discount factor at 10% is:

1st year	—	*.9091*
2nd year	—	*.8264*
3rd year	—	*.7513*
4th year	—	*.6830*
5th year	—	*.6209*

Answer to Problem No. 2

(i) Pay Back Method:

Pay back period for Machine 'A'

	Cash Flow (Rs.)		
Year	*Total*	*Needed*	*Pay back years required*
I	1,50,000	1,50,000	1 year
II	2,00,000	2,00,000	1 year
III	2,50,000	1,50,000	7 months = $\left(\frac{1,50,000}{2,50,000}\right)\times 12$
Investment		5,00,000	
Total pay back period			2 years 7.2 months

Pay back period for Machine 'B'

	Cash Flow (Rs.)		
Year	*Total*	*Needed*	*Pay back years required*
I	50,000	50,000	1 year
II	1,50,000	1,50,000	1 year
III	2,00,000	2,00,000	1 year
IV	3,00,000	1,00,000	4 months = $\left(\frac{1,00,000}{3,00,000}\right)\times 12$
Investment		5,00,000	
Total pay back period			3 years 4 months

Rankings:	Machine 'A'	Machine 'B'
	I	II

(ii) Net Present Method:

Calculation of Present Values of Cash Flows

Year	*Cash Flow (Rs.)*		*Discount Factor @10%*	*Present Value (Rs.)*	
	Machine 'A'	*Machine 'B'*		*Machine 'A'*	*Machine 'B'*

I	1,50,000	50,000	0.9091	1,36,365	45,455
II	2,00,000	1,50,000	0.8264	1,65,280	1,23,960
III	2,50,000	2,00,000	0.7513	1,87,825	1,50,260
IV	1,50,000	3,00,000	0.6830	1,02,450	2,04,900
V	1,00,000	2,00,000	0.6209	62,090	1,24,180
		Total Present Value		6,54,010	6,48,755
		Initial Investment		5,00,000	5,00,000
		Net Present Value		1,54,010	1,48,755
		Ranking		I	II

(iii) Post Pay Back Profitability:

	Machine 'A' Rs.	*Machine 'B' Rs.*
Total Actual Cash Flows	8,50,000	9,00,000
Less: Initial Investment (Recovered during pay-back)	5,00,000	5,00,000
Post Pay back Profitability	3,50,000	4,00,000
Ranking	II	I

(iv) Return on Investment Method:

$$\text{Return on Investment}^{*} = \frac{\text{Average Annual Cash Flow}}{\text{Initial Investment}} \times 10$$

	Machine 'A' Rs.	*Machine 'B' Rs.*
Total cash flows	8,50,000	9,00,000
(*Less* Depn. For 5 years)	5,00,000	5,00,000
Net earning after tax and depn.	3,50,000	4,00,000
Life of Machine (yrs)	5	5
Average earning per year	70,000	80,000
Initial cost	5,00,000	5,00,000
ARR	$\left(\frac{70,000}{5,00,000} \times 100\right)$ = 14%	$\left(\frac{80,000}{5,00,000} \times 100\right)$ = 16%
Ranking	II	I

Problem No. 3

Following are the details of three project A, B and C

	A	*B*	*C*
Cost (Rs.)	*50,000*	*70,000*	*70,000*
Life	*10 years*	*12 years*	*14 years*

Estimated scrap (Rs.)	*5,000*	*10,000*	*7,000*
Annual Profit Less Taxation (Rs.)	*5,000*	*6,000*	*5,500*

Select the best one using

(i) Pay back period

(ii) Surplus life over pay back period

(iii) Surplus cash flow, as the decision criterion.

***** Note: It may be calculated by using other methods also.

Answer to Problem No. 3

(a) Under pay-back method, the project which has the shortest pay-back period is selected. The pay-back period is the length of time required for recovering the initial investment out of the annual cash flow. In our question, the following are the pay-back periods of projects A, B and C.

Project A 50,000/5,000 = 10 years
Project B 70,000/6,000 = 11.66 years
Project C 70,000/5,500 = 12.73 years

(b) From the above, one can simply say that, on the basis of surplus life over pay-back period, Project C is the best because, C has the longest surplus life of 1.27 years. (14 – 12.73). However, to be more scientific, the scrap value should be taken into account in this case, because if the full life is alowed to be run the scrap value will be realised. One way to do this would be to deduct scrap value from initial cost and calculate the time period required to cover this cost. The difference between the life of the project and the time required to cover this cost may then be taken to represent the surplus life. On this basis, the surplus life of our projects are:

Project A: 10 years — (45,000/5,000) years = 1 year
Project B: 12 years — (60,000/6,000) years = 2 years
Project C: 14 years — (63,000/5,500) years = 2.55 years

So, Project 'C' is the best one.

(c) In our question, time value of money has been ignored. As such, the calculation of surplus cash flow, thus becomes easier. The scrap value may be deducted from the initial cost to derive the actual cost. On this basis, the surplus cash flows from each project after the life of each project is over, are:

	A	B	C
	Rs.	Rs.	Rs.
Total cash flow:	50,000	72,000	77,000
Initial cost:	(–) 45,000	(–) 60,000	(–) 63,000
Surplus	5,000	12,000	14,000

However, in order to select the best project we must see the highest rate of cash flow:

For Project A, the rate of surplus cash flow is 1.1 per cent per annum.

For Project B, the rate of surplus cash flow is 1.7 per cent per annum.

For Project B, the rate of surplus cash flow is 1.6 per cent per annum.

On the above basis, Project B yields the highest rate of surplus cash flow per annum and is the best.

Alternative Solution

Depreciation	A	B	C
Cost (Rs.)	50,000	70,000	70,000
Less Scrap (Rs.)	5,000	10,000	7,000
	45,000	60,000	63,000
Life (years)	10	12	14
Depreciation p.a. (Rs.)	4,500	5,000	4,500
Pay Back:			
Projects	A (Rs.)	B (Rs.)	C (Rs.)
Profits less Taxation	5,000	6,000	5,500
Depreciation	4,500	5,000	4,500
	9,500	11,000	10,000
Pay Back	50,000	70,000	70,000
	9,500	11,000	10,000
	= 5.3 years	= 6.4 years	= 7 years
Rank	I	II	III
Life	10 years	12 years	14 years
Profitable Period	4.7 years	5.8 Years	7 years
Rank	III	II	I
Cash Flows over the profitable period	Rs. 44,650	Rs. 63,800	Rs. 70,000
Estimated Scrap	5,000	10,000	7,000
Surplus Cash Flow	49,650	73,800	77,000
Rank	III	II	I

Problem No. 4

The particulars relating to two alternative Capital Projects are furnished below:

Life of the project	*PROJECT X 4 years*	*PROJECT Y 6 years*
	(Rs. in lakhs)	
Estimated Cash Outflow	*15*	*15*
Estimated Cash Inflow		
1st Year	*8*	*7*
2nd Year	*10*	*8*
3rd Year	*7*	*8*
4th Year	*3*	*6*
5th Year	*—*	*5*
6th Year	*—*	*4*

Compute internal rate of return of Project X and Y and state which project you could recommend. You may use the present value tables given below:

PRESENT VALUE OF Re. 1

After	*20%*	*25%*	*30%*	*35%*	*40%*	*45%*	*50%*
1st	*0.833*	*0.800*	*0.769*	*0.741*	*0.714*	*0.690*	*0.677*
2nd	*0.694*	*0.640*	*0.592*	*0.549*	*0.510*	*0.476*	*0.444*
3rd	*0.579*	*0.512*	*0.455*	*0.406*	*0.364*	*0.328*	*0.296*
4th	*0.482*	*0.410*	*0.350*	*0.301*	*0.260*	*0.226*	*0.198*
5th	*0.402*	*0.328*	*0.269*	*0.223*	*0.186*	*0.156*	*0.132*
6th	*0.335*	*0.262*	*0.207*	*0.165*	*0.133*	*0.108*	*0.088*

Answer to Problem No. 4

OUT FLOW: Rs. 15,00,000

Project X

Years	*Cash Inflow (Rs.)*	*Discount Factor @25%*	*Present Value (Rs.)*	*Discount Factor @30%*	*Present Value (Rs.)*
1st Year	8,00,000	.800	6,40,000	.769	6,15,200
2nd Year	10,00,000	.640	6,40,000	.592	5,92,000
3rd Year	7,00,000	.512	3,58,400	.455	3,18,500
4th Year	3,00,000	.410	1,23,000	.350	1,05,000
	Inflow	35%		40%	
1st Year	8,00,000	.741	5,92,800	.714	5,71,200
2nd Year	10,00,000	.549	5,49,000	.510	5,10,000
3rd Year	7,00,000	.406	1,84,200	.364	2,54,800
4th Year	3,00,000	.301	96,300	.260	78,000
			15,16,300		14,14,000

PV required Rs. 15,00,000

PV at 35% Rs. 15,16,300 — 16,300 — 5%

PV at 40% Rs. 14,14,000 — 1,02,300

$$IRR = 35\% + \frac{16,300}{1,02,300} \times 5 = 35.8\%$$

Project Y *OUT FLOW: Rs. 15,00,000*

Years	*Cash Inflow (Rs.)*	*Discount Factor @30%*	*Present Value (Rs.)*	*Discount Factor @40%*	*Present Value (Rs.)*
1	*2*	*3*	*4*	*5*	*6*
1	7,00,000	.741	5,18,700	.714	4,99,900
2	8,00,000	.549	4,39,200	.51	4,08,000
3	8,00,000	.406	3,24,800	.364	2,91,200
4	6,00,000	.301	1,80,600	.26	1,56,000
5	5,00,000	.223	1,11,500	.186	93,000
6	4,00,000	.165	66,000	.133	53,000
			16,40,800		15,01,200

1	*2*	*3*	*4*	*5*	*6*
		45%			
1	7,00,000	.69	4,83,000	PV required Rs. 15,00,000	
2	8,00,000	.476	3,80,800	PV at 40% Rs. 15,01,200	1,200 5%
3	8,00,000	.328	2,62,400	PV at 45% Rs. 13,83,000	1,18,200
4	6,00,000	.226	1,35,600		
5	5,00,000	.156	78,000		
6	4,00,000	.106	43,200		
			13,83,000		

$$IRR = 40\% + \frac{1{,}200}{1{,}18{,}200} \times 5$$

$$= 40 + .05 = 40.05\%$$

The profitability statement of project X shows that at 35 per cent, trial cash inflows are marginally greater and therefore 35 per cent is the rate of return which equates the present value of inflows with outflows. After employing the interpolation techniques the true rate in case of project 'X' comes to be 35.8%. The profitability of project 'Y' shows that the rate of return is 40%. Using the rate of return method project 'Y' yields a rate of return of 40.05 per cent while project 'X' yields 35.8%. On this basis Project 'Y' is recommended.

Problem No. 5

A company is faced with the problem of choosing between two mutually exclusive projects. Project A requires a cash outlay of Rs. 1,00,000 and cash running

expenses of Rs. 35,000 per year. On the other hand, Project B will cost Rs. 1,50,000 and require cash running expenses of Rs. 20,000 per year. Both the projects have a eight-year life. Project A has a Rs. 4,000 salvage value and Project B has a Rs. 14,000 salvage value. The company's tax rate is 50% and rate of return is 10%. Assume depreciation on straight line basis. Which project should be accepted. Present value of Re. 1 at the end of each year at 10% for 8 years is equal to Rs. 5.335 and present value of Re. 1 at the end of 8th year at 10% is equal to Re. 0.467.

Answer to Problem No. 5

	Project A Rs.	*Project B* Rs.	*Differential cash flow (B-A)* Rs.	*Differential net cash flow (B-A)* Rs.
1	2	3	4	5
Cash Outlay	1,00,000	1,50,000	□50,000	□50,000
Cash running expenses before taxes (for 8 years)	35,000	20,000	+15,000	—
tax saving (@ 50%) on expenses (for 8 years)	17,500	10,000	□7,500	7,500
1	2	3	4	5
Net savings depreciation (for 8 years)	12,000	17,000	+ 5,000	—
tax savings on depreciation (for 8 years) 6,000	6,000	8,500	□2,500	2,500
Net savings				10,000
Salvage (at the end of 8 years)	4,000	14,000	10,000	10,000

Thus, if Project B is chosen it would require an additional outlay of Rs. 50,000 but would save in terms of cash inflows Rs. 10,000 each year for eight years. This project should be accepted if it has a positive net present value at a 10% discount rate.

		Rs.
PV of Rs. 10,000 each for eight years @ 10%	10,000 □5.335	= 53,350
PV of Rs. 10,000 at the end of eight years @ 10%	10,000 □ .467	= 4,670
		58,020
Cash outlay		50,000
Net present value		8,020

As Project B will offer whatever Project A offers and also helps in generating an additional net present value of Rs. 8,020 it should be preferred to Project A.

Problem No. 6

The Klein & Co. is contemplating either of two mutually exclusive projects. The data

with respect to each are given below. The initial investment for both is equal to their depreciable value. Both will be depreciated straight line over a five-year life.

	Project A (Rs.)	*Project B (Rs.)*
Initial Investment	*1,00,000*	*1,40,000*
Year	*Profits after taxes*	
1	*10,000*	*25,000*
2	*15,000*	*25,000*
3	*20,000*	*25,000*
4	*25,000*	*25,000*
5	*35,000*	*25,000*

(i) Calculate the 'net present value' and 'benefit-cost ratio' for each project.

(ii) Evaluate the acceptability of each project on the basis of above mentioned two techniques.

(iii) Select the best project, using NPV and benefit cost ratios and comment on the resulting rankings.

(iv) Assume that the Klein Co. has an 11% cost of capital.

(v) The following data relates to discounting factor:

Year	*Discounting factor at 11%*
1	*.901*
2	*.812*
3	*.731*
4	*.659*
5	*.593*

and discounting factor for present value of an annuity discounted at 11% for five years is 3.696.

Answer to Problem No. 6

(i) The NPV for project A can be calculated as follows:

Year	*Cash inflow after tax but adding back depreciation (Rs.)*	*Present value interest factor at 11%*	*Present value (Rs.)*
1	30,000	.901	27,030
2	35,000	.812	28,420
3	40,000	.731	29,240
4	45,000	.659	29,655
5	55,000	.593	32,515
			1,46,600

For Project A, question provides data regarding profits after taxes. To obtain cash inflow, therefore, we have to add depreciation amount. Total project investment is

Rs. 1,00,000. Life of the project is 5 years and it is depreciated at straight line method. Therefore, depreciation amount would be Rs. 20,000 each year which should be added to PAT to obtain CI (Cash Inflow).

Similarly, for project B, the depreciation amount would be Rs. 28,000 per year, which should be added to PAT for obtaining Cash Inflow.

PV for inflow : (3.696) (53,000) = Rs. 1,95,888
NPV of Project B = 1,95,888 □1,40,000 = Rs. 55,888
NPV of Project A = 1,46,960 □1,40,000 = Rs. 46,960

Benefit Cost Ratio

The benefit-cost ratio (B/C) can easily be determined by dividing the present value of inflow by the initial investment in each case.

$$\text{Project A} \quad B/C = \frac{1,46,960}{1,00,000} = 1.47$$

$$\text{Project B} \quad B/C = \frac{1,95,888}{1,40,000} = 1.40$$

(ii) On the basis of both NPV and B/C ratios, both projects are acceptable because their NPVs are greater than zero and their B/Cs are greater than one respectively.

(iii) On the basis of NPV, project B is preferable to project A. On the basis of B/C ratios, project A is preferable to project B. If the firm is operating under capital rationing the B/C ratio approach would be best (i.e. project A preferred), while if the firm has unlimited funds, the NPV approach is best (i.e. project B preferred).

Problem No. 7

M/s Lalvani & Co. has Rs. 2,00,000 to invest. The following proposal are under consideration. The cost of capital for the company is estimated to be 15 per cent.

Project	*Initial Outlay Rs.*	*Annual Cash Flow Rs.*	*Life of Project (Years)*
A	1,00,000	25,000	10
B	70,000	20,000	8
C	30,000	6,000	20
D	50,000	15,000	10
E	50,000	12,000	20

Rank the above projects on the basis of—

(i) Pay-back method

(ii) NPV method

(iii) Profitability index method

Present value of annuity of Re. 1 received in steady steam discount at the rate of 15%

8 years = 4.6586
10 years = 5.1790
20 years = 6.3345

Answer to Problem No. 7

The ranking of various project under the various methods are shown below:

(i) Pay-Back Method:

$$\text{Pay back period} = \frac{\text{Initial Investment}}{\text{Annual cash flows}}$$

The project with the lowest pay-back period is to be ranked first.

Project	*Initial Investment Rs.*	*Annual Cash Flow Rs.*	*Pay-back period (in years)*	*Ranking*
A	1,00,000	25,000	4	3
B	70,000	20,000	3.5	2
C	30,000	6,000	5	5
D	50,000	15,000	3.33	1
E	50,000	12,000	4.17	4

(ii) Net Present Value Method: The project with the highest N.P.V. is to be ranked first.

Pro-ject	*Initial invest-ment Rs.*	*Annual Cash Flow Rs.*	*Life in years*	*PV Factor at 15%*	*PV Rs.*	*NPV Rs. (6-2)*	*Ranking*
A	1,00,000	25,000	10	5.1790	1,29,475	29,475	1
B	70,000	20,000	8	4.6586	93,172	23,172	4
C	30,000	6,000	20	6.3345	38,007	8,007	5
D	50,000	15,000	10	5.1790	77,685	27,685	2
E	50,000	12,000	20	6.3345	76,014	26,014	3

(iii) Profitability Index Method: The project which shows the highest profitability index is to be ranked first.

$$\text{Profitability Index} = \frac{\text{Total Present Value of Cash flows}}{\text{Initial Investment}}$$

Project	*Initial investment Rs.*	*Annual Cash Flow Rs.*	*Life in years*	*PV Factor at 15%*	*PV Rs.*	*Profitability Index*	*Ranking*
A	1,00,000	25,000	10	5.1790	1,29,475	1.29	4
B	70,000	20,000	8	4.6586	93,172	1.33	3
C	30,000	6,000	20	6.3345	38,007	1.27	5
D	50,000	15,000	10	5.1790	77,685	1.55	1
E	50,000	12,000	20	6.3345	76,014	1.52	2

Problem No. 8

Mohan & Co. is considering the purchase of a machine. Two machines X and Y each costing Rs. 50,000 are available. Earnings after taxation are expected to be as under:

Year	*Machine X (Rupees)*	*Machine Y (Rupees)*	*Discount factor at 10%*
1st	15,000	5,000	.9091
2nd	20,000	15,000	.8264
3rd	25,000	20,000	.7513
4th	15,000	30,000	.6830
5th	10,000	20,000	.6209

Estimate the two alternatives according to—

(i) Payback method;

(ii) Return on investment method;

(iii) Net present value method – a discount rate of 10% is to be used.

Answer to Problem No. 8

(i) Payback method:

	Earning Machine X (Rs.)	*Earning Machine Y (Rs.)*	*Cumulative Earning Machine X (Rs.)*	*Cumulative Earning Machine Y (Rs.)*

Year				
1st	15,000	5,000	15,000	5,000
2nd	20,000	15,000	35,000	20,000
3rd	25,000	20,000	60,000	40,000
4th	15,000	30,000	75,000	70,000
5th	10,000	20,000	85,000	90,000

Initial Investment = Rs. 50,000

Pay back period for Machine X = $15,000 + 20,000 + \frac{15,000}{25,000} \times 12$

= 2 years 7 months 6 days.

Pay back period for Machine Y = $5,000 + 15,000 + 20,000 + \frac{10,000}{30,000} \times 12$

= 3 years 4 months

(ii) Return on Investment Method:

PARTICULARS	*MACHINE – X*	*MACHINE – Y*
Total of Cash flows	Rs. 85,000	Rs. 90,000
Average Annual Cash flows	Rs. 85,000/5 = Rs. 17,000	Rs. 90,000/5 = Rs. 18,000
Annual Depreciation	Rs. 10,000	Rs. 10,000
Annual Net Savings	Rs. 17,000 – 10,000 = Rs. 7,000	Rs. 18,000 – 10,000 = Rs. 8,000
Average Investment	Rs. 50,000/2 = Rs. 25,000	Rs. 50,000/2 = Rs. 25,000
Return on Investment	$\frac{\text{Annual Net Savings}}{\text{Average Investment}} \times 100$	
	$\frac{7,000 \times 100}{25,000} = \frac{8,000 \times 100}{25,000}$	
	= 28% = 32%	

Note: In this case, Net cash flows after depreciation have been calculated for arriving at the ROI. The question can be solved with gross cash flows also.

(iii) Net present value method

Calculation of Present Value of Cash Flows

Year	*Discount factor at 10%*	*Machine X*		*Machine Y*	
		Cash flow	*P.V.*	*Cash flow*	*P.V.*
		Rs.	Rs.	Rs.	Rs.
1	.9091	15,000	13,636	5,000	4,545
2	.8264	20,000	16,528	15,000	12,396
3	.7513	25,000	18,782	20,000	15,026
4	.6832	15,000	10,245	30,000	20,490

5	.6209	10,000	6,209	20,000	12,418
		85,000	65,400	90,000	64,875

Net Present Value = Present value – Initial Investment
Net Present Value of Machine X = Rs. 65,400 – Rs. 50,000
= Rs. 15,400
Net Present Value of Machine Y = Rs. 64,875 – Rs. 50,000
= Rs. 14,875

It is evident from the above calculations that machine X would be preferred under the pay-back method and Net Present Value Method while machine Y would be preferred under the return on investment method. But NPV method is more scientific and therefore investment in Machine X will be more profitable while taking the time value of cash inflows into consideration.

Problem No. 9

Calculation the payback period, accounting rate of return, net present value and internal rate of return for the following investment:

Year	*Cashflow (Rs.)*
0	*(30,000)*
1	*4,000*
2	*10,000*
3	*20,000*
4	*11,000*

The discount rate for discounted cashflow (DCF) calculation is 12 per cent. Accounting profits are the same as cashflow except that the initial expenditure should be depreciated over 4 years; there is no resale value at year 4.

Answer to Problem No. 9

Calculation of Pay Back Period

Year	*Cashflow (Rs.)*	*Cumulative Cash Inflow (Rs.)*
0	(30,000)	—
1	4,000	4,000
2	10,000	14,000
3	20,000	34,000
4	11,000	45,000

Pay back period = 2 years + (16/20 □12) = 2.8 years (app.)

Accounting Rate of Return

Annual depreciation = 30,000/4 = Rs. 7,500
Accounting profits/(losses) =

		(Rs.)
Year 1	4,000 – 7,500	= (3,500)
Year 2	10,000 – 7,500	= 2,500
Year 3	20,000 – 7,500	= 12,500
Year 4	11,000 – 7,500	= 3,500
		15,000

Average profits $= \frac{15,000}{4}$ = Rs. 3,750

ARR $= \frac{3,750' \ 100}{30,000}$ = 12.5%

Net Present value

Year	*Cashflow (Rs.)*	*DF@12%*	*PV (Rs.)*
0	(30,000)	1.0	(30,000)
1	4,000	0.8929	3,572
2	10,000	0.7972	7,972
3	20,000	0.7118	14,236
4	11,000	0.6355	6,991
			NPV = Rs. 2,771

Internal Role of return

Discount at 16% and use linear interpolation:

Year	*Cashflow (Rs.)*	*DF@16%*	*PV (Rs.)*
0	(30,000)	1.0	(30,000)
1	4,000	0.8621	3,448
2	10,000	0.7432	7,432
3	20,000	0.6407	12,814
4	11,000	0.5523	6,075
			NPV = Rs. (231)

$$\text{IRR} = 12\% + \left(\frac{2,771}{2771 + 231} \times 4\% \right) = 15.7\%$$

Problem No. 10

The management of a company has two alternative projects under consideration. Project A requires a capital outlay of Rs. 1,20,000 but Project B needs Rs. 1,80,000. Both are estimated to provide a cash flow for five years: A – Rs. 40,000 per year and B – Rs. 58,000 per year. The cost of capital is 10%. Show which of the two projects is preferable from the viewpoint of (i) Net Present Value; and (ii) Internal rate of Return.

Answer to Problem No. 10

(i) Determination of NPV

Years	*CFAT Project*		*P.V. Factor at 10%*	*Total P.V.*	
	A	*B*		*A*	*B*

1—5	Rs. 40,000	58,000	3.791	Rs. 1,51,640	2,19,878
Less: Cash Outlay				1,20,000	1,80,000
Net Present Value				Rs. 31,640	39,878

In the above case, Project B is preferable as its NPV is more than that of A.

(ii) Determination of IRR

$$\text{Payback Period} = \frac{1,20,000}{40,000} = 3 \text{ years (Project A)}$$

$$= \frac{1,80,000}{58,000} = 3.1034 \text{ (Project B)}$$

Annuity Table indicates that closest factor to 3.0 against five years are 3.058 (19%) and 2.991 (20%).

By interpolation, we get

$$IRR_A = r_1 + \frac{(PV_{CFAT} - PV_C)}{PV} \times 1$$

$$= 19 + \frac{(1,22,320 - 1,20,000)}{2680} \times 1$$

$$= 19 + 0.86$$

$$= 19.86\%$$

In case of Project B, Annuity Table indicates that closest factor to 3.0134 against five years are 3.127 (18%) and 3.058 (19%). By interpolation, we get

$$IRR_B = 18 + \frac{(1,81,366 - 1,80,000)}{4,002} \times 1$$

$$= 18 + \frac{(1,366)}{(4,002)} \times 1$$

$$= 18 + 0.34 = 18.34\%$$

So project A is preferable as its IRR is greater that of B.

Problem No. 11

Andhra Pradesh Udyog is considering a new automatic blender. The new blender would last for 10 years and would be depreciated to zero over the 10 year period. The old blender would also last for 10 more years and would be depreciated to zero over the same 10 year period. The old blender has a book value of Rs. 20,000 but could be sold for Rs. 30,000 (the original cost was Rs. 40,000). The new blender would cost Rs. 1,00,000. It would reduce labour expense by Rs. 12,000 a year. The company is subject to a 50% tax rate on regular income and a 30% tax rate on capital gains. Their cost of capital is 8%. There is no investment tax credit in effect.

You are required to—
(a) Identify all the relevant cash flows for this replacement decision.
(b) Compute the present value, net present value and profitability index.
(c) Find out whether this is an attractive project?

Answer to Problem No. 11

(a) Tax on the sale of the old machine:

Original cost	Rs. 40,000
Sale Price	Rs. 30,000
Book value	Rs. 20,000
Rs. 10,000 □50	Rs. 5,000 tax on sale

After tax cash receipts from sale of old machine:

Sale Price	Rs. 30,000
Taxes on sale	5,000
After-tax cash receipts	Rs. 25,000

Net cash flow to replace old machine with new:

Cost of new machine	Rs. 100,000
After-tax receipt from sale of old machine	Rs. 25,000
Net cash flow to replace old machine with new	Rs. 75,000

Depreciation on new machine	= 1,00,000/10 =	Rs. 10,000
Depreciation on old machine	= 20,000/10 =	Rs. 2,000

	Book Value	*Cash flow*
Annual labour savings	Rs. 12,000	Rs. 12,000
Increased depreciation (Rs. 10,000 – Rs. 2,000)	8,000	
Increased earnings before tax	Rs. 4,000	
Increased tax	2,000	2,000
Increased earnings after tax	Rs. 2,000	
Increased after-tax cash flow		Rs. 10,000

(b) Calculation of present value at 8% discount rate are tabulated below:

Year	*Cash flow*	*Present value factor*	*Present value*
1–10	Rs. 10,000	6.710	Rs. 67,100

Present value	=	Rs. 67,100	
Net present value	=	Rs. 67,100 – Rs. 75,000	= □Rs. 7,900
Profitability Index	=	Rs. 67,100/75,000	= .895

(c) Since the net present value is negative and profitability index is less than one, the project is not an attractive project.

Problem No. 12

A most profitable company in the country is faced with the prospect of having to replace a large stamping machine. Two machines currently being marketed will do the job satisfactorily. The Zenith Stamping machine costs Rs. 100,000 and will require cash running expenses of Rs. 40,000 per year. The Godrej

Stamping machine costs Rs. 150,000 but running expenses are only expected to be Rs. 30,000 per year. Both machines have a ten-year useful life with no salvage value and would be depreciated on a straightline basis.

(a) If the company pays a 50% tax rate and has 10% after-tax required rate or return, which machine should it purchase?

(b) Would your answer be different if the required rate of return were 8%?

Answer to Problem No. 12

	Godrej Rs.	*Zenith Rs.*	*Differential Rs.*
Initial outlay	Rs. 1,50,000	Rs. 1,00,000	Rs.50,000
Operating expenses	30,000	40,000	10,000
Depreciation	15,000	10,000	5,000
Expenses savings-depreciation			5,000
Tax on the above			2,500
Cash flow			7,500
(Expenses savings of Rs. 10,000 - tax)			
Present value of Re. 1 received each year for 10 year			= 5.6502
Rs. 7,500 □5.65			= 42,376

Since the present value of the incremental cash flow benefits Rs. 42,376 is less than the differential cash outlay of Rs. 50,000, the additional cost of the Godrej machine cannot be justified. Thus, the Zenith machine should be purchased.

(b) Present value of Cash flow at 8% for 10 year = Rs.7,500 □6.7101=Rs.50,336

Since the present value of incremental benefits, Rs. 50,336 now exceeds Rs. 50,000 the Godrej machine should be purchases.

Problem No. 13

Saroj & co. is considering purchase of a machine that will enable production to increase by 2.5% (from 40,000 units to 50,000 units). The machine costs Re. 1 lakh and has a useful life of 10 years with a salvage value of 5%. The company is eligible for investment allowance of 25%. There will be increased requirement of working capital to the extent of Rs. 20,000. The following additional information is also furnished to you :

Variable cost (per unit) — Rs. 5
Fixed cost (per annum) — Rs. 1,00,000

The variable costs will remain the same but the fixed costs will increase by the amount of depreciation on the new machine. The current selling price is Rs. 10 per unit, which may have to be brought down by 50 paise in order to sell the entire production of 50,000 units.

The company adopts straight line method of depreciation, tax rate is 50% and the

minimum required rate of return is 15%. P.V. factors at 15%.

(i) Present value of an annuity of Re. 1 at the end of 9 years = 4.772
(ii) Present value of Re. 1 receivable at the end of the 10 years = 0.247

Discuss if it would be advisable for the company to purchase the machine.

Answer to Problem No. 13

1. Cash Outflows (period 0f):

	Rs.
Cost of new machine	1,00,000
Working capital increase	20,000
Tax saving on account of investment allowance* i.e.	
□(25% of Rs. 1 lakhs □50%)	(12,500)
Net outlay	1,07,500

*This could also be considered at year 1 end.

2. Cash inflows (year to year 9):

	Existing Rs.	*Proposed Rs.*
Revenues:	4,00,000	
40,000 units @ Rs. 10		
50,000 units @ Rs. 9.50		4,75,000
Variable cost		
40,000 units @ Rs. 5	2,00,000	
50,000 units @ Rs. 5	_____	2,50,000
Contribution margin	2,00,000	2,50,000
Fixed cost	1,00,000	1,09,500**
Surplus	1,00,000	1,15,500
Excess marginal contribution		15,500
Less: Tax @ 50%		7,750
		7,750

Incremental Cash Flow from year 1 to 9
after tax (including depreciation) Rs. 7,750 + Rs. 9,500
= Rs. 17,250

3. Cash Inflow (10th year):

	Rs.
Annual incremental cash flow	17,250
Working capital recovered	20,000
5% salvage value of machine	5,000
	42,250

4. Present value of Cash Flows:

Year	*Cash flow (Rs.)*	*P.V. at 15%*	*Total P.V .(Rs.)*
1–9	17,250	4,772	82,317.00
10	42,250	0.247	10,435.75
		Total	92,752.75
		P.V. of outlays	1,07,500.75
		Net Present Value	(14,747.25)

The machine yields negative P.V. of (Rs.14,747.25) and hence should not be procured. Therefore, it would not be advisable for the company to purchase the machine.

****Note:** Depreciation $= \frac{\text{Cost - Salvage Value}}{\text{Useful life}}$

$= \frac{\text{Rs. 1,00,000 - Rs. 5,000}}{10} = \text{Rs. 9,500 p.a.}$

Fixed cost = Rs. 1,00,000 + Rs. 9,500 = Rs. 1,09,500.

Problem No. 14

Rama manufacturing company must choose between constructing a large or small factory to produce a new line of products. The large plant would be needed if the future brings a high demand for new products. But the large plant would have a net cash inflows below the Rs. 20,00,000 outlay, if demand for the product is medium or low. The present value of cash inflows are Rs. 28,00,000 with high demand, Rs. 18,00,000 with medium demand and Rs. 12,00,000 with low demand. The smaller plant produces a lower return if demand is high but has positive net present values at medium demand for the products. It would cost Rs. 4,00,000 as a cash outlay and would return a present value inflow of Rs. 6,40,000 with high demand, Rs. 5,40,000 with medium demand and Rs. 3,60,000 with low demand. What is the net present value (NPV) of each alternative if there is 40% chance of high demand and 20% chance of low demand.

Answer to Problem No. 14

Capital outlay for large project – Rs. 20,00,000

Probabilities of demand for products	*Present value of cash inflow (Rs.)*	*Expected Return (Rs.)*
1	2	3 = 1 □2
High demand (.40)	28,00,000	11,20,000
Medium demand (.40)	18,00,000	7,20,000
Low demand (.20)	12,00,000	2,40,000
Total Expected Return		20,80,000
Less: Capital outlay		20,00,000
NPV		80,000

Capital outlay for small project – Rs. 4,00,000

Probabilities of demand for products	*Present value of cash inflow (Rs.)*	*Expected Return (Rs.)*
1	2	3 = 1 □2
High demand (.40)	6,40,000	2,56,000
Medium demand (.40)	5,40,000	2,16,000
Low demand (.20)	3,60,000	72,000
Total Expected Return		5,44,000
Less: Capital outlay		2,00,000
NPV		1,44,000

From the above it is clear that the small factory is a better investment on NPV basis.

Problem No. 15

A product is currently being manufactured on a machine that has a book value of Rs. 30,000. The machine was originally purchased for Rs. 60,000 ten years ago. The per unit costs of the product are: Direct labour Rs. 8.00; direct materials Rs. 10.00; variable overheads Rs. 5.00; fixed overheads Rs. 5.00; and total is Rs. 28.00. In the past year 6,000 units were produced and sold for Rs. 50.00 per unit. It is expected that the old machine can be used indefinitely in the future.

An equipment manufacturer has offered to accept the old machine at Rs. 20,000, a trade-in for a new version. The purchase price of the new machine is Rs. 1,00,000. The projected per unit costs associated with the new machine are: direct labour Rs. 4.00; direct materials Rs. 7.00; variable overheads Rs. 4.00; fixed overheads Rs. 7.00; and total is Rs. 22.00.

The management also expects that, if the new machine is purchased, the new working capital requirement of the company would be less by Rs. 10,000. The fixed overheads costs are allocations from other departments plus the depreciation of the equipment. The new machine has an expected life of ten years with no salvage value; the straight line method of depreciation is employed by the company. It is also expected that the future demand of the product would remain at 6,000 units per year. Should the new equipment be acquired? Corporate tax is @ 50%.

Notes:

(i) Present value of annuity of Re. 1.00 at 10% rate of discount for 9 years is 5.759.

(ii) Present value of Re. 1.00 at 10% rate of discount, received at the end of 10th year is 0.386.

Answer to Problem No. 15

Determination of Cash Outflows t = 0

		Rs.	*Rs.*
Cost of new machine			1,00,000
Less : (i)	Sale value of old machine	20,000	
(ii)	Tax saving due to direct loss on the sale of old machine @ 50% on Rs. 10,000 (i.e. 30,000 – 20,000)		
(iii)	Release of working capital	10,000	35,000
Net cash outflows			65,000

Calculation of Cash Inflows:

			Rs.	*Rs.*
I.	Cost saving after tax:			
	Cost saving: 6,000 x 8*****	=	48,000	
	Less: Tax @ 5%	=	24,000	24,000
II.	Tax saving on additional depreciation			
	Depreciation on new machine		10,000	
	Less: Depreciation on old machine		3,000	
	Additional Depreciation		7,000	
	Tax saving @ 50% on Rs. 7,000			3,500
	Cash inflows after tax i.e. CFAT (t = 1 to 10)			27,500

Determination of Net Present Value:

Year	*CFAT*	*PV factor at 10%*		*Total P.V. (Rs.)*
1–10	Rs. 27,500 ×	6.145 = (5.759 + 0.386)	=	1,68,987.50
Less: Present value of cash outlay				(–) 65,000.00
				1,03,987.50

Since NPV > 0 therefore, the new equipment should be acquired.

*****Variable cost (i.e. cost saving per unit):

	Rs.
Old machine	23
Less: New machine	(–) 15
	8

Problem No. 16

Apollo Ltd. manufactures a special chemical for sale at Rs. 30 per kg. The variable cost of manufacture is Rs. 15 per kg. Fixed cost excluding depreciation is Rs. 2,50,000. Apollo Ltd. is currently operating at 50% capacity. It can produce a maximum of 1,00,000 kgs. at full capacity.

The production manager suggests that if the existing machines are replaced, the company can achieve maximum capacity in the next 5 years gradually increasing the production by 10% a year.

The finance manager estimates that for each 10% increase in capacity, the additional increase in fixed cost will be Rs. 50,000. The existing machines with a current book value of Rs. 10,00,000 and remaining useful life of 5 years can be disposed of for Rs. 5,00,000. The vice-president (finance) is willing to replace the existing machines provided the NPV on replacement is Rs. 4,53,000 at 15% cost of capital.

(a) You are required to compute the total value of machines necessary for replacement. For computations, you may assume the following:

(i) All the assets are in the same block. Depreciation will be on straight line basis and the same is allowed for tax purposes.

(ii) There will be no salvage value for the new machines. The entire cost of the assets will be depreciated over a five year period.

(iii) Tax rate is 46%.

(iv) Cash inflows will accrue at the end of the year.

(v) Replacement outflow will be at the beginning of the year (year 0).

(b) On the basis of data given above, the managing director feels that the replacement, if carried out, would at least yield a post-tax return of 15% in three years provided the capacity build up is 60%, 80% and 100% respectively. Do you agree? Give reasons.

	Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*
Present value factor at 15%	*0.87*	*0.76*	*0.66*	*0.57*	*0.50*
Present value annuity factor at 15%	*0.87*	*1.63*	*2.29*	*2.86*	*3.36*

Answer to Problem No. 16

(a) Determination of total replacement value of machines

Incremental cash outflows:

Cost of replacement of new machines = Rs. X
Less: Disposal value of existing machines = Rs. 5,00,000
Cash outflows required = (X – Rs. 5,00,000)

Determination of cash flows after tax (CFAT) and Net Present Value (NPV) (excluding depreciation)

	Years				
	1	*2*	*3*	*4*	*5*
Increase Production and sales (kg) ...(I)	10,000	20,000	30,000	40,000	50,000

Contribution per unit (Sales Price – Variable Cost) i.e. Rs. 30 – Rs. 15) ...(II)		15	15	15	15	15

		1	*2*	*3*	*4*	*5*
Incremental Contribution (I × II)	...(III)	1,50,000	3,00,000	4,50,000	6,00,000	7,50,000
Incremental fixed cost	...(IV)	50,000	1,00,000	1,50,000	2,00,000	2,50,000
Incremental profits (III – IV)	...(V)	1,00,000	2,00,000	3,00,000	4,00,000	5,00,000
Less: Taxes (0.46)	...(VI)	46,000	92,000	1,38,000	1,84,000	2,30,000
Earnings after taxes	...(V – VI)	54,000	1,08,000	1,62,000	2,16,000	2,70,000
PV Factor		0.87	0.76	0.66	0.57	0.50
Total Present Value (Rs.)		46,980	82,080	1,06,920	1,23,120	1,35,000

Total Present Value for 5 years (T = 1 – 5) Rs. 4,94,100 ..(A)

Base for Incremental Depreciation

	Rs.
Current book value of existing machine	10,00,000
Add: Cost of new machines	X
Less: Sale proceeds of existing machine	5,00,000
Depreciation base of new machine	X + 5,00,000
Less: Depreciation base of existing machine	10,00,000
Base for Incremental Depreciation	X – 5,00,000

Calculation of Present Value of tax savings on Incremental Depreciation for years 1–5

Incremental Depreciation per year = X – 5,00,000 / 5
= 0.20 X – 1,00,000

Tax Rate = 0.46

Present Value Factor of annuity for 5 years = 3.36

Present Value of tax savings on Incremental Depreciation for years 1 – 5 = Incremental Depreciation per year × Tax rate × PV of annuity for 5 years

= 0.20X – 1,00,000) × 0.46 × 3.36

= 0.30912X – Rs. 1,54,560 ...(B)

Total Present Value = (A) + (B)

= Rs. 4,94,100 + 0.30912X – Rs. 1,54,560
= Rs. 3,39,540 + 0.30912X

Net present value = Present value of cash flows after tax – Present value of outflows
Rs. 4,53,000 = Rs. 3,39,540 + 0.30912X – (X – Rs. 5,00,000)
Rs. 4,53,000 = Rs. 3,39,540 + 0.30912X – X + Rs. 5,00,000

0.69088X = Rs. 3,39,540 + Rs. 5,00,000 – Rs. 4,53,000

$$X = \frac{3,86,540}{0.69088} = \text{Rs. } 5,59,489$$

Total value of machines required for replacement is Rs. 5,59,489

(b) Financial evaluation whether replacement would yield post-tax return of 15% in 3 years

	1	2	3
Increased Capacity (%)	10%	30%	50%
Increased sales	Rs. 10,000	Rs. 30,000	Rs. 50,000
Contribution (Sales – V.C.) i.e. (Rs. 30 – Rs. 15)	Rs. 15	Rs. 15	Rs. 15
Incremental Contribution	Rs. 1,50,000	Rs. 4,50,000	Rs. 7,50,000
Less: Incremental fixed cost	50,000	1,50,000	2,50,000
	Rs. 1,00,000	Rs. 3,00,000	Rs. 5,00,000
Less: Incremental Depreciation $\frac{(\text{Rs. } 5,00,000 + 5,59,489 - 10,00,000)}{5 \text{ years}}$			
$= \frac{\text{Rs. } 59,489}{5}$	Rs. 11,898	Rs. 11,898	Rs. 11,898
Earnings before taxes	Rs. 88,102	Rs. 2,88,102	Rs. 4,88,102
Less: Taxes (0.46)	40,527	1,32,527	2,24,527
Earnings after taxes	Rs. 47,575	Rs. 1,55,575	Rs. 2,63,575
Cash flow after tax (Earnings after tax + Deprecation)	Rs. 59,473	Rs. 1,67,473	Rs. 2,75,473
Present Value Factor at 15%	0.87	0.76	0.66
Present Value	Rs. 51,742	Rs. 1,27,279	Rs. 1,81,812
Total Present Value	= Rs. 3,60,833		
Less: Incremental Cash Outflows	= Rs. 59,489		
Net Present Value	Rs. 3,01,344		

Hence, the assessment of the managing director is correct as the Net Present Value is positive.

Problem No. 17

The management of Rohit Ltd. is considering the replacement of machine which has current written down value of Rs.25,00,000 and a present sale value of Rs.8,00,000. The machine is still usable for 5 years, but will have no scrap value at the end of 5 years.

A new machine having a useful life of 5 years and scrap value of Rs. 1,00,00,000 at the end of this is available for Rs. 10,00,000. The installation of the new machine, it is estimated, would result in saving of Rs. 20,00,000 per annum in operating cost at the present level of production. The capacity of new machine is more than that of old, and since sales are no problem, utilisation of additional capacity would bring in an additional contribution of Rs. 25,00,000 per annum (after meeting incremental costs of production and sale). This machine would be depreciated @ 25 per cent on written down basis.

The company has other assets in the block. Current income tax is 35 per cent. Considering the company's estimated cost of capital, it will not pay to purchase the new machine unless the net savings are 20% or more, on the added investment. Should the company replace the existing machine?

Answer to Problem No. 17

(Rs.)

Existing Machine		
Current Written Down Value of Machine	=	25,00,000
Present Sale Value of Machine	=	8,00,000
Life of Machine	=	5 years
Scrap Value after 5 years	=	0
New Machine		
Scap Value	=	10,00,000
Cost Price	=	1,00,00,000
Life of Machine	=	5 years

Calculation of Cash Flows for 5 years

(Rs.)

	1	2	3	4	5
Saving in Operating Cost	2000000	2000000	2000000	2000000	2000000
Contribution	2500000	2500000	2500000	2500000	2500000
EBIT	4500000	4500000	4500000	4500000	4500000
Incremental Depreciation	1675000	1256250	942187	70664	529980
EBIT	2825000	3243750	3557813	3793359	39700

Less Tax (@35%)	98750	1135313	1245234	1327676	1389507
PAT	1836250	2108438	2312579	2465683	2580513
NPV	1530147	1464099	1338289	1189199	10378108
Total PV					6558842.3

As the Net Present cash inflow in negative, it is not advisable to purchase the machine.

Old Machine Cost = Rs. 25,00,000
New Machine Cost = Rs. 1,00,00,000 – Rs. 8,00,000
Sale Value of Machine = Rs. 92,00,000

Calculation of Incremental Depreciation

(Rs.)

Year	*Old machine*	*New machine*	*Incremental Depreciation*
1	625000	2300000	1675000
2	468750	1725000	1256250
3	351563	1293750	942187
4	263672	970313	706641
5	197754	727734	529980

Problem No. 18

Strong Enterprises Ltd. is a manufacturer of high quality running shoes. Ms. Dazling, President, is considering computerising the company's ordering, inventory and billing procedures. She estimates that the annual savings from computerisation include a reduction of ten clerical employees with annual salaries of Rs.15,000 each, Rs.8,000 from reduced production delays caused by raw materials inventory problems, Rs.12,000 from lost sales due to inventory stockouts and Rs.3,000 associated with timely billing procedures. The purchase price of the system is Rs.2,00,000 and installation costs are Rs.50,000. These outlays will be capitalised (depreciated) on a straight-line basis to a zero book salvage value which is also its market value at the end of five years. Operation of the new system requires two computer specialists with annual salaries of Rs.40,000 per person. Also annual maintenance and operating cash expenses of Rs.12,000 are estimated to be required. The company's tax rate is 40% and its required rate of return (cost of capital) for this project is 12%.

You are required to—

(a) find the project's initial net cash outlay.

(b) find the project's after tax profit and cash flows over its 5-year life.

(c) evaluate the project using Net Present Value (NPV) method.

(d) evaluate the project using Profitability Index (PI) method.

(e) *calculate the project's payback period.*

(f) *find the project's cash flows and NPV [parts (a) through [(c)] assuming that system can be sold for Rs.25,000 at the end of five years even though the book salvage value will be zero.*

(g) *find the project's cash flows and NPV [parts (a) through (c)] assuming that the book salvage value of depreciation purposes is Rs.20,000 even though the machine is worthless in terms of its resale value.*

NOTE:

(i) *Present value of annuity of Re. 1 at 12% rate of discount for 5 years in 3.605.*

(ii) *Present value of Re. 1 at 12% rate of discount, received at the end of 5 years is 0.567.*

Answer to Problem No. 18

(a) Project's Initial cash outlay

	Rs.
Cost	2,00,000
Installation Expenses	50,000
Total Net Cash Outlay	2,50,000

(b) Project's after tax profit and cash inflows over its 5-year life

Savings		*Rs.*
Reduction in clericals salaries		1,50,000
Reduction in production delays		8,000
Reduction in lost sales		12,000
Gains due to timely production		3,000
		1,73,000
Less: Expenses	*Rs.*	
Depreciation	50,000	
Addl. employee's cost	80,000	
Maintenance cost	12,000	1,42,000
Profit before Tax		31,000
Less: Tax (40%)		12,400
Profit after Tax		18,600

Cash inflow = PAT + Depreciation
= Rs. 18,600 + Rs. 50,000 = Rs. 68,600

The cash flow is the same for the years 1 to 5.

(c) Evaluation of the Profit by using NPV Method

Years	*Cash inflow after tax (Rs.)*	*PV of Annuity of Re. 1 at 12% for five years*	=	*Total present value (Rs.)*
(1 to 5)	68,600	3.605		2,47,303

Less: total Initial Cash Outlay		–2,50,000
NPV	=	(Rs. –2,697)

Since NPV is negative, the project is unviable.

(d) Evaluation of the Project by using PI Method

Profitability Index (PI) = PV of cash inflows/Initial outlay
= 2,47,303/2,50,000 = 0.989

Since PI is less than 1.0, the project is unviable.

(e) Calculation of the Projects' Payback Period

Year	*Net cash inflow (Rs.)*	*Cumulative cash inflow (Rs.)*
1	68,600	68,600
2	68,600	137,200
3	68,600	205,800
4	68,600	274,400
5	68,600	343,000

Here, the payback period is 3 yeas plus a fraction of the 4th year for balance Rs. 44,200 (Rs. 2,50,000 – Rs. 2,05,800). The fraction of the year is calculated as under:

$$\frac{44{,}200 \times 12}{68{,}600} = 0.64$$

Therefore, the payback period is 3.64 years.

(f) Calculation of cash flows and NPV assuming when the system can be sold for Rs. 25,000 at the end of 5 years.

In case the project has a salvage of Rs. 25,000 at the end of five years, present value of the after tax salvage amount is required to be added to the current NPV.

Post tax salvage value in year 5 = Rs. 15,000.

Present value of Rs. 15,000 discounted at 12% is (Rs. 15000 × 0.567) = Rs. 8,505 Previous NPV of the projects is – Rs. 2697. [see © above] New NPV is Rs. 8,505 – Rs. 2,697 = Rs. 5,808, Since NPV > 0, the project is viable.

(g) Project's cash flow and NPV assuming that book salvage value for depreciation purposes is Rs. 20,000.

Depreciation = Rs. 2,50,000 – Rs. 20,000/5 = Rs. 46,000 per year

Cash flow for the years 1 to 5 are Rs. 67,000*.

In year 5, the firm get an additional tax credit on Rs. 20,000 book value, which is Rs. 8,000, the NPV of this additional tax credit and new cash flow is – Rs. 3,929**. Since NPV is negative the project is not viable.

Rs.

Working*

Saving [see (b) above]			1,73,000
Less :	Expenses		
	Depreciation	Rs. 46,000	
	Addl. employee's cost	Rs. 80,000	
	Maintenance cost	Rs. 12,000	1,38,000
	Profit before tax		35,000
	Tax (40%)		14,000
	Profit after tax		21,000

Cash inflow = PAT + Depreciation = Rs. 21,000 + Rs. 46,000 = Rs. 67,000.

Working**

Years	*Cash inflow (Rs.)*	*PV factor at 12%*		*Total present value (Rs.)*
(1 to 5)	67,000	3.805 (Annuity)		2,41,535
Addl. Tax Credit in 5th year	8,000	0.567		4,536
		Total PV of cash inflow	=	2,46,071
		Less: Total initial cash outlay		2,50,000
		NPV	=	(Rs. –3,929)

Problem No. 19

P. Ltd. has a machine having an additional life of 5 years, which costs Rs.10,00,000 and has a book value of Rs.4,00,000. A new machine costing Rs.20,00,000 is available. Though its capacity is the same as that of the old machine, it will mean a saving in variable costs to the extent of Rs.7,00,000 per annum. The life of the machine will be 5 years at the end of which it will have a scrap value of Rs.2,00,000. The rate of income-tax is 46% and P Ltd.'s policy is not to make an investment if the yield is less than 12% per annum. The old machine, if sold today, will realise Rs.1,00,000; it will have no salvage value if sold at the end of 5th year. Advise P. Ltd. whether or not the old machine should be replaced. (Present value of Re. 1 receivable annually for 5 years at 12% = 3.605, present value of Re. 1 receivable at the end of 5 years at 12% per annum = 0.567). Capital gain is tax free. Ignore income-tax savings on depreciation as well as on loss due to sale of existing machine.

Answer to Problem No. 19

Net Cash Outlay on New Machine

	Rs.
Purchase Price	20,00,000
Less: Realisation from sale of old machine	1,00,000
Net Initial Investment	19,00,000
Cash Inflows	
Annual saving in variable cost as a Result of purchase of New Machine	7,00,000
Tax = 46%	

Annual Saving in variable cost after tax = Rs. 7,00,000 (1 – 0.46) =	3,78,000
Present value for cash inflows annually for 5 years @12% per annum = 3,78,000 × 3.605 =	13,62,690
PV of Salvage value (2,00,000 × 0.567) at the end of 5 years @ 12% per annum	1,13,400
Total PV of Cash Inflows	14,76,090
Less: Initial Investment	19,00,000
Net Present Value	–4,23,910

Since NPV of new machine is negative, it is not profitable for the company to go for new machine. Therefore, the company should continue with the old machine.

Problem No. 20

Norton Engineering company is considering the replacement of existing machine by a new one. The written down value of the existing machine is Rs. 1,50,000 and its cash salvage value is Rs. 40,000. The removal of this machine could cost Rs. 10,000 by way of labour charges etc. The purchase price of the new machine is Rs. 40 lakhs and its expected life is 10 years. The company follows straight line depreciation without considering scrap value. The other expenses associated with the new machine are carriage inward and installation charges Rs. 30,000, cost of training workers to handle the new machine Rs. 10,000, additional working capital Rs. 20,000 (which is assumed to be received back by sale of scraps in last year) and the fees paid to a consultant for his advice to buy a new machine Rs. 20,000. The annual savings (before tax) from the new machine would amount to Rs. 4,00,000. The income tax rate is 40%. The company's required rate of return is 12%. Should the company replace the existing machine?

Note: *Present value of Re. 1 at 12% discount rate are as follows:*

Year	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
P.V.	*.893*	*.797*	*.712*	*.636*	*.567*	*.507*	*.452*	*.404*	*.361*	*.322*

Answer to Problem No. 20

Present Value of Cash Outflow:

		Rs.
Purchase Price of a new machine		40,00,000
Carriage inward for installation		30,000
Cost of Training to workers		10,000
Fees Paid to consultant		20,000
Total Investment on new machine		40,60,000
Add: Working capital		20,000
		40,80,000
Less: Cash inflow at the start		
cash salvage value of old machine	40,000	
Less: Removal charges	10,000	

		30,000	
Tax benefit on the loss of old machine (40%)		48,000	@ 78,000
Total cash outflow			40,02,000

Annual Cash Inflow (New Machine):

Annual saving before tax	4,00,000
Less: Tax at 40%	1,60,000
Annual Saving after tax	2,40,000
Add: Depreciation (Rs. 40,60,000 ÷ 10)	4,06,000
Annual Cash inflow	6,46,000

Statement Showing NPV of Cash Flows

	Cash inflows (Rs.)	*PV Factor 12%*	*Present value (Rs.)*
Annual Cash inflow for 10 years	6,46,000	5.650	36,49,900
Working capital received back after 10 years	20,000	0.322	6,440
Total Present Value of Cash-inflow in 10 years			36,56,340
Present value of cash outflows in 1st year			40,02,000
		NPV =	(3,45,660)

Recommendation: Since NPV is negative by Rs. 3,45,660, the company is advised not to buy the new machine.

		Rs.
@Written down value of the old machine		1,50,000
Salvage Value	40,000	
Less: Removal Charges	10,000	30,000
Loss on Salvaging the machine		1,20,000
Tax benefit due to loss on old machine (40%)		48,000

Note: Tax benefit has been presumed to have been realised at zero year. In practical life, tax benefit will be realised at the year-end over and if this presumption is taken then Rs. 48,000 will have to be discounted by the factor 0.893.

Problem No. 21

A firm has an investment proposal, requiring an outlay of Rs. 40,000. The investment proposal is expected to have 2 years' economic life with no salvage value. In year-1, there is a 0.4 probability that cash flow after tax (CFAT) will be Rs. 25,000 and 0.6 probability that CFAT will be Rs. 30,000. The probabilities assigned to CFAT for the year-2 are as follows:

If CFAT = Rs. 25,000		*If CFAT = Rs. 30,000*	
Amount (Rs.)	*Probability*	*Amount (Rs.)*	*Probability*

12,000	*0.2*	*20,000*	*0.4*
16,000	*0.3*	*25,000*	*0.5*
22,000	*0.5*	*30,000*	*0.1*

The firm uses a 10% discount rate for this type of investment.

You are required to—

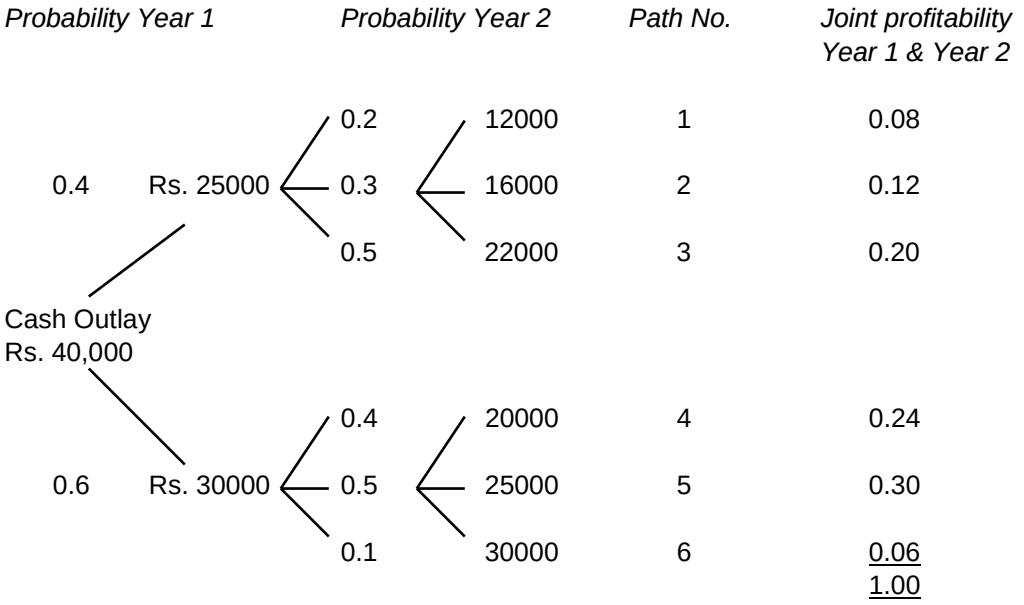
(i) Present the above information in the form of a decision tree.

(ii) Find out the NPV under (a) the worst outcome; and (b) under the best outcome.

(iii) Find out the profitability or otherwise of the above investment proposal.

Answer to Problem No. 21

(i) Decision Tree



The Decision Tree given above shows that there are six possible outcomes each represented by a path.

(ii) The Net Present Value (NPV) of each path at 10% discount rate is given below:

Path	*(Cash inflow year 1 x Discount factor year 1)* *(a)*	*(Cash inflow year 2 x Discount factor year 2)* *(b)*	*Total Cash inflow* *(c) = (a)+(b)*	*Cash Outflow* *(d)*	*Net present value* *(e) = (c)–(d)*
			Rs.	*Rs.*	*Rs.*

1.	(Rs. 25,000 x 0.909) = 22,725	(Rs. 12,000 x 0.826) = 9,912	32,637	40,000	–7,363
2.	(Rs. 25,000 x 0.909) = 22,725	(Rs. 16,000 x 0.826) = 13,216	35,941	40,000	–4,059
3.	(Rs. 25,000 x 0.909) = 22,725	(Rs. 22,000 x 0.826) = 18,172	40,897	40,000	897
4.	(Rs. 30,000 x 0.909) = 22,270	(Rs. 20,000 x 0.826) = 16,520	43,790	40,000	3,790
5.	(Rs. 30,000 x 0.909) = 22,270	(Rs. 25,000 x 0.826) = 20,650	47,920	40,000	7,920
6.	(Rs. 30,000 x 0.909) = 22,270	(Rs. 30,000 x 0.826) = 24,780	52,050	40,000	12,050

(a) If the worst outcome is realized, the Net Present Value which the project will yield in Rs. 7,363 (negative).

(b) The best outcome will be path 6 when Net Present Value is highest i.e. Rs. 12,050 (Positive).

(iii) Statement showing the Expected Net Present Value

Path	*NPV @10% (a)*	*Joint Probability (b)*	*Expected PV (a) x (b)*
1	Rs. –7,363	0.08	Rs. –589.04
2	–4,059	0.12	–487.08
3	897	0.20	179.40
4	3,790	0.24	909.60
5	7,920	0.30	2,376.00
6	12,050	0.06	723.00
		1.00	**3,111.88**

Yes, the project will be accepted since the Expected Net Present Value is positive.

Problem No. 22

A product is currently manufactured on a machine that is not fully depreciated for tax purposes and has book value of Rs. 80,000. It was purchased for Rs. 2,40,000 twenty years ago. The costs of the product are as follows:

	Unit Cost (Rs.)
Direct labour	*28.00*
Indirect labour	*14.00*
Other variable overhead	*10.50*
Fixed overhead	*17.50*

	70.00

In the past year 10,000 units were produced. It is expected that with suitable repairs the old machine can be used indefinitely in future. The repairs are expected to average Rs. 75,000 per year.

An equipment manufacturer has offered to accept the old machine as trade-in for a new equipment. The new machine would cost Rs. 5,20,000 before allowing for Rs. 1,00,000 for the old equipment. The project costs associated with the new machine are follows:

	Unit Cost (Rs.)
Direct labour	*14.00*
Indirect labour	*21.00*
Other variable overhead	*7.00*
Fixed overhead	*22.75*
	64.75

The fixed overhead costs are allocations for other departments plus the depreciation of the equipment.

The old machine can be sold now for Rs. 60,000 in the open market. The new machine has an expected life of 10 years and salvage value of Rs. 20,000 at that time. The current corporate income tax rate is assumed to be 50%. For tax purpose cost of the new machine and the book value of the old machine may be depreciated in 10 years. The minimum required rate is 10%. It is expected that the future demand of the product will stay at 10,000 units per year. The present value of an annuity of Re. 1 for 9 years @ 10% discount factor is = 5.759. The present value of Re. 1 received at the end of 10th year @ 10% discount factor is = 0.386.

Should the new equipment be purchased? (Assume no capital gain taxes).

Answer to Problem No. 22

Net Cash outlay on New Machine

	Rs.	*Rs.*
Purchase Price		5,20,000
Less: Trade in value		1,00,000
		4,20,000
Depreciation:		
New Machine	50,000 per annum	
Old Machine	8,000 per annum	
Differential Depreciation	42,000	

Annual Cash Savings from New Machine

Variable Cost of product on new machine	4,20,000

(10,000 units × Rs. 42)	
Variable cost of product on old machine	5,25,000
(10,000 units × Rs. 52.50) + Annual Repair	75,000
	6,00,000
Differential savings (Rs. 6,00,000 – Rs. 4,20,000)	Rs. 1,80,000 per annum
Taxable Saving (Rs. 1,80,000 – Rs. 42,000)	1,38,000
Less: Tax @ 50%	69,000
Income after tax	69,000
Add: Depreciation (Difference)	42,000
Cash flow per annum for 9 years	1,11,000

Cash flow for 10th year Rs. 1,11,000 + Rs. 20,000 salvage value	*(Rs.)*
Present value of 1,11,000 annuity for 9 years.	
(Rs. 1,11,000 × 5.759)	6,39,249
Present value of Rs. 1,31,000 at the end of 10th year	
(Rs. 1,11,000 × 0.386)	50,566
Present value of Total cash Inflow	6,89,815
Less: Cash outlay	4,20,000
Net Present Value	2,69,815

Recommendation: Since NPV is positive, new equipment should be purchased.

COST OF CAPITAL

Problem No. 23

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

Debt as percentage of total capital employed	*Cost of debt (%)*	*Cost of equity (%)*
1	*2*	*3*
0	7.0	15.0
10	7.0	15.0
20	7.0	15.5
30	7.5	16.0
40	8.0	17.0
50	8.5	19.0
60	9.5	20.0

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

Answer to Problem No. 23

Composite Cost of Capital

Debt as % of total capital	*Cost of debt %*	*Cost of equity %*	*Composite Cost of capital %*	
0	7.0	15.0	$(7 \times 0) + (15 \times 1)$	= 15.0
10	7.0	15.0	$(7 \times 0.10) + (15 \times 0.9)$	= 14.20
20	7.0	15.5	$(7 \times 0.20) + (15.5 \times 0.80)$	= 13.80
30	7.5	16.0	$(7.5 \times 0.30) + (16 \times 0.70)$	= 13.45
40	8.0	17.0	$(8 \times 0.40) + (17 \times 0.60)$	= 13.40
50	8.5	19.0	$(8.5 \times 0.50) + (19 \times 0.50)$	= 13.75
60	9.5	20.0	$(9.5 \times 0.60) + (20 \times 0.40)$	= 13.70

The optimal debt-equity mix for the company on the basis of composite cost of capital = 40 % debt

= 60 % Equity

When the composite cost of capital will be least i.e. 13.40.

Problem No. 24

M/s Robert Cement Corporation has a financial structure of 30% debt and 70% equity. The company is considering various investment proposals costing less than Rs. 30 lakhs.

The corporation does not want to disturb its present capital structure.

The cost of raising the debt and equity are as follows:

Project Cost	*Cost of debt*	*Cost of equity*
Upto Rs. 5 lakhs	*9%*	*13%*
Above Rs. 5 lakhs and upto Rs. 20 lakhs	*10%*	*14%*
Above Rs. 20 lakhs and upto Rs. 40 lakhs	*11%*	*15%*
Above Rs. 40 lakhs and upto Rs. 1 crore	*12%*	*15.5%*

Assuming the tax rate of 50% you are required to calculate:

(i) Cost of capital of two projects A and B whose funds requirements are Rs. 8 lakhs and Rs. 21 lakhs respectively, and

(ii) If a project is expected to give after tax return of 11% determine under what conditions it would be acceptable.

Answer to Problem No. 24

(i) Calculation of Weighted Average Cost of Capital

	Finan-	*Prop. of capital*	*Cost before*	*Cost after*	*Weighted cost of*

Project	*cing*	*structure*	*tax (%)*	*tax*	*Capital*	
Upto Rs. 5 lakhs	Debt	0.30	9.00	4.50	1.35	
	Equity	0.70	13.00	13.00	**9.10**	**10.45**
Above Rs. 5 lakhs and upto Rs. 20 lakhs	Debt	0.30	10.00	5.00	1.50	
	Equity	0.70	14.00	14.00	**9.80**	**11.30**
Above Rs. 20 lakhs and upto Rs. 40 lakhs	Debt	0.30	11.00	5.50	1.65	
	Equity	0.70	15.00	15.00	**10.50**	**12.15**
Above Rs. 40 lakhs and upto Rs. 1 Crore	Debt	0.30	12.00	6.00	1.80	
	Equity	0.70	15.50	15.50	**10.85**	**12.65**

(i) Project A costs Rs. 8 lakhs. In the above table one can see that Project A lies in the range of Rs. 5 lakhs and Rs. 20 lakhs. So the weighted average cost of capital for this amount to the company will be 11.30 per cent. Similarly, for the project B which requires Rs. 21 lakhs and lies in the range of Rs. 20 lakhs and Rs. 40 lakhs the weighted average cost of capital will be 12.15 per cent.

(ii) A company may accept a project which is expected to give after tax return of 11% if project cost is below Rs. 5 lakhs. The project which requires above Rs. 5 lakhs may not be accepted by the company because the expected rate of return on the project is low as against its cost of capital and thus acceptance of project will adversely affect the value of share of the company.

Problem No. 25

Following are the details regarding capital structure of a company.

	Book value (Rs.)	*Market value (Rs.)*	*Specific cost (%)*
Debentures	*80,000*	*76,000*	*5*
Preference Capital	*20,000*	*22,000*	*8*
Equity Capital	*1,20,000*	*2,40,000*	*13*
Retained Earnings	*40,000*	—	*9*
	2,60,000	*3,38,000*	

You are required to calculate the weighted average cost of capital using (i) book value as weights (ii) market value as weights. Can you imagine a situation where weighted average cost of capital would be the same using either of the weights?

Answer to Problem No. 25

(i) Calculation of the weighted average cost of capital using book value weights:

Source of Capital	*Amount of Book value (W) (Rs)*	*Specific Cost (X) (%)*	*Total cost (XW) (Rs.)*
Debentures	80,000	5	4,000
Preference Capital	20,000	8	1,600
Equity Capital	1,20,000	13	15,600

Retained Earning	40,000	9	3,600
	2,60,000		24,800

Weighted average cost of capital $(Ko) = \frac{SXW}{SW}$

$= \frac{\text{Total Costs}}{\text{Total Capital}} \times 100$

$\frac{\text{Rs. } 24,800}{\text{Rs. } 2,60,000} \times 100 = 9.54\%$ Approximately

(ii) Calculation of the weighted average cost of capital using market value as weights:

Source of Capital	*Market value (W) (Rs)*	*Specific Cost (X) (%)*	*Total cost (WX) (Rs.)*
Debentures	76,000	5	3,800
Preference Capital	22,000	8	1,760
Equity Capital	1,80,000	13	23,400
Retained Earning	60,000	9	5,400
	3,38,000		34,360

$Ko = \frac{\text{Rs. } 34,360}{\text{Rs. } 3,38,000} \times 100$

$= 10.17\%$

In our question the market value of equity share and retained earnings is Rs. 2,40,000 as against their book value Rs. 1,60,000. In relative term we can say that every equity funds of rupees 2 at book value have market value of Rs. 3/- (Rs. 2,40,000/Rs. 1,60,000). On basis of this criteria, we may calculate the value of retained earning and that of equity shares as under.

Value of retained earnings = $40,000 \times \frac{3}{2} = \text{Rs. } 60,000$

Value of Equity Share = $1,20,000 \times \frac{3}{2} = \text{Rs. } 1,80,000$

The weighted average cost of capital computed on the basis of market value weight is higher than the weighted average cost of capital computed on the basis of book value weights as in our problem. Because market value of equity capital is higher than its book value.

The weighted average cost of capital would be the same under book value weights and market value weights provided there is no difference in value of securities under both the cases.

Problem No. 26

The Novex company has the following capital structure on 31st March, 1998

	Rs.
Ordinary shares (4,00,000 shares)	*80,00,000*
10% Preference shares	*20,00,000*
14% Debentures	*60,00,000*
	1,60,00,000

The share of the company sells for Rs. 20. It is expected that company will pay next year a dividend of Rs. 2 per share which will grow at 7 per cent forever. Assume a 40 per cent tax rate.

You are required to:

(a) Compute a weighted average cost of capital based on existing capital structure.

(b) Compute the new weighted average cost of capital if the company raises an additional Rs. 40 lakh debt by issuing 15 per cent debenture. This would result in increasing the expected dividend to Rs. 3 and leave the growth rate unchanged, but the price of share will fall to Rs. 15 per share.

(c) Compute the cost of capital if in (b) above growth rate increases to 10 per cent.

Answer to Problem No. 26

(a) Weighted Average Cost of Capital—Existing Capital Structure

	Amount	*After-tax cost*	*Weights (%)*	*Weighted cost (%)*
Ordinary Shares	80,00,000	0.17*	0.500	0.0850
10% Preference Shares	20,00,000	0.10	0.125	0.0125
14% Debentures	60,00,000	0.084	0.375	0.0315
Total	1,60,00,000			0.1290
Weighted Average Cost of Capital (WACC)				or 12.9%

*Cost of Ordinary Share $(K_e) = \frac{D_1}{P_0} + g$

$= \frac{Rs.\,2}{Rs.\,20} + 0.07$

= 0.10 + 0.07 = 0.17

(b) Weighted Average Cost of Capital—New Capital Structure

Scripts	*Amount (Rs.)*	*After-tax cost*	*Weights (%)*	*Weighted cost (%)*
Ordinary shares	80,00,000	0.27**	0.40	0.108

10% Preference shares	20,00,000	0.10	0.10	0.010
14% Debentures	60,00,000	0.084	0.30	0.025
15% Debentures	40,00,000	0.09	0.20	0.018
Total	2,00,00,000			0.161
Weighted Average Cost of Capital (WACC)				or 16.1%

**Cost of ordinary share $(K_e) = \frac{D_1}{P_0} + g$

$$= \frac{Rs.3}{Rs.15} + 0.07$$

$$= 0.20 + 0.07 = 0.27$$

(c) Weighted Average Cost of Capital—Changed Growth Rate

Scripts	*Amount (Rs.)*	*After-tax cost*	*Weights (%)*	*Weighted cost (%)*
Ordinary shares	80,00,000	0.30***	0.40	0.120
10% Preference shares	20,00,000	0.10	0.10	0.010
14% Debentures	60,00,000	0.084	0.30	0.025
15% Debentures	40,00,000	0.09	0.20	0.018
Total	2,00,00,000			0.173
Weighted Average Cost of Capital (WACC)				or 17.3%

***Cost of ordinary share $(K_e) = \frac{D_1}{P_0} + g$

$$= \frac{Rs.3}{Rs.15} + 0.10$$

$$= 0.20 + 0.10 = 0.30$$

Note: The book value weights have been used to calculate WACC in the above cases.

MANAGEMENT OF WORKING CAPITAL

Problem No. 27

From the given information for Ajanta manufacturing company, prepare an estimate of the requirement of working capital.

Production	*90,000 units*
Selling Price per unit	*Rs. 5/-*
Raw Materials	*60% of selling price*
Direct Wages	*10% of selling price*
Overheads	*20% of selling price*
Materials in hand	*2 months requirements*

Production time	*1 month*
Finished goods in stores	*3 months*
Credit for material	*2 months*
Credit allowed to customers	*3 months*
Average cash balance	*Rs. 30,000/-*

Wages and overheads are paid at the beginning of the month following. In production all the required materials are charged in the initial stage and wages and overheads accrue evenly.

Answer to Problem No. 27

Calculation of Working Capital Requirement

		Rupees
Current assets (level of production 90,000 units)		
Current Assets:		
Materials (90,000 □Rs. 3 □2/12)		45,000
Work in Progress:		
Materials (90,000 □Rs. 3 □1/12)	Rs. 22,500	
Labour (90,000 □Re. 0.50 □1/12 □1/2)	Rs. 1,875	
Overheads (90,000 □Re. 1 □1/12 □1/2)	Rs. 3,750	28,125
Finished goods (90,000 □90% □Rs. 5 □3/12)		1,01,250
Debtors (90,000 □Rs. 5 □3/12)		1,12,500
Cash		30,000
Total Current Assets (A)		3,16,875
Less: Current Liabilities		
Creditors (90,000 □Rs. 3 □2/12)		45,000
Outstanding wages (90,000 □Re. 0.50 □1/12)		3,750
Outstanding Overheads (90,000 □Re. 1 □1/12)		7,500
Total Current Liabilities (B)		56,250
Estimated Working Capital Requirements (A–B)		2,60,625

Problem No. 28

The Management of Apollo Ltd. Has called for a statement showing the working capital needed to finance a level of activity of 6,00,000 units of output for the year. The cost structure for the company's product, for the above mentioned level is given as under:

	Cost per unit (Rs.)
Raw materials	*20*
Direct labour	*5*
Overheads	*15*
Total cost	*40*
Profit	*10*
Selling price	*50*

Past trends indicate that raw materials are in stock on an average for two months.

Work in progress will approximate to half a months production. Finished goods remain in warehouse on an average for a month. Supplier of a materials extend a months credit.

Two months credit is normally allowed to debtors. A minimum cash balance of Rs. 60,000 is expected to be maintained. The production pattern is assumed to be even during the year. Prepare the statement of working capital determination.

Answer to Problem No. 28

Statement showing Cost & Profit

	Per unit (Rs.)	*Amount for 6,00,000 Units of output (Rs.)*
Raw materials	20.00	1,20,00,000
Direct labour	5.00	30,00,000
Overheads	15.00	90,00,000
Total cost	40.00	2,40,00,000
Profit	10.00	60,00,000
Sales	50.00	3,00,00,000

Calculation of working capital requirement

		Rs.
Raw materials (stock for two months) = $\frac{2}{12} \times$ 1,20,00,000	=	20,00,000
Work in progress 1/2 months production		
i.e. 1/2 month total cost = $\frac{1}{24} \times$ 2,40,00,000	=	10,00,000
Finished goods remain in warehouse for		
one month's i.e. one month's total cost = $\frac{1}{12} \times$ 2,40,00,000	=	20,00,000
Total inventory	=	50,00,000
Debtor balances – 2 months sales = $\frac{2}{12} \times$ 3,00,00,000	=	50,00,000
Cash balance (minimum as given in the question)	=	60,00,000
Total current assets		1,00,60,000
Less: Creditors = $\frac{1}{12} \times$ 1,20,00,000	=	10,00,000
Working capital required		90,60,000

Problem No. 29

M/s Kataria & Co. have approached their banker for their working capital

requirement who have agreed to sanction the same by retaining the margins as under:

Raw material	*15%*
Stock in Progress	*30%*
Finished goods	*20%*
Debtors	*10%*

From the following projections for 2001–02 you are required to work out:

(a) the working capital required by the company; and

(b) the working capital limits likely to be approved by bankers.

Estimates for 2001–02	*Rs.*
Annual Sales	*16,80,000*
Cost of production	*14,40,000*
Raw material Purchases	*8,15,000*
Monthly Expenditure	*45,000*
Anticipated opening stock of raw materials	*= Rs. 1,80,000*
Anticipated closing stock of raw materials	*= Rs. 1,55,000*
Inventory Norms:	
Raw material	*2 months*
Work in Progress	*15 days*
Finished goods	*1 months*

The firm enjoy a credit of 15 days on its purchases and allows 1 month credit on its supplies. On sales orders, the company has received an advance of Rs. 25,000. State your assumption if any.

Answer to Problem No. 29

Calculation of Monthly consumption of raw materials, monthly sales and monthly cost of production

Raw materials

Opening Stock + Purchases (Rs. 8,15,000 + Rs. 1,80,000)	=	Rs. 9,95,000
Less closing stock	=	Rs. 1,55,000
Annual Consumption	=	Rs. 8,40,000
Monthly Consumption = $\frac{\text{Rs. } 8,40,000}{12}$	=	Rs. 70,000

Monthly Sales

$\frac{\text{Annual Sales}}{12} = \frac{\text{Rs. } 16,80,000}{12}$	=	Rs. 1,40,000

Monthly Cost of Production

$$\frac{\text{Cost of Production per year}}{12} = \frac{\text{Rs.14,40,000}}{12} = \text{Rs. 1,20,000}$$

Calculation of Working capital required by Kataria & Co.

			Rs.
1.	Raw materials — 2 months consumption		1,40,000
2.	Work in Progress — 15 days Cost of Production		60,000
3.	Finished Goods — 1 month Cost of Production		1,20,000
4.	Sundry debtor — 1 month sales		1,40,000
5.	Expenses for — 1 month		45,000
			5,05,000
Less :	(i) Creditors 15 days purchases $\left(\frac{8,15,000}{12} \times \frac{1}{2}\right)$	= 33,959	
	(ii) Advance received on sales order	= 25,000	58,959
Working capital required by the company			4,46,041

Working capital limits set by bankers

1.	Raw materials — 2 months' consumption	1,40,000	
	Less: 15% margin	21,000	1,19,000
2.	Work in progress — 15 days' cost of production	60,000	
	Less: 30% margin	18,000	42,000
3.	Finished goods — 1 month cost of production	1,20,000	
	Less: 20% margin	24,000	96,000
4.	Sundry Debtors — 1 month sales	1,40,000	
	Less: 10% margin	14,000	1,26,000
5.	For expenses		Nil
Total limit likely to be approved by bank			3,83,000

Problem No. 30

A company is floated to manufacture a new chemical called 'moin'. Currently 'moin' is imported in India at a landed cost of Rs. 8,500 per tonne. The following data have been collected regarding the project:

(i) Investment:

Land	*= Rs. 1 lakh*
Building	*= Rs. 8 lakhs*
Plant and machinery	*= Rs. 12 lakhs*

(ii) Cost of production:

Imported raw material	*= Rs. 6,50,000*
Indigenous raw material	*= Rs. 6,26,000*
Salaries and wages	*= Rs. 1,35,000*
Repairs and maintenance:	*5% on plant cost; and*

	2% on building cost
Depreciation:	*7% on plant; and*
	2-1/2% on building
Administrative expenses	*= Rs. 50,000*
Steam requirement	*= Rs. 7,000 tonnes at Rs. 16 per tonne*
Power	*= Rs. 60,000*
Packing drums	*= Rs. 30 each per 500 kgs.*

(iii) Working capital requirements:

Imported raw material stock	*— 6 months*
Local raw material stock	*— 3 months*
Packing material stock	*— 3 months*
Finished product stock	*— 1 month*
Credit to customers	*— 1 month*
Credit from suppliers	*— 1 month*
Cash expenses	*— 1 month*

(iv) Expected production — 250 M/T per annum.

(a) Calculate the total capital needed for the project.

(b) Assuming that the entire production can be sold at the imported price, calculate the percentage yield on the investment and profit on sales.

(c) Also calculate the rate of cash generation per annum before taxation.

Answer to Problem No. 30

Working:

Forecast Operating Statement	Rs.
Raw materials — imported	6,50,000
Raw materials — local	6,26,000
Packing material — 500 drums @ Rs. 30/- each	15,000
Salaries and wages	1,35,000
Repair and Maintenance: Plant	60,000
Building	16,000
Administrative expenses	50,000
Steam requirement	1,12,000
Power	60,000
Depreciation: Plant	84,000
Building	20,000
Total Cost	18,28,000
Production 250 M/T	
Cost per tonne (Rs. 18,28,000 – 250)	7,312
Selling price	8,500
Profit	1,188
Total profit per annum	2,97,000

Investment	*Rs./lakh*
Fixed Assets	1.00
Land	8.00
Building	12.00
Total	21.00

Answer to Problem No. 30(i)

Working Capital

Stores: Raw Material:	*Rs.*
Imported (Rs. 6,50,000 □6/12)	3,25,000
Local (Rs. 6,26,000 □3/12)	1,56,000
Packing (Rs. 15,000 □3/12)	3,750
Finished products (Rs. 18,28,000 □1/12)	1,52,333
Debtors (Rs. 21,25,000 □1/12)	1,77,083
Cash expenses (Rs. 4,33,000 □1/12)	36,083
	8,50,749
Less: Suppliers' credit (Rs. 6,41,000 □1/12)	53,417
Say Rs. 7,97,000	7,97,332

Answer to Problem No. 30(ii)

It has been assumed that no credit is available in respect of imported raw material.

(a) Total Capital requirement

	Rs./lakh
Investment	21.00
Working Capital	7.97
	28.97

(b) Percentage yield on total investment = $\frac{2,97,000 \times 100}{\text{Rs. } 28,97,000}$ = Rs. 10.25%

Profit on sales: $\frac{\text{Rs. } 1,188}{\text{Rs. } 8,500} \times 100$ = 13.97%

Answer to Problem No. 30(iii)

Cash generation per annum: Profit + Depreciation

Rs. 2.97 lakhs + Rs. 1.04 lakhs

= Rs. 4.01 lakhs

Problem No. 31

PQR company is currently selling 2,00,000 units of its product @ Rs. 50 each. At the current level of production the cost per unit is Rs. 45, variable cost per unit is Rs. 40. The company is currently extending one month credit. The company is thinking of extending credit period to two months in the expectation that sales will increase by 20 per cent. If the required rate of return on firms investment is 25 per cent, is the new credit policy desirable for the company?

Answer to Problem No. 31

Calculation of total cost at new Sales Level

		Rs.
Cost at present level of sales (2,00,000 □Rs. 45)	=	90,00,000
Cost of increased sales (2,00,000 □20%) □40	=	16,00,000
Cost of Sales of 2,40,000 units	=	1,06,00,000
Average cost per unit of sales at the new level of Sales is = $\frac{1,06,00,000}{2,40,000}$	=	44.16

Calculation of Profitability and required rate of return

Profitability on additional sales [40,000 □(Rs. 50 – Rs. 40)]	=	4,00,000
Present average investment in receivables = 90,00,000/12	=	7,50,000
Average investment in receivable after change in credit policy (Rs. 1,06,00,000/6)	=	17,66,666
Additional investment in receivables (Rs. 17,66,666 – Rs. 7,50,000)	=	10,16,666
Required rate of return on additional investment (Rs. 10,16,666 × .25)	=	2,54,166

From above it is clear the new credit policy is acceptable to the company because profit on account of additional sales is expected to increase by Rs. 4,00,000 as against the required rate of return of Rs. 2,54,166 on the additional investment in receivable.

Assumptions : (1) All sales are on credit sales.
(2) Fixed cost do not change.

Problem No. 32

Compute 'maximum bank borrowings' permissible under Method I, Method II and Method III of Tandon Committee norms from the following figures and comment on each method:

	Rs. (lakhs)			*Rs. (lakhs)*
Current Liabilities:			*Current Assets:*	
Creditors for purchases	*400*		*Raw Materials*	*800*
Other current liabiltiies	*200*	*600*	*Work-in-process*	*80*
Bank borrowings including bills discounted with bankers		*800*	*Finished goods*	*360*
			Receivables including bills discounted with bankers	*200*
			Other current assets	*40*
		1,400		*1,480*

Assume core current assets are Rs. 380 lakhs.

Answer to Problem No. 32

Maximum bank borrowings permissible under different methods of Tandon Committee norms

Method I	*(Rs. in lakhs)*
Total current assets	1480
Less: Current liabilities other than bank borrowings	600
Working capital gap	880
Less: Borrower's contribution of 25% of above from Long term sources	220
Maximum bank borrowings permissible	660
Excess borrowings (Rs. 800 lakhs – Rs. 660 lakhs)	140
Method II	
Total current assets	1480
Less: Borrower's contribution of 25% of above from Long term sources	370
	1110
Less: Current liabilities other than bank borrowings	600
Maximum bank borrowings permissible	510
Excess borrowings (Rs. 800 lakhs – Rs. 510 lakhs)	290
Method III	
Total current assets	1480
Less: Core current assets (100% Contribution)	380
Real current assets	1100
Less: Borrower's contribution of 25% of above from Long term sources	275
	825
Less: Current liabilities other than bank borrowings	600
Maximum bank borrowings permissible	225
Excess borrowings (Rs. 800 lakhs – Rs. 225 lakhs)	575

Comments

Method I: According to Method I prescribed by Tandon Committee the maximum permissible limit of bank borrowings for the Company are Rs. 660 lakhs whereas actual bank borrowings are of Rs. 800 lakhs. Thus, there is excess amount of bank borrowing to the tune of Rs. 140 lakhs which may be converted into term loan to be paid out gradually.

Method II: According Method II, the Company has to get Rs. 290 lakhs converted into term loan to be phased out gradually.

Method III: As per Method III, excess borrowings of the Company from bank are Rs. 575 lakhs. Under this method, the borrower has to finance core current assets also from the long-term sources. Till the time the borrower is able to arrange for long-term funds, bank may convert the excess amount of borrowings into term loan to be phased out in future.

Problem No. 33

X Public Limited Company has obtained the following data concerning the average working capital cycle for other components in the same industry.

		Day
Raw material stock turnover	—	*20*
Credit received	—	*(40)*
Work in progress turnover	—	*15*
Finished goods stock turnover	—	*40*
Debtors' collection period	—	*60*
		95

Using the following information, you are required to calculate the current working capital cycle for X Public Limited Co. and briefly comment on it.

		Rs. ('000)
Sales	—	*3,000*
Cost of sales	—	*2,100*
Purchases	—	*600*
Average raw material stock	—	*80*
Average work-in-progress	—	*85*
Average finished goods stock	—	*180*
Average creditors	—	*90*
Average debtors	—	*350*

Answer to Problem No. 33

Working capital cycle for X Public Ltd. Co. can be calculated in the following manner—

Raw material stock $= \frac{\text{Average raw material stock}}{\text{Purchases}} \times 365$

$= \frac{80}{600} \times 365 = 49$ days approx.

Less: Creditors $= \frac{\text{Average creditors}}{\text{Purchases}}$

$= \frac{90}{60} \times 365 = (55)$ days

Work in progress $= \frac{\text{Average work in Progress}}{\text{Cost of goods sold}} \times 365$

$= \frac{85}{2100} \times 365 = 15$ days

Finished goods stock $= \frac{\text{Average finished goods stock}}{\text{Cost of goods sold}} \times 365$

$= \frac{180}{2100} \times 365 = 31 \text{ days}$

Debtors $= \frac{\text{Average debtors}}{\text{Sales}} \times 365$

$= \frac{350}{3000} \times 365 = 43 \text{ days}$

Working capital cycle is 83 days $= 49 - 55 + 15 + 31 + 43$

Comments

Overall, the working capital cycle is below the industry average, indicating a lower investment in current assets. However, the following point should be noted about the individual elements of working capital:

(a) The stock of raw material is considerably higher than the average. The stock control procedures should be reviewed since these could possibly be reduced.

(b) The value of creditors is also above average. This indicates that X Ltd. Company is delaying the payment of creditors beyond the credit period. Although this is an additional source of finance, it may result in a higher cost of raw materials.

(c) The finished goods stock is below average. This may be due to high demand for the firm's goods or to efficient stock control. A low finished goods stock can be however, reduce sales since it can cause delivery delays.

(d) Debts are collected more quickly than average. The Company may employ good credit control procedures or may offer cash discount for early payment. This can, however, be done at the expense of profitability.

Problem No. 34

Calculate the amount of working capital requirements for Jolly & Co. Ltd. from the following information :

	Rs. (per unit)
Raw materials	*160*
Direct labour	*60*
Over heads	*120*
Total cost	*340*
Profit	*60*

Selling price *400*

Raw materials are held in stock on an average for one month. Materials are in process on an average for half-a-month. Finished goods are in stock on an average for one month.

Credit allowed by suppliers is one month and credit allowed to debtors is two months. Time leg in payment of wages is 1-1/2 weeks. Time leg in payment of overhead expenses is one month. One fourth of the finished goods is sold against cash.

Cash in hand and at bank is expected to be Rs. 50,000 ; and expected level of production amounts to 1,04,000 units.

You may assume that production is carried on evenly throughout the year, wages is equivalent to a month.

Answer to Problem No. 34

Total value method

Working:

1. *Raw material inventory:* Total cost of materials for the whole year (Fifty two weeks) is Rs. 1,66,40,000. The monthly (four weeks) consumption would be Rs. 12,80,000. Raw material requirement is for one month, hence raw materials in stock would be Rs. 12,80,000.
2. *Debtors:* The average credit sales (per week) is Rs. 6,00,000. Therefore, a sum of Rs. 48,00,000 is the amount of sundry debtors.
3. *Creditors:* Suppliers allow a one month credit period. Hence the average amount of creditors is Rs. 12,80,000. Besides wages and overhead payable are:

   Wages (1-1/2 weeks) = Rs. 1,80,000
   Overheads (4 weeks) = Rs. 9,60,000

4. Work-in-process:

		Rs.
(i)	Raw materials in WIP	6,40,000
(ii)	Labour cost (it is given in the question that labour and overheads accrue evenly throughout the year or month. Thus on the first day of month it would be zero, and on the last day of the month the WIP includes one month's labour cost on an average it is equivalent to 1 week labour cost).	1,20,000
(iii)	Overhead (for 1 weeks as explained above)	2,40,000
	Total WIP	10,00,000

5. *Finished goods inventory:*

One month cost of raw material	12,80,000
Labour	4,80,000

Overhead		9,60,000
		27,20,000

Working capital requirements :

Current Assets (A):	*Rs.*	*Rs.*
Raw materials inventory	12,80,000	
Debtors	48,00,000	
Work-in-process	10,00,000	
Finished goods inventory	27,20,000	
Cash	50,000	98,50,000
Current liabilities (B):		
Creditors	12,80,000	
Wages payable	1,80,000	
Overheads payable	9,60,000	24,20,000
		74,30,000

Alternate Cash Cost Method

Working capital requirements:

Current Assets	
Raw materials inventory	12,80,000
*Debtors	40,80,000
Work-in-progress	10,00,000
Finished goods inventory	27,20,000
Cash	50,000
	91,30,000
Current Liabilities:	
Creditors	12,80,000
Wages payable	1,80,000
Overhead payable	9,60,000
Estimated Working Capital requirement (Balancing figure)	67,10,000
	91,30,000

*Debtors: The average credit sales (per week) is Rs. 5,10,000 (1,500 units x Rs.340).

Problem No. 35

In order to increase sales from the normal level of Rs. 2.4 lakhs per annum, the marketing manager submits a proposal for liberalising credit policy as under :

Normal sales	*Rs. 2.4 lakhs*
Normal credit period	*30 days*

Proposed increase in credit period beyond normal 30 days	*Relevant increase over normal sales (Rs.)*
15 days	*12,000*
30 days	*18,000*
45 days	*21,000*
60 days	*24,000*

The P.V. ratios of the company is 33-1/3%

The company expects a pre-tax return of 20% on investment. Evaluate the above four alternatives and advise the management. (Assume 360 days a year)

Answer to Problem No. 35

Evaluation of Alternative

(Rs. in lakhs)

	Existing Credit Policy	*Proposed Credit Policy*			
1	*2*	*3*	*4*	*5*	*6*
(i) Credit period days	30	45	60	70	90
(ii) Credit period year	1/12	1/8	1/6	1/4.8	1/4
(iii) Sales	2.4	2.52	2.58	2.61	2.64
(iv) Contribution (Sales x P/V ratio)	0.8	0.84	0.86	0.87	0.88
(v) Increase in contribution overexisting (a)	—	0.04	0.06	0.07	0.08
(vi) Debtors balances (Sales x Credit period)	0.2	0.315	0.43	0.54375	0.66
(vii) Required pre tax return on investment	0.04	0.063	0.086	0.10875	0.132
(viii) Increase in return on investment over existing (b)	—	0.023	0.046	0.06875	0.092
(ix) Excess (a – b)	—	0.017	0.014	0.00125	(0.012)

It will be seen from the above calculation that there is maximum return when the credit period is for 45 days. There is an excess of contribution over increase in return on investment. Therefore management is advised to extend the credit period to 45 days.

Note: Investment in debtors could be calculated on variable cost basis also.

Problem No. 36

Taxes Manufacturing Company Ltd., is to start production on 1st January, 2002. The prime cost of a unit is expected to be Rs. 40 out of which Rs. 16 is for materials and Rs. 24 for labour. In addition variable expenses per unit are

expected to be Rs. 8, and fixed expenses per month Rs. 30,000. Payment for materials is to be made in the month following the purchase. One-third of sales will be for cash and the rest on credit for settlement in the following month. Expenses are payable in the month in which they are incurred.

The selling price is fixed at Rs. 80 per units manufactured and sold are expected to be as under :

January	*900*	*April*	*2,100*
February	*1,200*	*May*	*2,100*
March	*1,800*	*June*	*2,400*

Draw up a statement showing requirements of working capital from month to month, ignoring the question of stocks.

Answer to Problem No. 36

Statement showing requirements of Working Capital (Jan. to June 2002)

	January Rs.	*February* Rs.	*March* Rs.	*April* Rs.	*May* Rs.	*June* Rs.
Requirements:						
Wages	21,600	28,800	43,200	50,400	50,400	57,600
Materials	—	14,400	19,200	28,800	33,600	33,600
Expenses:						
Fixed	30,000	30,000	30,000	30,000	30,000	30,000
Variable	7,200	9,600	14,400	16,800	16,800	19,200
Total (i)	58,800	82,800	1,06,800	1,26,000	1,30,800	1,40,000
Receipts:						
Cash sales	24,000	32,000	48,000	56,000	56,000	64,000
Sundry Debtors (Credit Sales)	—	48,000	64,000	96,000	1,12,000	1,12,000
Total (ii)	24,000	80,000	1,12,000	1,52,000	1,68,000	1,76,000
Cash required:						
[(i)—(ii)]	34,800	2,800	—	—	—	—
Surplus (ii)—(i)	—	—	5,200	26,000	37,200	35,600
Cumulative requirement	34,800	37,600	32,000	6,400	—	—
Cumulative Surplus	—	—	—	—	30,800	66,400

It is same as Cash Budget.

Problem No. 37

Estalla Garment Co. Ltd. is a famous manufacturer and exporter of garments to

the European countries. The finance manager of the company is preparing its working capital forecast for the next year. After carefully screening all the documents, he collected the following information:

Production during the previous year was 15,00,000 units. The same level of activity is intended to be maintained during the current year.

The expected ratios of cost to selling price are:

Raw materials	*40%*
Direct wages	*20%*
Overheads	*20%*

The raw materials ordinarily remain in stores for 3 months before production. Every unit of production remains in the process for 2 months and is assumed to be consisting of 100% raw material, wages and overheads. Finished goods remain in warehouse for 3 months. Credit allowed by the creditors is 4 months from the date of the delivery of raw material and credit given to debtors is 3 months from the date of dispatch.

The estimated balance of cash to be held: Rs. 2,00,000

Lag in payment of wages: $\frac{1}{2}$ *month*

Lag in payment of expenses: $8\frac{1}{2}$ *month*

Selling price is Rs. 10 per unit. Both production and sales are in a regular cycle. You are required to make a provision of 10% for contingency (except cash). Relevant assumptions may be made.

You have recently joined the company as an assistant finance manager. The job of preparing the forecast statement has been given to you. You are required to prepare the forecast statement. The finance manager is particularly interested in applying the quantitative techniques for forecasting the working capital needs of the company. You are also required to explain the approach in the brief note to be prepared by you.

Answer to Problem No. 37

Forecast statement of Working Capital Requirement of Estalla Garment Co. Ltd.

A. Current Assets

			Rs.
(i)	Debtors $\left(1{,}50{,}00{,}000 \times \frac{80}{100} \times \frac{3}{12}\right)$	=	30,00,000
(ii)	Finished goods $\left(1{,}50{,}00{,}000 \times \frac{80}{100} \times \frac{3}{12}\right)$	=	30,00,000
(iii)	Work-in-progress $\left(1{,}50{,}00{,}000 \times \frac{80}{100} \times \frac{2}{12}\right)$	=	20,00,000

(iv) Raw materials $\left(1,50,00,000 \times \frac{40}{100} \times \frac{3}{12}\right)$ = 15,00,000

Total Current Assets (A) 95,00,000

B. Current Liabilities

		Rs.
(i) Creditors $\left(1,50,00,000 \times \frac{40}{100} \times \frac{4}{12}\right)$	=	20,00,000
(ii) Wages $\left(1,50,00,000 \times \frac{20}{100} \times \frac{1}{24}\right)$	=	1,25,000
(iii) Expenses $\left(1,50,00,000 \times \frac{20}{100} \times \frac{1}{24}\right)$	=	1,25,000
Total Current Liabilities (B)		22,50,000

	Rs.
Excess of current assets over current liabilities (A – B)	72,50,000
Add: Provision of 10% contingency	7,25,000
	79,75,000
Add: Balance of Cash available	2,00,000
Forecast of Working Capital Requirement	81,75,000

Working Notes:

Total sales of the company for the current year:

Total sales = Number of units sold x Price per unit

Total sales = 15,00,000 x Rs. 10
= Rs. 1,50,00,000

Assumptions:

(i) All sales are made on credit basis.

(ii) The working capital blocked in debtors, finished goods and work-in-progress is taken at cost i.e. 80% of selling price.

NOTE

Dated: 2.1.2003

From: Assistant Finance Manager To: Finance Manager

Sir,

This has reference to your direction to prepare a brief note on application of quantitative techniques for forecasting the working capital. In this connection, I

hereby submit as under:

Apart from the estimation of working capital, as per operating cycle method, the following quantitative techniques are also used for estimating the working capital needs of the company:

(i) *Regression analysis method:* The regression analysis method is very useful statistical technique of forecasting working capital requirements. In the sphere of working capital management, it helps in making projections after establishing the average relationship in the past years between sales and the working capital and its various components. The analysis can be carried out through the graphic portrayals (scatter diagram) or through mathematical formulae. The relationship between sales and working capital may be simple and direct indicating complete linearity between the two or may be complex in differing degrees involving simple linear regression and multiple regression situations. This method is suitable for simple as well as complex situations.

(ii) *Percent-of-sales method:* It is a traditional and simple method of determining the level of working capital and its components. In this method, working capital is determined on the basis of past experience. If over the years, the relationship between sales and working capital is found to be stable, then this relationship may be taken as base for determining the working capital for future. This method is simple, easy to understand and useful in forecasting of working capital. However, this method is criticised on the assumption of linear relationship, between sales and working capital. Therefore, this method is not universally applicable.

Submitted please.

XYZ
(Assistant Finance Manager)

Problem No. 38

A dealer having annual sales of Rs. 50 lakh extends 30 days credit period to its debtors. The variable cost is estimated at 80% on sales and fixed costs are Rs. 6,00,000. The dealer intends to change the credit policy for which the following information is given:

Credit Policy	*Average Collection Period (Days)*	*Annual Sales (Rs. in lakhs)*
A	*45*	*56*
B	*60*	*60*
C	*75*	*62*

Rate of return (pre-tax) required on investment is 20%.

You are required to assess the most profitable policy with the help of incremental approach. Calculations may be restricted to two decimal places.

Answer to Problem No. 38

Evaluation of Proposed Credit Policies

Amount in lakhs (Rs.)

Credit Policy	*Present*	*A*	*B*	*C*
Period (days)	30	45	60	75
Annual Sales	50	56	60	62
Variable Cost (80% on sales)	40	44.8	48	49.6
Fixed Cost	6	6	6	6
Total Cost	46	50.8	54	55.6
Profit (Annual Sales-Total Cost)	4.00	5.20	6.00	6.40
Incremental Profit	—	1.20	2.00	2.40..(A)
Average Investment in Debtors				
46 x 30/365	3.78			
50.8 x 45/365		6.26		
54 x 60/365			8.88	
55.6 x 75/365				11.42
Incremental Investment in Debtors as compared to present level	—	2.48	5.10	7.64
Required Return:				
20% of incremental investment	—	0.50	1.02	1.53..(B)
Excess return i.e. (A – B)	—	0.70	0.98	0.87

Policy B having Average Collection Period 60 day's yields the maximum profit and thus is most profitable.

Problem No. 39

On 1st January, 1996, the Board of directors of Dowell Co. Ltd. wishes to know the amount of working capital that will be required to meet the programme of activity; they have planned for the year. The following information is available:

(i) Issued and paid-up capital Rs. 2,00,000.

(ii) 5% Debentures (secured on assets) Rs. 50,000.

(iii) Fixed assets valued at Rs. 1,25,000 on 31.12.1996.

(iv) Production during the previous year was 60,000 units. It is planned that this level of activity should be maintained during the present year.

(v) The expected ratios of cost to selling price are – raw materials 60%, direct wages 10% and overheads 20%.

(vi) Raw materials are expected to remain in stores for an average of two months before these are issued for production.

(vii) Each unit of production is expected to be in process for one month.

(viii) Finished goods will stay in warehouse for approximately three months.

(ix) Creditors allow credit for 2 months from the date of delivery of raw materials.

(x) Credit allowed to debtors is 3 months from the date of dispatch.

(xi) Selling price per unit is Rs. 5.

(xii) There is a regular production and sales cycle.

Prepare:

(a) working capital requirement forecast; and

(b) an estimated profit and loss account and balance sheet at the end of the year.

Answer to Problem No. 39

(a) Forecast of Working Capital Requirements—of Dowell Co. Ltd.

	Holding Periods	*Rs.*
Current Assets:		
Raw Material	2 months	30,000
Work-in-progress	1 month	18,750
Finished goods	3 months	67,500
Debtors	3 months	75,000
Total Current Assets		1,91,250
Less: Current Liabilities – Creditors	2 months	30,000
Net Working Capital (CA – CL)		1,61,250

(b)(i) Dowell Company Limited
Estimated Profit and Loss Account
for the year ending 31st December, 1996

	Rs.	*Rs.*
Sales 60,000 units @ Rs.5		3,00,000
Less: Cost of Sales:		
Raw material @ 60%	1,80,000	
Direct Wages @ 10%	30,000	
Overheads @ 20%	60,000	2,70,000
Gross profit		30,000
Less: Debenture Interest @ 5% on 50,000		2,500
Net Profit		27,500

(ii) Dowell Company Limited
Estimated Balance Sheet
for the end of 31st December, 1996

Liabilities	*Rs.*	*Assets*	*Rs.*
Share Capital	2,00,000	Fixed Assets	1,25,000
Reserve & Surplus	8,750	*Current Assets:*	
(balance figure)		Raw material	30,000
Profit & Loss A/c		Work-in-progress	18,750
(Profit for the year)	27,500	Finished goods	67,500
5% Debentures	50,000	Debtors (equivalent	
Creditors	30,000	to 3 months sales)	75,000
	3,16,250		3,16,250

Working Notes:

(i) Computation of Cost and Sales:

	Per unit	*Total 60,000 units*
	Rs.	*Rs.*
Selling price	5.00	3,00,000
Cost of Sales:		
Raw material	3.00	1,80,000
Direct Wages	0.50	30,000
Overheads	1.00	60,000
	4.50	2,70,000

(ii) Stock of Raw material:

2 month's consumption $\left(\frac{1,80,000 \times 2}{12}\right)$ = Rs. 30,000

(iii) Work in progress (1 month's production):

Raw Material $\left(\text{Rs. } \frac{1,80,000}{12}\right)$	=	Rs. 15,000
Direct Wages* $\left(\frac{30,000}{12} \times \frac{1}{2}\right)$	=	Rs. 1,250
Overheads* $\left(\frac{60,000}{12} \times \frac{1}{2}\right)$	=	Rs. 2,500
*Presumed to accrue evently during the period		Rs. 18,750

(iv) Finished goods (3 months' production)

$\frac{2,70,000 \times 3}{12}$ = Rs. 67,500

(v) Debtors (3 months cost of sales)

$$\frac{3{,}00{,}000 \times 3}{12} = \text{Rs. } 75{,}000$$

(vi) Creditors (2 months consumption of raw materials)

$$\frac{1{,}80{,}000 \times 2}{12} = \text{Rs. } 30{,}000$$

Problem No. 40

Prepare working capital forecast and projected profit and loss account and balance sheet from the following information:

	Rs.
Issued equity share capital	*50,00,000*
Preference share capital	*15,00,000*
Fixed assets	*30,66,667*

Production during the previous year was 10,00,000 units which is expected to be maintained during the current year. The expected ratios of cost to selling price are?

Raw material	*40%*
Direct wages	*20%*
Overheads	*20%*

Raw material ordinarily remains in stock for 3 months before production. Every unit of production remains in process for 2 months. Finished goods remain in stock for 3 months. Creditors allow 3 months for payment and debtors are allowed 4 months credit. Estimated minimum cash to be held will be half a month. The selling price will be Rs. 8 per unit. The production is in continuous process and sales are in regular cycle.

Answer to Problem No. 40

Total Production	:	10,00,000 units
Sale Rate	:	Rs. 8/unit
Cost per unit of:		
Raw Material	=	$8 \times 40\% = 3.20$
Wages	=	$8 \times 20\% = 1.60$
Overheads	=	$8 \times 20\% = 1.60$

Current Assets

			(Rs.)
Cash			2,00,000
Raw Material 10,00,000 × 3.20 × 3m/12		=	8,00,000
Work-in-Progress 10,0,000 × [3.20 RM]			
[0.80 Wages]			
[0.80 o/h]			
× 2/12		=	8,00,000
Finished Goods 10,00,000 × 6.40 × 3/12		=	16,00,000
Debtors 10,00,000 × 8 × 4/12		=	26,66,667
		Total :	60,66,667

Current Liabilities

Creditors 10,00,000 × 3.20 × 3/12	=	8,00,000	
Wages 10,00,000 × 1.60 × 1/24	=	66,667	
Overheads 10,00,000 × 1/60 / 1/24	=	66,667	9,33,334
Working Capital required			51,33,333

Profit Statement

		(Rs.)
Sales		80,00,000
Less:		
Raw Material	32,00,000	
Wages	16,00,000	
Wages	16,00,000	64,00,000
Profit		16,00,000

Balance Sheet as on……

Liabilities	*(Rs.)*	*Assets*	*(Rs.)*
Capital	50,00,000	Fixed	30,66,667
Prof. Share Capital	15,00,000	Raw Material	8,00,000
Profit: Previous Years		Work-in-Progress	8,00,000
(Balance figure)	1,00,000	Finished Goods	16,00,000
Current Year	16,00,000	Debtors	26,66,667
Creditors	8,00,000	Cash	2,00,000
Wages Payable	66,667		
Overheads Payable	66,667		
	91,33,334		91,33,334

Problem No. 41

During a 5 year period, the relevant results for the aggregate market are that the rf (risk-free rate) is 8 percent and the rm (return on market) is 14 percent. For that period, the results of four portfolio managers are as follows:

Portfolio Manager	*Average Return (%)*	*Beta*
A	*13*	*0.80*
B	*14*	*1.05*
C	*17*	*1.25*
D	*13*	*0.90*

Using CAPM model you are required to (a) Calculate the expected rate of return for each portfolio manager and compare the actual returns with the expected returns. (b) Based upon your calculations, select the manager with the best performance.

Answer to Problem No. 41

(a) Use the CAMP equation :

The expected rates of return are as follows :

Portfolio Manager	*Average Return (%)*	*Expected Return (%)*	*Actual Return (%)*	*Difference between Actual and Expected Returns (%)*
A	13	rA = 8% + 0.80 (14% – 8%) = 12.8	13	+0.2
B	14	rB = 8% + 1.05 (14% – 8%) = 14.3	14	–0.3
C	17	rC = 8% + 1.25 (14% – 8%) = 15.5	17	+1.5
D	13	rD = 8% + 0.90 (14% – 8%) = 13.4	13	–0.4

(b) Portfolio Managers A and C did better than expected, since A exceeded the expected return by 1.56 percent (0.2% – 12.8%) and C bettered the expected return by 9.68 percent (1.5% – 15.5%). C therefore showed the best performance.

Note: Average return is the actual return.

Problem No. 42

From the following information, calculate the expected rate of return of a portfolio:

Risk Free rate of interest	*12%*
Expected return of market portfolio	*18%*

Standard deviation of an asset	*2.8%*
Market standard deviation	*2.3%*
Co-relation co-efficient of portfolio with market	*0.8%*

Answer to Problem No. 42

Calculation of Expected Rate of Return of a Portfolio

Expected Rate of Return of a portfolio can be worked by using following formula:

$$R_e + R_f + b_j(R_m - R_f) \quad ...(1)$$

Where R_e stands for expected rate of return of a portfolio
R_f = Risk free rate of interest or return
r_m = Expected return of market portfolio
□ = Beta co-efficient of Security j.

Since in the question, information on □is not given, it is essential to find it. The formula to calculate □s

$$\frac{r_{sm} \times s_s}{s_m} \quad ...(2)$$

Where r_{sm} — Stands for correlation co-efficient of portfolio with market
□s — Standard deviation of an asset
□m — Market standard deviation

By substituting the available information in above formula, (2) we may get

$$b = \frac{0.80 \times 0.028}{0.023}$$
$$= 0.97$$

Now we may get expected rate of return by substituting available information in equation (1)

$$Re = 12 + 0.97 (18 - 12)$$
$$= 17.82 \text{ per cent}$$

Problem No. 43

The following information is available in respect of Security-X and Security-Y:

Security	*β*	*Expected Rate of Return*
X	*1.8*	*22.00%*
Y	*1.6*	*20.40%*

Rate of return of market portfolio is 15.3%.

If risk-free rate of return is 7%, are these securities correctly priced? What would be the risk-free rate of return, if they are correctly period?

Answer to Problem No. 43

If the two Securities X and Y are correctly priced, then the returns required, based on their levels of systematic risk and calculated from the CAPM, will be the same as their expected returns given. So, the required return can be ascertained with the help of CAPM equation as follows:

$$\begin{aligned} \text{Security X} &= I_{RF} + (R_M - IRF)\ \beta \\ &= 7\% + (15.3\% - 7\%)\ 1.8 \\ &= 7\% + (8.3\% \times 1.8) \\ &= 7\% + 14.94\% \\ &= 21.94\% \end{aligned}$$

This is less than the expected return of Security X i.e. 22%. Therefore, Security A is not correctly priced.

$$\begin{aligned} \text{Security Y} &= I_{RF} + (R_M - IRF)\ \alpha \\ &= 7\% + (15.3\% - 7\%)\ 1.6 \\ &= 7\% + (8.3\% \times 1.6) \\ &= 7\% + 13.28\% \\ &= 20.28\% \end{aligned}$$

Return of 20.28% is less than the expected return of 20.40%. Therefore, Security Y is not correctly priced.

In case, both securities are correctly priced, then they must offer same Reward to Risk Ratio. The risk free rate would have to be such that:

$$\begin{aligned} (22\% - I_{RF}) \div 1.8 &= (20.4\% - I_{RF}) \div 1.6 \\ (.22\% - I_{RF}) \times 1.6 &= (.204 - I_{RF}) \times 1.8 \\ .352 - 1.6\ I_{RF} &= .3672 - 1.8\ I_{RF} \\ .2\ I_{RF} &= 0.152 \\ I_{RF} &= 7.6\% \end{aligned}$$

So, both securities would have correctly priced if the risk free rate is 7.6%.

LEASING

Problem No. 44

XYZ Ltd. Is considering to acquire an additional computer to supplement its time-share computer services to its clients. It has two options—

(i) To purchase the computer for Rs. 22,00,000.

(ii) To lease the computer for 3 years from a leasing company for Rs. 5,00,000 as annual lease rent plus 10% of gross time-share service revenue. The agreement also requires an additional payment of Rs. 6,00,000 at the end of the third year. Lease rent are payable at the year end, and the computer reverts to the lessor after the contract period.

The company estimates that the computer under review now will be worth Rs. 10 lakhs at the end of the third year. Forecast revenues are—

Year	*Rs. .*
1	*22,50,000*
2	*25,00,000*
3	*27,50,000*

Annual operating costs (excluding depreciation/lease rent of computer) are estimated at Rs. 9,00,000 with an additional Rs. 1,00,000 for start-up and training costs at the beginning of the first year. These costs are to be borne by the lessee. XYZ Ltd. Will borrow at 16% interest to finance the acquisition of the computer; repayments are to be made according to the following schedule:

Year-end	*Principal (Rs.)*	*Interest (Rs.)*	*Total (Rs.)*
1	*5,00,000*	*3,52,000*	*8,52,000*
2	*8,50,000*	*2,72,000*	*11,22,000*
3	*8,50,000*	*1,36,000*	*9,86,000*

The company uses the straight line method to depreciate its assets and pays 50% tax on its income.

The management of XYZ Ltd. Approaches you, as a company secretary, for advice. Which alternative would you recommend and why?

Note: *Present value factor at 8% and 16% rate of discount:*

Year	*8%*	*16%*
1	*0.926*	*0.862*
2	*0.857*	*0.743*
3	*0.794*	*0.641*

Answer to Problem No. 44

Present Value of Cash Outflows under Leasing Alternative

Year	*Payment under lease contract (Rs.)*				*Tax Shield @50% on lease payment*	*Net cash outflows*	*PV factor at 8%*	*Total PV*
	Lease Rent	*10% of gross revenue*	*Lump-sum payment*	*Total*				
	(Rs.)	*(Rs.)*	*(Rs.)*	*(Rs.)*	*(Rs.)*	*(Rs.)*		*(Rs.)*
1.	5,00,000	2,25,000	—	7,25,000	3,62,500	3,62,500	0.926	3,35,675
2.	5,00,000	2,50,000	—	7,50,000	3,75,000	3,75,000	0.857	3,21,375
3.	5,00,000	2,75,000	6,00,000	13,75,000	6,87,500	6,87,500	0.794	5,45,875
								12,02,925

Present Value of Cash Outflows under Buying/Borrowing Alternative

Year end	*Instalment Payment*			*Tax advantage on*		*Net cash outflows*	*PV factor at 8%*	*Total PV*
	Principal	*Interest @16%*	*Total*	*Interest payment*	*Depre-ciation*			
	(Rs.)	(Rs.)	(Rs.)	(Rs.)	(Rs.)	(Rs.)		(Rs.)
1.	5,00,000	3,52,000	8,52,000	1,76,000	2,00,000	4,76,000	0.926	4,40,776

2.	8,50,000	2,72,000	11,22,000	1,36,000	2,00,000	7,86,000	0.857	6,73,602
3.	8,50,000	1,36,000	9,86,000	68,000	2,00,000	7,18,000	0.794	5,70,092
		Salvage value				(10,00,000)	0.794	(7,94,000)
								8,90,470

Recommendation: Since the Present value of cash outflows under borrowing/buying alternative Rs. 8,90,470 is less than Present value of cash outflow under lease alternative i.e. Rs. 12,02,925. Therefore, the Company is advised to buy the computer.

*Depreciation for 3 years = (Rs. 22,00,000 – Rs. 10,00,000) = Rs. 12,00,000. Effective rate of interest or discount = 16% (1 – .50) = 8%.

NOTE: Since the annual operating costs and training costs are same under both the alternatives, so it is not included in the calculations of cash outflows.

Problem No. 45

The Controller of Mahindra Electronic Corporation of India has been analysing the firm's policy regarding computers, which are now being leased on a yearly basis on rental amounting to Rs. 2,00,000 per year. The computer can be bought for Rs. 10,00,000. The purchase would be financed by 16% loan repayable in 4 equal annual instalments.

On account of rapid technological progress in the computer industry, it is suggested that a 4 year economic life should be used, instead of 10 years physical life. It is estimated that the computer could be sold for Rs. 4,00,000 at the end of 4 years.

The company uses the straight line method of depreciation. Corporate tax rate is 50%.

You are required to:

(a) Comment on whether the equipment should be bought or leased?

(b) Analyse the financial viability from the point of view of the lessor, assuming 14% cost of capital.

(c) Determine the minimum lease rent at which the lessor would break-even.

(d) Determine the lease rent which will yield on IRR of 16% to the lessor.

Answer to Problem No. 45

(a) Present value of cash outflows under Leasing alternative

Year	*Lease Rent after Taxes (Rs.)*	*PV factor at 8%*	*Total Present Value (Rs.)*
1—4	1,00,000	3.312	3,31,200

Cash outflows under Buying alternative

Year end	*Loan at the beginning of the year*	*Loan Instalment*	*Interest on Loan*	*Principal Repayment*	*Principal outstanding at the end of the year*
1	10,00,000	3,57,398	1,60,000	1,97,398	8,02,602
2	8,02,602	3,57,398	1,28,416	2,28,982	5,73,620

3	5,73,620	3,57,398	91,779	2,65,619	3,08,001
4	3,08,001	3,57,398	49,397	3,08,001	—

*(Rs. 10,00,000 / 2.798) Present value factor of annuity of Re. 1 at 16% for 4 years.

Present value of cash outflows under Buying alternative

Year	*Loan Instalment*	*Tax advantage on*		*Net Cash Outflows*	*PV factor at 8%*	*Total PV*
		Payment of Interest	*Depre-ciation*			
1	3,57,398	80,000	75,000	2,02,398	0.926	1,87,421
2	3,57,398	64,208	75,000	2,18,190	0.857	1,86,989
3	3,57,398	45,890	75,000	2,36,508	0.794	1,87,787
4	3,57,398	24,699	75,000	2,57,699	0.735	1,89,409
			Salvage value	(4,00,000)	0.735	(2,94,000)
						4,57,606

Recommendation: It may be noted from the above workings that leasing option is financially superior as against buying alternative because present value of cash outflow under leasing option is lower.

(b) (i) *Viability from the lesser's point of view. at 14% cost of capital*

Determination of CFAT

Lease rent received	2,00,000
Less: Depreciation	1,50,000
Earning before tax	50,000
Less: Taxes (50%)	25,000
Earning after tax	25,000
Add: Depreciation	1,50,000
CFAT	1,75,000

(ii) *Determination of NPV*

Year	*CFAT (Rs.)*	*PV Factor at 14%*	*Total PV (Rs.)*
1-4	1,75,000	2.914	5,09,950
4	4,00,000	0.592	2,36,800
			7,46,750
Less: Cost of computer			10,00,000
			(2,53,250)

Recommendation: The proposal is not financially viable to the lessor.

(c) *Lease rent at which lessor would break even:*

	Rs.
Cost of computers	10,00,000

Less: PV of salvage price of computer	2,36,800
Net cost to be covered	7,63,200
CFAT (Desired) (7,63,200 ÷ 2.914*)	2,61,908
Less: Depreciation	1,50,000
Earning after taxes	1,11,908
Add: Taxes @ 50%	1,11,908
Earning before tax	2,23,816
Add: Depreciation	1,50,000
Lease rent at which lessor would break-even	3,73,816

* Annuity factor at 14% for four years.

(d) *Lease rent to yield 16% IRR*

$$\text{Rs. } 10,00,000 = \sum_{t=1}^{4} \frac{X}{(1+0.16)^4} + \frac{\text{Rs. } 4,00,000}{(1+0.16)^4}$$

Where X = CFAT

$$\Rightarrow \text{Rs. } 10,00,000 - \frac{\text{Rs. } 4,00,000}{(1.16)^4} = \sum_{t=1}^{4} \frac{X}{(1+0.16)^4}$$

Substituting (i) PV factor of annuity of Re. 1 at 16% for 4 years is 2.798 and (ii) PV factor of Re. 1 at 16% in 4 years is 0.552.

Rs. 10,00,000 – Rs. 4,00,000 × .552 = 2.798X

Rs. 10,00,000 – Rs. 2,20,800 = 2.798X

$$\text{Rs. } \frac{779200}{2.798} = X$$

X = Rs. 278485

	Rs.
CFAT desired	2,78,485
Less: Depreciation	1,50,000
Earning after taxes	1,28,485
Add: Taxes @ 50%	1,28,485
Earning before taxes	2,56,970
Add: Depreciation	1,50,000
Lease Rent Desired	4,06,970

Problem No. 46

ABC Ltd. is considering to acquire an additional sophisticated computer to supplement its time-share computer services to its clients. It has two options:

(i) To purchase the computer for Rs. 44,00,000.

(ii) To lease the computer for 3 years from a leasing company for Rs. 10,00,000 as annual lease rent plus 10% of gross time share service revenue. The agreement also requires an additional payment of Rs. 12,00,000 at the end of the third year. Lease rents are payable at the year end, and the computer

reverts back to the lessor after the contract period.

The company estimates that the computer under review now will be worth Rs. 20 lakhs at the end of the third year.

Year	*Rs.*
1	*45,00,000*
2	*50,00,000*
3	*55,00,000*

Annual operating costs (excluding depreciation/lease rent of computer) are estimated at Rs. 18,00,000 with an additional cost of Rs. 2,00,000 for start-up and training at the beginning of the first year. These costs are to be borne by the lessee. ABC Ltd. will borrow 16% interest to finance the acquisition of the computer and the repayments are to be made according to the following schedule:

Year-end	*Principal (Rs.)*	*Interest (Rs.)*	*Total (Rs.)*
1	*10,00,000*	*7,04,000*	*17,04,000*
2	*17,00,000*	*5,44,000*	*22,44,000*
3	*17,00,000*	*2,72,000*	*19,72,000*

The company uses the straight line method to depreciate its assets and pays 50% tax on its income.

The management of ABC Ltd. approaches you, as a Company Secretary-cum-Finance Manager, for advice. Which alternative would you recommend and why?

***Note:** Present value factor at 8% and 16% rate of discount:*

Year	*8%*	*16%*
1	*0.926*	*0.862*
2	*0.857*	*0.743*
3	*0.794*	*0.641*

Answer to Problem No. 46

Present Value of Cash Outflows under Leasing Alternative

Year	*Payment under lease control (Rs.)*				*Tax Shield @ 50% on lease*	*Net cash outflow*	*PV factor at 8%*	*Total PV*
	Lease Rent	*10% of gross revenue*	*Lumpsum payment*	*Total*				
	(Rs.)	*(Rs.)*	*(Rs.)*	*(Rs.)*	*(Rs.)*	*(Rs.)*		*(Rs.)*
1	10,00,000	4,50,000	—	14,50,000	7,25,000	7,25,000	0.926	6,71,350
2	10,00,000	5,00,000	—	15,00,000	7,50,000	7,50,000	0.857	6,42,750
3	10,00,000	5,50,000	12,00,000	27,50,000	13,75,000	13,75,000	0.794	10,91,750
							PV	24,05,850

Present Value of Cash Outflows under Buying/Borrowing Alternative

Year end	*Instalment Payment*			*Tax Advantage on*		*Net cash outflow*	*PV factor at 8%*	*Total PV*
	Principal	*Interest @16%*	*Total*	*Interest payment*	*Depre-ciation*			
	(Rs.)	*(Rs.)*	*(Rs.)*	*(Rs.)*	*(Rs.)*	*(Rs.)*		*(Rs.)*
1	10,00,000	7,04,000	17,04,000	3,52,000	4,00,000	9,52,000	0.926	8,81,552
2	17,00,000	5,44,000	22,44,000	2,72,000	4,00,000	15,72,000	0.857	13,47,204
3	17,00,000	2,72,000	19,72,000	1,36,000	4,00,000	14,36,000	0.794	11,40,184
					Salvage Value	(20,00,000)	0.794	(15,88,000)
							PV	17,80,940

Recommendations: Since the Present value of cash outflows under borrowing/buying alternative Rs. 17,80,940 is less than Present value of cash outflow under lease alternative i.e. Rs. 24,05,580. Therefore, the Company is advised to buy the computer.

Depreciation for 3 years = (Rs. 44,00,000 – Rs. 20,00,000)
= Rs. 24,00,000 / 3 = Rs. 8,00,000.

Effective rate of interest or discount = 16% (1 – .50) = 8%.

Note: Since the annual operating costs and training costs are same under both the alternatives, these are not considered in the calculation of cash outflows.

FINANCIAL DECISIONS

Problem No. 47

Sales and earnings before interest and taxes for the XYZ Company during 2002, were Rs. 17,50,000 and Rs. 4,50,000, respectively. During 1988, interest expense was Rs. 4,000 and preferred dividends were Rs. 10,000. These fixed charges are expected to continue during 2003. An expansion is planned, which will require Rs. 1,75,000 and is expected to increase EBIT by Rs. 1,00,000 to Rs. 5,50,000.

The firm is considering the following financing alternatives:

(a) Issue 5,000 shares of common stock to net the firm Rs. 35 per share. The firm currently has 40,000 shares of common stock outstanding.

(b) Issue Rs. 1,75,000 of fifteen-year bonds at 8%. Sinking fund payments on these bonds will commence in 2012.

(c) Issue Rs. 1,75,000 of 8.5% preferred stock.

Assume a 50% income tax rate.

(i) Calculate the EPS for 2003 at the expected earnings before interest and taxes level of Rs. 5,50,000 of each financing alternative.

(ii) Calculate the equivalency level of earnings before interest and taxes between the debt and common stock alternatives.

(iii) Calculate the equivalency level of earnings before interest and taxes between the preferred stock and common stock alternatives.

Answer to Problem No. 47

(i) Determination of EPS at EBIT of Rs. 5,50,000

Financial Plans

	(a) Equity shares (Rs.)	*(b) bonds (Rs.)*	*(c) Preference shares (Rs.)*
EBIT	5,50,000	5,50,000	5,50,000
Less interest	4,000	18,000	4,000
Taxable income	5,46,000	5,32,000	5,46,000
Less: Taxes 50%	2,73,000	2,66,000	2,73,00
Income after taxes	2,73,000	2,66,000	2,73,000
Less: Dividend on preference shares	10,000	10,000	24,875
Earnings available for equityholders	2,63,000	2,56,000	2,48,125
Number of equity shares	45,000	40,000	40,000
EPS	Rs. 5.84	Rs. 6.40	Rs. 6.20

(ii) Equivalency level of earnings between equity and debt plan

$$\frac{(X - I_1)(1 - t) - P_1}{N_1} = \frac{(X - I_1 - I_2)(I - t)P_1}{N_2}$$

where I = Interest, t = tax rate

P = Dividend to Preference Share holders.

or $$\frac{(X - \text{Rs. } 4{,}000)0.5 - \text{Rs. } 10{,}000}{45{,}000}$$

$$= \frac{(X - \text{Rs. } 4{,}000 - \text{Rs. } 14{,}000)0.5 - \text{Rs. } 10{,}000}{40{,}000}$$

or $$\frac{0.5X - \text{Rs. } 2{,}000 - \text{Rs. } 10{,}000}{45{,}000}$$

$$= \frac{0.5X - \text{Rs. } 9{,}000 - \text{Rs. } 10{,}000}{45{,}000}$$

or $$\frac{0.5X - \text{Rs. } 12{,}000}{45{,}000} = \frac{0.5X - \text{Rs. } 19{,}000}{40{,}000}$$

Multiplying each side of the equation by 3,60,000

$$8(0.5X - \text{Rs. } 12{,}000) = 9(0.5X - \text{Rs. } 19{,}000)$$

$$4X - \text{Rs. } 96{,}000 = 4.5X - \text{Rs. } 1{,}71{,}000$$

75,000 = 0.5X
Rs. 1,50,000 = X (EBIT)

Verification table

	Equity plan (Rs.)	*Debt plan (Rs.)*
EBIT	1,50,000	1,50,000
Less interest	4,000	18,000
Taxable earnings	1,46,000	1,32,000
Less taxes 50%	73,000	66,000
Earnings after taxes	73,000	66,000
Less preference dividends	10,000	10,000
Earnings for equity holders	63,000	56,000
Number of equity shares	45,000	40,000
EPS	Rs. 1.40	Rs. 1.40

(iii) Equivalency level between the preferred stock and common stock alternatives

$$\frac{(X - I_1)(1 - t) - P_1 - P_2}{N_1} = \frac{(X - I_1)(I - t) - P_1}{N_2}$$

or $$\frac{(X - \text{Rs. } 4{,}000)0.5 - \text{Rs. } 24{,}875}{40{,}000} = \frac{(X - \text{Rs. } 4{,}000)(0.5) - \text{Rs. } 10{,}000}{45{,}000}$$

or $$\frac{0.5X - \text{Rs. } 2{,}000 - \text{Rs. } 24{,}875}{40{,}000} = \frac{0.5X - \text{Rs. } 2{,}000 - \text{Rs. } 10{,}000}{45{,}000}$$

Multiplying both sides of the equation by 3,60,000

9(0.5X – Rs. 26,875) = 8(0.5X – Rs. 12,000)
4.5X – Rs. 2,41,875 = 4X – Rs. 96,000
0.5X = Rs. 1,45,875
X = Rs. 2,91,750

Problem No. 48

The balance sheet of XYZ Company is given as under:

Liabilities	*Rs.*	*Assets*	*Rs.*
Equity Capital		*Net fixed assets*	*2,25,000*
(Rs. 10 per share)	*90,000*	*Current Assets*	*75,000*
10% long term debt	*1,20,000*		
Retained earning	*30,000*		
Current liabilities	*60,000*		
	3,00,000		*3,00,000*

The Company's total assets turnover ratio is 3.00, its fixed operating cost is Rs.1,50,000 and its variable operating cost ratio is 50%. The income tax rate is 50%.

You are required to

(a) Calculate different type of leverages for the company.

(b) Determine the likely level of EBIT if EPS is (i) Re. 1 (ii) Rs. 2 (iii) Re. 0

Answer to Problem No. 48

Income Statement of XYZ Company

Sales Turnover ratio $= \frac{\text{Sales}}{\text{Total Assets}}$

			Rs.
Let sales of the Company be X, then 3	$= \left\{\frac{X}{3,00,000}\right\}$ or	=	9,00,000
Less: Variable Cost (50% of sales)	= Rs. 4,50,000		
Less: Fixed Assets	= Rs. 1,50,000		6,00,000
Earning before Interest and Taxes (EBIT)			3,00,000
Less: Interest (10% of Rs. 1,20,000)			12,000
Earning before Taxes (EBT)			2,88,000
Less: Taxes (50% of Income)			1,44,000
Earning after Taxes (EAT)			1,44,000

Leverages

(a)(i) operating leverages $= \frac{\text{Contribution}}{\text{EBIT}}$

$= \frac{\text{Rs. } 9,00,000 - \text{ Rs. } 4,50,000}{3,00,000}$

$= \frac{4,50,000}{3,00,000} = 150$

(a)(ii) financial leverage $= \frac{\text{EBIT}}{\text{EBT}}$

$= \frac{3,00,000}{2,88,000} = 104$

(a)(iii) combined leverage = operating leverage □financial leverage

$= \frac{\text{Contribution}}{\text{EBIT}}, \frac{\text{EBIT}}{\text{EBT}}$

Combined leverage = 1.50 □1.04 = 1.56

$$EPS = \frac{(EBIT - I)(1 - t)}{N}$$

where I stands for interest
t stands for taxes
N stands for number of shares

(b)(i) If EPS = Re. 1

$$\text{Re. 1} = \frac{(\text{EBIT} - 12{,}000)(1 - .50)}{9{,}000}$$

Rs. 9,000 = (EBIT – 12,000) (.50)
Rs. 9,000 = .5 EBIT – 6,000
.5EBIT = Rs. 9,000 + Rs. 6,000
.5EBIT = Rs. 15,000
EBIT = Rs. 15,000 □2 = Rs. 30,000

(b)(ii) If EPS = Rs. 2

$$\text{Rs. 2} = \frac{(\text{EBIT} - 12{,}000)(1 - .5)}{9{,}000}$$

Rs. 18,000 = .5 EBIT – 6,000
.5EBIT = Rs. 18,000 + Rs. 6,000
.5EBIT = Rs. 24,000
EBIT = Rs. 48,000

(b)(iii) If EPS = Re. 0

$$\text{Re. 0} = \frac{(\text{EBIT} - 12{,}000)(1 - .5)}{9{,}000}$$

.5EBIT – 6,000 = 0
.5EBIT = 6,000
EBIT = Rs. 12,000

Problem No. 49

X & Co. needs Rs. 10,00,000 for construction of a new plant for which it has three financing plans. The company wants to maximise EPS. Currently, the equity share is selling for Rs. 30 per share. The EBIT resulting from the plant operations are expected to run about Rs. 1,80,000 per year. The company's marginal tax rate is 50%. Money can be borrowed at the rates indicated as under:

Upto Rs. 1,00,000 at 10%

Over Rs. 1,00,000 at Rs. 5,00,000 at 14%

Over Rs. 5,00,000 at 18%

If fund is excess of Rs. 5,00,000 are borrowed, the company anticipates a drop in the price of equity to Rs. 25 per share. The three financing plans are as follows:

Plan-A – Use Rs. 1,00,000 debt

Plan-B – Use Rs. 3,00,000 debt

Plan-C – Use Rs. 6,00,000 debt

You are required to determine the EPS for these three plans and indicate the financial plan which will result in the highest EPS.

Answer to Problem No. 49

Calculation of EPS under different plans

	Plan - A	*Plan - B*	*Plan - C*
EBIT (Rs.)	1,80,000	1,80,000	1,80,000
Interest (Rs.)	10,000	38,000	84,000
EBT (Rs.)	1,70,000	1,42,000	96,000
Taxes (50%)	85,000	71,000	48,000
EAT	85,000	71,000	48,000
No. of shares	30,000	23,333	16,000
EPS (Rs.)	2.83	3.04	3.00

From the above it is clear that plan B gives highest earning per share i.e. Rs. 3.04 for the Company.

Problem No. 50

Sales and earnings before interest and taxes for the XYZ Ltd., during current year were Rs. 35,00,000 and Rs. 9,00,000, respectively. During the year interest expense was Rs. 8,000, and preference dividends were Rs. 10,000. These fixed charges are expected to continue for the next year.

An expansion is planned, which will require Rs. 3,50,000 and is expected to increase EBIT by Rs. 2,00,000 to Rs. 11,00,000.

The firm is considering the following financing alternatives:

(a) Issue 10,000 shares of common stock to net the firm Rs. 35 per share. The firm currently has 80,000 shares of common stock outstanding.

(b) Issue Rs. 3,50,000 of fifteen-year bonds at 15%. Sinking fund payments on these bonds will commence after 15 years.

(c) Issue Rs. 3,50,000 of 14% preference share.

Assume a 50% income tax rate:

(i) Calculate the EPS at the expected earnings before interest and taxes level of Rs. 11,00,000 for each financing alternative.

(ii) Calculate the equivalency level of earnings before interest and taxes between the debt and common stock alternatives.

(iii) Calculate the equivalency level of earnings before interest and taxes between the preference share and common stock alternatives.

Answer to Problem No. 50

(i) Determination of EPS at EBIT Level of Rs. 11,00,000

	Financing Plan		
	(a) Equity Shares	*(b) Bond*	*(c) Preference Shares*

	Rs.	*Rs.*	*Rs.*
EBIT	11,00,000	11,00,000	11,00,000
Less: Interest	8,000	60,500	8,000
Taxable Income	10,92,000	10,39,500	10,92,000
Less: Taxes 50%	5,46,000	5,19,750	5,46,000
Income after taxes	5,46,000	5,19,750	5,46,000
Less: Dividend on Preference Shares	10,000	10,000	59,000
Earning available for equity holders	5,36,000	5,09,750	4,87,000
Number of Equity shares	90,000	80,000	80,000
EPS (Rs.)	5.96	6.37	6.09

(ii) Equivalency Level of Earnings between Equity and Debt Plan

$$\frac{(X - I_1)\,(1-t) - P_1}{N_1} = \frac{(X - I_1 - I_2)\,(1-t) - P_1}{N_2}$$

OR

$$\frac{(X - \text{Rs.}\,8{,}000)\,0.5 - \text{Rs.}\,10{,}000}{90{,}000} = \frac{(X - \text{Rs.}\,8{,}000 - \text{Rs.}\,52{,}500)\,0.5 - \text{Rs.}\,10{,}000}{80{,}000}$$

$$\frac{0.5X - \text{Rs.}\,4{,}000 - \text{Rs.}\,10{,}000}{90{,}000} = \frac{0.5X - \text{Rs.}\,30{,}250 - \text{Rs.}\,10{,}000}{80{,}000}$$

The above equation can be simplified as under:

$\Rightarrow$ 8 (0.5X – Rs. 14,000) = 9 (0.5X – Rs. 40,250)
$\Rightarrow$ 4X – Rs. 1,12,000 = 4.5X – Rs. 3,62,250
$\Rightarrow$ 4X – 4.5X – Rs. 3,62,250 + Rs. 1,12,000
$\Rightarrow$ –0.5X = –2,50,250
X = Rs. 5,00,500

Verification Table

	Equity Plan (Rs.)	*Debt Plan (Rs.)*
EBIT	5,00,500	5,00,500
Less: Interest	8,000	60,500
	4,92,500	4,40,000
Less: Taxes (50%)	2,46,250	2,20,000
EAT	2,46,250	2,20,000
Less: Pref. Dividend	10,000	10,000
Earnings for Equityholders	2,36,250	2,10,000
No. of Equity shares	90,000	80,000
EPS (Rs.)	2.625	2.625

(iii) Equivalency level between the Preferred stock and common stock alternatives

$$\frac{(X - I_1)\,(1-t) - P_1 - P_2}{N_1} = \frac{(X - I_1)\,(1-t) - P_1}{N_2}$$

OR

$$\frac{(X - Rs.8{,}000)\,0.5 - Rs.10{,}000 - Rs.49{,}000}{80{,}000} = \frac{(X - Rs.8{,}000)\,0.5 - Rs.10{,}000}{90{,}000}$$

$$= \frac{0.5X - Rs.4{,}000 - Rs.59{,}000}{80{,}000} = \frac{0.5X - Rs.4{,}000 - Rs.10{,}000}{90{,}000}$$

OR

$$\Rightarrow \frac{0.5X - Rs.63{,}000}{80{,}000} = \frac{0.5X - Rs.14{,}000}{90{,}000}$$

By simplifying the above, we get:

$\Rightarrow$ 9 (0.5X – Rs. 63,000) = 8 (0.5X – Rs. 14,000)
$\Rightarrow$ 4.5X – Rs. 5,67,000 = 4X – Rs. 1,12,000
$\Rightarrow$ 4.5X – 4X = Rs. 5,67,000 – Rs. 1,12,000
0.5X = 4,55,000

$$X = \frac{Rs.4{,}55{,}000}{.5} = Rs.\ 9{,}10{,}000$$

Problem No. 51

Two companies – P Ltd. and Q Ltd. belong to the equivalent risk group. The two companies are identical in every respect except that Q Ltd. is levered, while P Ltd. is unlevered. The outstanding amount of debt of the levered company is Rs.6,00,000 in 10% debentures. The other information for the two companies are as follows:

	P Ltd.	*Q Ltd.*
Net operating income (EBIT) (Rs.)	*1,50,000*	*1,50,000*
Interest (Rs.)	*—*	*60,000*
Earnings to equity-holders (Rs.)	*1,50,000*	*90,000*
Equity capitalization rate, ke	*0.15*	*0.20*
Market value of equity (Rs.)	*10,00,000*	*4,50,000*
Market value of debt (Rs.)	*—*	*6,00,000*
Total value of firm (Rs.)	*10,00,000*	*10,50,000*
Overall capitalization rate, ko = EBIT/V	*15.0%*	*14.3%*
Debt-equity ratio	*0*	*1.33*

An investor owns 5% equity shares of Q Ltd. Show the process and the amount by which he could reduce his outlay through use of the arbitrage process. Is there

any limit to the 'process'?

Answer to Problem No. 51

Investor's current position (in Company Q)

Dividend income (5% of Rs. 90,000)	=	Rs. 4,500
Market value of Investment (5% of Rs. 4,50,000)	=	Rs. 22,500

He sells his holdings in company Q for Rs. 22,500 and creates a personal leverage by borrowing Rs. 30,000 (5% of Rs. 6,00,000). The total amount with him is Rs. 52,500. He purchases 5% equity holdings of the Company P for Rs.50,000 as the total value of the firm is Rs. 10,00,000. Further, his position with respect to income would be as follows:

	Company P	*Company Q*
Dividends (5% of profit)	Rs. 7,500	Rs. 4,500
Less: Interest (10% of Rs. 30,000)	3,000	—
Net Income	4,500	4,500

The investor, thus, can save an amount of Rs. 2,500 through the use of leverage and still continue to earn the same earnings of Rs. 4,500 as before.

There are limits to the arbitrage process and it will come to an end when the market values of both the companies are same.

Problem No. 52

XYZ Corporation has plans for expansion which calls for 50% increase in assets. The alternatives before the corporation are issue of equity shares or debt at 14%. Its balance sheet and profit and loss accounts are as given below:

Balance sheet as at 31st December, 1995

Liabilities	*Rs. (in lakhs)*	*Assets*	*Rs. (in lakhs)*
12% debentures	*25*	*Total assets*	*200*
Ordinary shares— 10 lakhs shares of Rs. 10 each	*100*		
General reserve	*75*		—
	200		*200*

Profit & loss account for the year ending 31st December, 1995

	Rs. (in lakhs)
Sales	*750*
Total cost excluding interest	*675*
EBIT	*75*
Interest on debentures	*3*

EBT			*72*
Taxes			*36*
EAT			*36*
Earning per share (EPS)	*36,00,000 ÷ 10,00,000*	=	*Rs. 3.60*
P/E ratio		=	*5 times*
Market price		=	*Rs. 18.00*

If the corporation finances the expansion with debt, the incremental financing charges will be at 14% and P/E ratio is expected to be at 4 times. If the expansion is through equity, the P/E ratio will remain at 5 times. The company expects that its new issues will be subscribed to at a premium of 25%.

With the above information determine the following:

(i) If the EBIT is 10% of sales, calculate EPS at sales levels of Rs. 4 crores, Rs.8 crores and Rs. 10 crores.

(ii) After expansion determine at what level of EBIT, EPS would remain the same, whether new funds are raised by equity or debt.

(iii) Using P/E ratios calculate the market value per share at each sales level for both debt and equity financing.

Answer to Problem No. 52

(i) Determination of EPS at various sales levels under Debt and Equity Financing of Rs. 100 lakhs:

Sales Level

Sales	Rs. 4 crores		Rs. 8 crores		Rs. 10 crores	
						Rs. in lakh
	Equity	*Debt 14%*	*Equity*	*Debt 14%*	*Equity*	*Debt 14%*
EBIT at 10%	40	40	80	80	100	100
Less: Interest	3	17 (3+14)	3	17 (3+14)	3	17 (3+14)
EBT	37	23	77	63	97	83
Tax 50%	18.5	11.5	38.5	31.5	48.5	41.5
EAT	18.5	11.5	38.5	31.5	48.5	41.5
*No. of equity shares in lakhs	18	10	18	10	18	10
EPS (Rs.)	1.03	1.15	2.14	3.15	2.00	4.15

*Existing Shares 10,00,000

New issue = $\left(\frac{\text{Rs.}10,00,000 \times 10}{12.5}\right)$

(if equity financing is resorted) (since shares are sold at a premium of 25%)

(ii) Let 'A' be the EBIT level at which EPS would be the same:

$$\frac{(A - I_1) \times .5}{18} = \frac{(A - I_1 - I_2) \times .5}{10} = EBIT$$

Where I_1, is interest when additional funds are raised through equity and I_2 is incremental interest charges if financing is through debt.

i.e. $$\frac{(A - 3) \times .5}{18} = \frac{(A - 3 - 14) \times .5}{10}$$

$$\frac{5A - 1.5}{18} = \frac{.5A - 8.5}{10}$$

By cross multiplication, we may get

10 (.5A – 1.5) = 18 (.5A – 8.5)
5A – 15 = 9A – 153
–4A = –138
4A = 138
A = 138/4
A = 34.5

So solving for A, we get the EBIT as Rs. 34.5 lakhs.

Problem No. 53

Triplex Company Limited is considering an expansion programme which is expected to cost Rs. 10,00,000. The company can finance it either through debt or through equity. Its current financing pattern is given as below:

	Rs.
Equity Capital (50,000 shares @ Rs. 10 each)	*5,00,000*
Reserves and Surplus	*2,00,000*
Debt (10%)	*3,00,000*
	10,00,000

The latest income statement reveals the following information:

	Rs.
Sales	*64,00,000*
Less: Total costs	*59,00,000*
EBIT	*5,00,000*
Less: Interest	*30,000*
EBT	*4,70,000*
Less: Income-tax @ 50%	*2,35,000*
EAT	*2,35,000*

The expansion programme is expected to generate additional sales of Rs. 16,00,000 with a return of 15% on sale, before interest and taxes. If the expansion is financed through debt, the rate of new debt will be 12% and the price earning ratio will be 4 times. If the expansion programme is financed through equity shares i.e. the new shares can be sold at a price of Rs. 40 and the

price to earning ratio will be 5 times. Which form of financing should the company choose if the objective of financial management in the company is maximisation of shareholders wealth.

Answer to Problem No. 53

Statement Showing the Comparative Analysis of Alternative Financial Plan

	Financial Plans	
	I *Debt Issue (Rs.)*	*II* *Equity Issue (Rs.)*
Earnings Before Interest and Taxes (EBIT) (Rs. 5,00,000 + 15% of 16,00,000)	7,40,000	7,40,000
Less: Interest	1,50,000	30,000
Earnings Before Taxes (EBT)	5,90,000	7,10,000
Less: Taxes @ 50%	2,95,000	3,55,000
Earnings After Taxes	2,95,000	3,55,000
No. of shares	50,000	75,000
EPS (EAT/No. of shares)	5.90	4.73
Price-Earning Ratio	4 times	5 times
Market value of share (EPS P/E ratio)	5.90×4 =Rs. 23.60	4.73×5 =Rs. 23.65

Decision: Though there is a marginal difference in the market value of shares under alternative financial plans but in view of higher EPS (Rs. 5.90) and debt equity ratio with in acceptable norm i.e. 2.1; Financial Plan I may be accepted.

DIVIDEND DECISIONS

Problem No. 54

From the given details regarding three companies, you are required to (i) calculate the value of an equity share of each of these companies when dividend pay-out ratio is (a) 20% (b) 50% (c) 0% and (d) 100% (ii) Comment on the results drawn.

A Ltd.	*B Ltd.*	*C Ltd.*
R = 15%	*R = 10%*	*R = 8%*
K_e = 10%	*K_e = 10%*	*K_e = 10%*
E = Rs. 10	*E = Rs. 10*	*E = Rs. 10*

Answer to Problem No. 54

According to J. Walter, the price of a equity share in a company with no debt or taxes may determined by the following equations.

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e}$$

Where P = Price per share
D = Cash dividend per share
E = Earnings per share
r = Operating return on assets or internal rate of return
K_e = Cost of equity capital or capitalisation rate.

Using the above mentioned formula, the price or value of an equity share can be calculated as under:

	A Ltd.	*B Ltd.*	*C Ltd.*
(i) When dividend pay out ratio is 20%			
	$= \frac{2 + \frac{15\%(10 - 2)}{10\%}}{10\%}$	$= \frac{2 + \frac{10\%(10 - 2)}{10\%}}{10\%}$	$= \frac{2 + \frac{8\%(10 - 2)}{10\%}}{10\%}$
	$= \frac{2 + \frac{(.15)(8)}{.10}}{.10}$	$= \frac{2 + 8}{.10}$	$= \frac{2 + \frac{.08' 8}{.10}}{.10}$
	= Rs. 140	= Rs. 100	= Rs. 84
(ii) When dividend pay out ratio is 50%			
	$= \frac{5 + \frac{.15(10 - 5)}{.10}}{.10}$	$= \frac{5 + \frac{.10(10 - 5)}{.10}}{.10}$	$= \frac{5 + \frac{.08(10 - 5)}{.10}}{.10}$
	= Rs. 125	= Rs. 100	= Rs. 90
(ii) When dividend pay out ratio is 0%			
	$= \frac{0 + \frac{.15(10 - 0)}{.10}}{.10}$	$= \frac{0 + \frac{.10(10 - 0)}{.10}}{.10}$	$= \frac{0 + \frac{.08(10 - 0)}{.10}}{.10}$
	= Rs. 150	= Rs. 100	= Rs. 80
(iv) When dividend pay out ratio is 100%			
	$= \frac{10 + \frac{.15(10 - 10)}{.10}}{.10}$	$= \frac{10 + \frac{.10(10 - 10)}{.10}}{.10}$	$= \frac{10 + \frac{.08(10 - 10)}{.10}}{.10}$
	= Rs. 100	= Rs. 100	= Rs. 100

Comments

1. Firm A is a growth firm because its internal rate of return (r = 15%) is greater than the cost of capital (K_e = 8%). This firm may re-invest its retained

earnings at a rate which is higher than the rate expected by share holders. Firm A will maximise its share value when dividend pay out ratio is 0%. At this ratio, the value of share is Rs. 150. The market price of share increases as dividend pay out ratio declines and reverse otherwise. So optimum pay out ratio for growth firm A is zero.

2. Firm B is the normal firm because for this firm $r = K_e$ (i.e. 10%). The dividend pay out ratio for the firm is irrelevant as it does not affect the market price of its share. It is same i.e. Rs. 100 at different level of dividend pay out ratios.
3. Firm C is declining firm because the rate of return (i.e. 8%) on the investment for this firms is lower than the cost of capital (i.e. 10%). Investors of this firm would like earnings to be distributed to them so that they may either spend it or invest it elsewhere to get a rate higher than earned by this firm. The optimum pay out ratio for this firm is 100% because at this ratio market price of its share is maximum i.e. Rs. 100.

Problem No. 55

Bajaj Auto Ltd. has outstanding 1,20,000 shares selling at Rs. 20 per share. The company hopes to make a net income of Rs. 3,50,000 during the year ending on March 2003. The company is thinking of paying a dividend of Rs. 2 per share at the end of current year. The capitalisation rate for risk class of this firm has been estimated to be 15%. Assuming no taxes, answer questions listed below on the basis of the Modigliani Miller dividend Valuation Model:

(a) What will be the price of share at the end of March 31, 2003.

(i) If the dividend is paid and

(ii) If the dividend is not paid.

(b) How many new shares must the company issue if the dividend is paid and company needs Rs. 7,40,000 for an approved investment expenditure during the year.

Answer to Problem No. 55

(i) Price of the share if the dividend is paid

$$P_0 = \frac{D_1 + P_1}{(1 + K_e)}$$

Where P_o stands for prevailing market price of shares.
D_1 stands for dividend to be received at the end of period.
K_e stands for the cost of equity capital.
P_1 stands for market price of share at the end of period one.

$$20 = \frac{2 + P_1}{(1 + 0.15)}$$

$20 (1 + 0.15) = (2 + P_1)$
$20 (1.15) = 2 + P_1$
$P_1 = 23 - 2 =$ Rs. 21.

(ii) Price of the share if dividends is not paid.

$$20 = \frac{0 + P_1}{(1 + .15)}$$

$$20 = \frac{0 + P_1}{(115)}$$

$P_1 = 20\ (1.15)$

$P_1 = \text{Rs. } 23$

(iii) Number of new equity to be issued

$$DN = \frac{I - (E - ND_1)}{P_1}$$

$$DN = \frac{\text{Rs. } 7,40,000 - (\text{Rs. } 3,50,000 - 1,20,000 \times \text{Rs. } 2)}{\text{Rs. } 21}$$

$$= \frac{\text{Rs. } 7,40,000 - (\text{Rs. } 3,50,000 - 2,40,000)}{\text{Rs. } 21}$$

$$= \frac{\text{Rs. } 7,40,000 - \text{Rs. } 1,10,000}{\text{Rs. } 21}$$

$$= \frac{\text{Rs. } 6,30,000}{\text{Rs. } 21}$$

= 30,000 shares.

Problem No. 56

From the given information for Alpha & Company you are required to:

(i) Find out whether the firms dividend pay-out ratio is optimal according to Walters formula. The firm was starting a year before with equity capital of Rs. 40 lakhs.

Earnings of the firm	*Rs. 4,00,000*
Dividend paid	*Rs. 3,20,000*
Price earning ratio	*12.5*
Number of share outstanding	*40,000 @ Rs. 100 each.*

(ii) Will the Company change its dividend policy if P/E ratio is 8 instead of 12.5?

Answer to Problem No. 56

According to J. Walter, the price of share may be find out by using the following formula:

$$P = \frac{D + (E - D)\frac{r}{Ke}}{Ke}$$

P — stands for price per equity shares.
D — stands for dividend per share.
E — stands for earnings per share.
Ke — stands for cost of capital.
r — stands for internal rate of return on investments.

(E–D) — stands for retained earnings per share

Substitute the information in above formula we may get

$$P = \frac{8 + \frac{10\%}{8\%}(10 - 8)}{8\%}$$

$$P = \frac{8 + \frac{.10}{.08}(2)}{.08}$$

$$P = \frac{8 + \frac{20}{8}}{8/100}$$

$$P = \frac{\frac{64 + 20}{8}}{8/100}$$

$$P = \frac{84}{8} \times \frac{100}{8} = \frac{8400}{64}$$

$$P = \frac{2100}{16}$$

P = 131.25

Working Notes

Ke is the reciprocal of 1/12.5% = 8%

$$EPS = \frac{\text{Total Earnings of the firm}}{\text{Number of shares}} = \frac{4,00,000}{40,000} = \text{Rs. } 10.00$$

$$D = \frac{\text{Amount of Dividend Paid}}{\text{Number of Shares}} = \frac{3,20,000}{40,000} = \text{Rs. } 8$$

$$r = \frac{\text{Total Earnings of the firm}}{\text{Total Equity Capital of the firm}} = \frac{4,00,000}{40,00,000} \times 100 = 10\%$$

At present, the firm pay out ratio which is 80% is not optimal. The zero dividend pay out ratio is considered maximum because at this point the price of share would be maximum.

It is evident from the following calculations.

$$P = \frac{0 + \frac{10\%}{8\%}(10 - 0)}{8\%}$$

$$= \frac{0 + \frac{.10}{.08}(10)}{.08}$$

$$= \frac{0 + 12.5 \times 10}{.08}$$

$$= \frac{12.5}{8} \times 100$$

= Rs. 156.25

(ii) The firm will change its dividend policy if P/E ratio is 8. It is because at this level of P/E ratio, the value of Cost of Capital (Ke = 12.5%) is greater than that of internal rate of return of investment (r = 10%). The optimum dividend policy for company in this case is to go for 100% dividend pay out ratio. Since Ke > r, 100% dividend pay out ratio would maximise the value of share.

Problem No. 57

Consider a common stock whose dividends are expected to grow at a 25 percent rate for 2 years, after which the growth rate is expected to fall to 5 percent. The dividend paid last period was Rs. 2. The investor desires a 12 per cent return. You are required to find the value of this stock.

Answer to Problem No. 57

Compute the dividends during the supernormal growth period and find their present value. Assuming D_0. is Rs. 2, g is 15 per cent, and r is 12 percent :

$D_1 = D_0 (1 + g)$ = Rs. 2 (1 + 0.25) = Rs. 2.50

$D_2 = D_0 (1 + g)^2$ = Rs. 2 (1.563) = Rs. 3.125 or

$D_2 = D_1 (1 + g)$ = Rs. 2.50 (1.25) = Rs. 3.125

$$\text{PV of dividends} = \frac{D_1}{(1+r)^1} + \frac{D_2}{(1+r)^2} = \frac{\text{Rs. } 2.50}{(1+0.12)^1} + \frac{\text{Rs. } 3.125}{(1+0.12)^2}$$

= Rs. 2.50 (PVIF 12%, 1) + Rs. 3.125 (PVIF 12%, .2)

= Rs. 2.50 (0.8929) + Rs. 3.125 (0.7972)

= Rs. 2.23 + Rs. 2.49 = Rs. 4.72.

Find the price of the stock at the end of the supernormal growth period. The dividend for the third year

$D_3 = D_2 (1 + g)$, where g = 5%

= Rs. 3.125 (1 + 0.05) = Rs. 3.28

The price of the stock is therefore :

$$P_2 = \frac{D_3}{r - g} = \frac{\text{Rs. } 3.28}{0.12 - 0.05} = \text{Rs. } 46.86$$

PV of stock price = Rs. 46.86 (PVIF 12% .2)

= Rs. 46.86 (0.7972) = Rs. 37.36.

Add the two PV figures obtained above to find the value of the stock

P_0 = Rs. 4.72 + Rs. 37.36 = Rs. 42.08

Problem No. 58

Harish Engineering company has a cost of equity capital 15%. The current market value of the firm is Rs. 60,00,000 @ Rs. 30 per share. Assume value for I (New Investment) Rs. 18,00,000, E (Earnings) Rs. 10,00,000 and total dividends (D) Rs. 6,00,000. You are required to show that under the MM assumptions the payment of dividend does not affect the value of the firm.

Answer to Problem No. 58

(a) Price of a share when dividend is declared

$$P_0 = \frac{D_1 + P_1}{(1 + K_e)}$$

Where

P_0 = Price of share at time period 0.

D_1 = Dividend to be received at the end of time period 1.

P_1 = Price of share at the end of time period 1.

K_e = Cost of capital.

Substituting the values in the above formula, we may get

$$\text{Rs. } 30 = \frac{\text{Rs. } 3 + P_1}{1.15}$$

P_1 = Rs. 30 $\times$ 1.15 – Rs. 3 = Rs. 31.50

Price of a share when dividend is not declared

$$\text{Rs. } 30 = \frac{P_1}{1 + .15} = \frac{P_1}{1.15} \text{ or } P_1 = \text{Rs. } 34.50$$

Amount of New-Financing

(i) When dividend is declared

$$I - (E - nD1)$$

Where I = New Investment, E = Earnings of the Firm during the period

n = The Number of shares outstanding at the beginning of the year

D_1 = Dividend paid to the shareholder at the end of time period 1.

Substituting the value in above equation, we may get

= Rs. 18,00,000 – (Rs. 10,00,000 – Rs. 6,00,000)

= Rs. 14,00,000

$$\Delta n = \frac{\text{Rs. } 14,00,000}{\text{Rs. } 31.50}$$

(Here Δ n = The change in the number of shares outstanding during the year)

(ii) When dividend is not declared

= I – E

= Rs. 18,00,000 – Rs. 10,00,000

= Rs. 8,00,000

New shares to be issued are

$$\Delta n = \frac{Rs.8,00,000}{Rs.34.50}$$

(b) (i) Value of Firm (V) when dividend is declared:

$$V = \frac{1}{(1-K_e)}[nD_1 + (n+\Delta n)P_1 - I + E - nD_1]$$

$$= \frac{Rs.\,6,00,000 + \left(2,00,000 + \frac{14,00,000}{31.50}\right) \times Rs.31.50 - Rs.18,00,000 + Rs.10,00,000 - Rs.\,6,00,000}{1.15}$$

$$= \frac{Rs.\,6,00,000 + \left(\frac{63,00,000 + 14,00,000}{31.50}\right) \times Rs.31.50 - Rs.14,00,000}{1.15}$$

$$= \frac{Rs.\,6,00,000 + Rs.\,77,00,000 - Rs.14,00,000}{1.15} = \frac{Rs.\,69,00,000}{1.15}$$

= Rs. 60,00,000.

(ii) Value of Firm (V) when dividend is not declared:

$$V = \frac{1}{(1-K_e)}[(n+\Delta n)P_1 - I + E]$$

$$= \frac{\left[2,00,000 + \frac{8,00,000}{34.5}\right] \times Rs.34.50 - Rs.18,00,000 + Rs.10,00,000}{1.15}$$

$$= \frac{\frac{[Rs.\,69,00,000 + 8,00,000]}{34.5} \times 34.5 - Rs.\,8,00,000}{1.15}$$

$$= \frac{Rs.\,77,00,000 - Rs.\,8,00,000}{1.15} = \frac{Rs.\,69,00,000}{1.15}$$

= Rs. 60,00,000

Thus, it is clear from above that under MM Hypothesis dividend payment does

not affect the value of the firm.

Problem No. 59

The shares of XYZ is presently at Rs. 50 and the company is currently paying dividend of Rs. 4 per share with a growth rate expected at 8 per cent per annum. It plans to raise fresh equity share capital. The merchant banker has suggested that an underprice of Rupee 1 is necessary, in pricing the new issue besides involving a cost of 50 paise per share on miscellaneous expenses. You are required to find out the cost of existing equity shares as well as the new equity given that the dividend rate and growth rate are not expected to change.

Answer to Problem No. 59

Current Price Share	Current Dividend Payment	Annual Growth Rate
P_o = Rs. 50	D_o = 4	g = 8%

F = Rs. 0.50 + Rs. 1 = Rs. 1.50

$$K_{new} = \frac{D_1}{(P_o - F)} + g = \frac{4(1.080)}{(50 - 1.50)} + 0.08 = 16.91\%$$

Problem No. 60

The earning per share of a company is Rs. 10. Its has an internal rate of return of 15 percent and the capitalization rate of risk class is 12.5 percent. If Walter's model is used:

(i) What should be the optimum pay out ratio of the firm?

(ii) What should be the price of share at this pay out?

(iii) How shall the price of share be affected if different pay out were employed?

Answer to Problem No. 60

According to Walter Model—

$$\text{Market Price per share} = \frac{DPS + (r / K_e)(EPS - DPS)}{K_e}$$

Where, DPS = Dividend per share, EPS = Earning per share, r = return on Investment and K_e = Capitalization rate.

(i) If $r/K_e > 1$, the value of the share of a firm will increase as EPS increases under this type of firm situation the has ample opportunities for investment and growth. The price of the share would be maximum when the firm retains all its earnings. Thus, the optimum payout ratio in this case is zero.

(ii) When the optimum payout is zero, the price of the share of the firm is as under:

$$P = \frac{0 + (0.15 / 0.125)(10 - 0)}{0.125} = \frac{12}{0.125} = \text{Rs. } 96$$

(iii) If the firm, under the condition $r/K_e > 1$, chooses a payout other than zero, the price of the share will fall. Suppose the firm has a payout of 20 per cent, the price of the share will be:

$$P = \frac{2 + (0.15/0.125)(10 - 2)}{0.125} = \frac{2 + (1.2)(8)}{0.125} = \frac{2 + 9.6}{0.125} = \frac{11.60}{0.125} = \text{Rs. } 92.80$$

Problem No. 61

A closely-held toys manufacturing company has been following a dividend policy, which can maximise the market value of the company as per Walter's Model. Accordingly, each year at dividend time, the capital budget is reviewed in conjunction with the earnings for the period and alternative investment opportunities for the shareholders. In the current year, the company reports net profits of Rs. 10,00,000. It is estimated that the company can earn Rs. 2,50,000 if such profits are retained. The investors have alternative investment opportunities that will yield them 12%. The company has 1,00,000 shares outstanding. What would be the dividend payout ratio of the company, if it wishes to maximise the wealth of the shareholders?

Answer to Problem No. 61

DP ratio of the company should be zero. At this ratio, market price of the share would be the maximum as shown by the following calculation:

$P = [D + (r/K_e) (E - D)]/K_e$

$R = (\text{Rs. } 2,50,000/\text{Rs. } 10,00,000) \times 100 = 25\%$

$E = \text{Rs. } 10,00,000/1,00,000 = \text{Rs. } 10$

$P = [0 + 0.25/0.12 (\text{Rs. } 10 - 0)]/0.12$

$= (2.083 \times 10)/0.12$

$= 20.83/0.12$

$= \text{Rs. } 173.58$

FOREX MANAGEMENT

Problem No. 62

Blue Ltd. is engaged in the production of synthetic yarn and planning to expand its operations. In this context, the company is planning to import a multi-purpose machine from Japan at a cost of ¥ 2,460 lakh. The company is in a position to borrow funds to finance import at 12% interest per annum with quarterly rests. India based Tokyo branch has also offered to extend credit of 90 days at 2% per annum against opening of an irrevocable letter of credit. Other informations are as under.

Present exchange rate : Rs. 100 = ¥ 246.
90 Days forward rate : Rs. 100 = ¥ 250.

Commission charges for letter of credit at 4% per 12 months.

Advise whether the offer from the foreign branch should be accepted.

Answer to Problem No. 62

Evaluation of Options

Option I : Financing Import by borrowing at 12% p.a.

Cost of Machine	*Rs. (in lakhs)*
2460 lakhs yen in Rs. [@ Rs. 100 = 246 yen]	1000.00
+ Interest at 3% for Quarter	30.00
Total Outflow in Rs.	1030.00

Option II : Offer from Foreign Branch

	Rs. (in lakhs)	
Cost of Letter of credit (Commission) at 1% (for quarter) on 2460 lakhs yen @ Rs. 100 = 246 yen	10.00	
+ Interest for Quarter (3% of 10 lakhs)	.30	
	10.30	…(a)
Payment at the end of 90 days:		
Cost of Machine	2460.00 lakh yen	
Interest at 2% p.a. [2460 x 2/100 x 90/365]	12.13 lakh yen	
	2472.13 lakh yen	

Conversion cost at Rs. 100 = 250 yen

$$2472.13 \text{ lakhs} \times \frac{100}{250} = \text{Rs. } 988.85 \text{ lakhs} \quad \ldots(b)$$

Total Cost = (a) + (b) = 10.30 lakhs + 988.85 lakhs = Rs. 999.15 lakhs.

The above calculation shows that Option II i.e. offer from Foreign Branch is cheaper and hence better. Therefore, it should be accepted.

Problem No. 63

Horizon Ltd. has to make a US $ 5 million payment in three months' time. The required amount in dollars is available with Syntex Ltd. The management of the company decides to invest them for three months and following information is available in this context:

— *The US $ deposit rate is 9% per annum.*

— *The sterling pound deposit rate is 11% per annum.*

— *The spot exchange rate is $ 1.82/pound.*

— *The three month forward rate is $ 1.80/pound.*

Answer the following questions—

(i) Where should the company invest for better returns?

(ii) Assuming that the interest rates and the spot exchange rate remain as above, what forward rate would yield an equilibrium situation?

(iii) Assuming that the US interest rate an the spot and forward rates remain as above, where should the company invest if the sterling pound deposit rate were 15% per annum?

(iv) With the originally stated spot and forward rates and the same dollar deposit rate, what is the equilibrium sterling pound deposit rate?

Answer to Problem No. 63

(i) US$ Deposit Rate	=	9% per annum
Sterling Pound Deposit Rate	=	11% per annum
Spot Exchange Rate	=	$ 1.82 / pound
Three Month Forward Rate	=	$ 1.80 / pound

Option I:

Invest in $ deposit @ 9% per annum for 3 months

$$\text{Income} = 50,00,000 \times \frac{9}{100} \times \frac{3}{12} = \$\ 1,12,500$$

Option II:

Available dollars may be converted to pounds at spot rate. Cover forward position and invest @ 11% p.a. for three months.

Spot exchange rate = $ 1.82 / £

$$\text{So, \$ 5 million} = \frac{5,000,000}{1.82} = £\ 2747252.747$$

Interest earning on £ 2747252.747 @ 11% p.a.

$$= 2747252.747 \times \frac{11}{100} \times \frac{3 \text{ months}}{12} = £\ 75549.450$$

∴	Amount after 3 months	=	£ 2747252.747
	Plus Interest	=	£ 75549.450
			£ 2822802.197

Pound converted to dollar at 1.80 / pound

Forward rate = 2822802.197 x 1.80 = $ 5081043.954
Gain = 5081043.954 – 5,000,000 = $ 81043.954

Hence, Gain – Option I = $ 1,12,500
Gain – Option II = $ 81043.95

Therefore, Syntex Ltd. must invest under Option I in $ at 9%.

(ii) For an equilibrium situation, amount at the end of three months should be

equal. Therefore, amount invested in sterling covered by forward rate.

= $ 50,00,000 + $ 1,12,500 = $ 51,12,500

Let forward rate be $ x /£

∴ at equilibrium £ 2822802.197 equals 2822802.197 x = $ 51,12,500

$$\therefore \quad x = \frac{51,12,500}{28,22,802.197} = 1.811$$

∴ Forward rate = $ 1.811/£

(iii) Interest earned in pounds given same spot and forward rates:

$$= £\ 2747252.747 \times \frac{15}{100} \times \frac{3}{12} = £\ 103021.978$$

∴ Total £ = 2747252.747 + 1,03,021.978 = 2850274.725

Total $ = 2850274.725 x 1.80

= $ 5130494.505

Gain = $ 51,30,494.505 – $ 50,00,000 = $ 130494.505

Earlier Gain = $ 1,12,500

Therefore, at 15% Syntex Ltd. should invest in $ Sterling.

(iv) For equilibrium sterling deposit rate, amount invested in sterling equals $ 51,12,500 after three months.

Now, $ 51,12,500 converted to £ at forward rate = $\frac{\$\ 5,112,500}{1.80} = £\ 2840277.777$

Let sterling rate be X% p.a.

$$\therefore \quad 2747252.747 \times \frac{X}{100} \times \frac{3}{12} + 2747252.747 = 2840277.777$$

6868.131867X + 2747252.742 = 2840277.777

6868.131867X = 93025.035

X = 13.54% per annum

Problem No. 64

The following quotes are available for 3-months options in respect of a share currently traded at Rs. 31:

Strike price	*Rs. 30*
Call option	*Rs. 3*
Put option	*Rs. 2*

An investor devises a strategy of buying a call and selling the share and a put option. Draw his profit/loss profile if it is given that the rate of interest is 10% per annum. What would be the position if the strategy adopted is selling a call and buying the put and the share?

Answer to Problem No. 64

Strategy I: (Buying a Call and Selling a Put and a Share)

Initial Cash Inflow (Rs. 31 – Rs. 3 + Rs. 2)	Rs. 30
Interest Rate	10%
Amount grows in 3 months to ($30 \times e^{1 \times .25}$)	Rs. 30.76*

If the share price is greater than Rs. 30, he would exercise the call option and buy one share for Rs. 30 and his net profit is Rs. 0.76 (i.e., Rs. 30.76 – 30).

However, if the share price is less than Rs. 30, the counter-party would exercise the put option and the investor would buy one share at Rs. 30. The net profit to the investor is again Rs. 0.76.

Strategy II: (Selling a Call and Buying a Put and a Share)

In this case, the investor has to arrange a loan @ 10% of Rs. 30 (i.e., Rs. 31 + 2 – 3).

This amount would be repaid after 3 months. Amount payable is:

$30 \times e^{1 \times .25}$	Rs. 30.76

After 3 months, if the market price is more than Rs. 30, the counter-party would exercise the call option and the investor would be required to sell the share at Rs. 30. The loss to the investor would be Rs. 0.76 (i.e., Rs. 30.76 – 30).

However, if the rate is less than Rs. 30, the investor would exercise the put option and would get Rs. 30 from the rate of share. The loss to the buyer would again be Rs. 0.76.

**Interest can also be calculated on a simple interest basis instead of continuous compound interest.*

Problem No. 65

A company operating in a country having the $ as its unit of currency has today invoiced sales to an Indian company, the payment being due 3 months from the date of invoice. The invoice amount is $13,750. At today's spot rate, it is equivalent is Rs. 5,00,000. It is anticipated that the exchange rate will decline by 5% over the 3 months period and in order to protect the $ payments, the importer proposes to take appropriate action in the foreign exchange market. The 3 months forward rate is presently quoted at $ 0.0273. You are required to calculate the expected loss and to show how it can be hedged by a forward contract.

Answer to Problem No. 65

Calculation of Expected Exchange Loss

$$\text{Spot rate} = \frac{\$13{,}750}{\text{Rs.}5{,}00{,}000}$$

= $ 0.0275/Re 1

3 months forward rate = $ 0.0273/Re 1

Expected spot rate after 3 months

= ($ 0.0275 – 5%)

= ($ 0.0275 – 0.001375)

= 0.026125

Present Cost of $ 13,750 = Rs. 5,00,000 …(A)

Cost after 3 months

($ 13,750 @ 0.026125/Re 1) = Rs. 5,26,316* …(B)

Expected Exchange Loss (A – B) = Rs. 26,316 …(C)

If a forward contract is taken for 3 months @

$0.0273/Re 1 then

$$\text{Net amount payable} = \frac{\$13{,}750}{\$0.0273/\text{Re}1} = \text{Rs. } 5{,}03663$$

So, Exchange Loss will be = Rs. 5,00,000 – Rs. 503,663

= Rs. 3,663 …(D)

Thus, by comparing C and D, by forward contract, the firm can cover Rs. 22,653 (i.e.) Rs. 26,316 – Rs. 3,663)

Therefore, firm can take a forward contract.

$$*\frac{\$13{,}750}{\$0.026126/\text{Re}1} = \text{Rs.}5{,}26{,}316$$

CASE STUDIES

WORKING CAPITAL MANAGEMENT AT CASIO LTD.

Casio Ltd. is a leading manufacturer of sugar in the country. Besides sugar, it is also engaged in the manufacture of small steam turbines. Sugar constitutes 76% of the turnover of the company, turbines 16 % and the balance is contributed by high speed reduction gears and Project and engineering activities. Financial performance of the company for the last two years is summarized as under:

(Amt. in Rs. crores)

Sr. No.	*Particulars*	*Year Ended 31.03.2005*	*Year ended 31.03.2004*

(A) Income			
1	Income from operations	603.29	520.22
2	Other Income	19.43	7.01
3	Increase in Work-in-progress / Finished Goods	63.27	69.13
4	Total Income	685.99	596.35
(B) Expenditure			
5	Materials Consumed	420.77	373.70
6	Manufacturing / Operating	52.01	46.55
7	Personnel	47.35	44.34
8	Administration	26.35	23.76
9	Financing	49.91	47.14
10	Selling	5.96	5.87
11	Excise Duty	44.40	37.97
12	Depreciation	10.30	9.95
13	Off – Season Expenses	(4.90)	(8.10)
14	Total Expenditure (5 to14)	652.15	589.19
15	Profit Before Tax (4–14)	33.85	7.16
16	Provision for tax – normal	0.56	0.75
17	Deferred Tax Liability	1.61	0
18	Profit After Tax (15-16-17)	31.68	6.41
19	Impact of change in accounting policies	4.62	0
20	Prior period adjustments	0.21	0.05
21	Net Profit (18-19-20)	26.85	6.36

India is the largest producer of sugar in the world with an expected production of 183 lac tones followed closely by Brazil. Indian production constitutes 22% of the world sugarcane production and 14% of the total sugar (cane and beet) production. There are 508 installed sugar mills in the country of which about 436 worked in 2000-04. There are 450 lac cane growers including their dependants in this industry. Although the largest producer, India is not the lowest cost producer of sugar. Brazil, Australia and Thailand are ahead of India in this respect.

The high cost of production is due to the low plant capacity which on an average is 3000 TCD (Tonnes of Sugarcane crushed per day) and the high cost of sugarcane purchases. Sugarcane prices are advised every year by the state government at which the mills in the state are bound to make purchases. The selling price of sugar is more or less subject to market forces. Since the production has been in excess of demand for the last four years, the sugar prices have remained depressed. In such a situation, increase in productivity and better control of working capital are essential for survival.

The other segments where the company operates pertain to the capital goods industry which has been affected by low growth in industrial investment in the country. The company has faced slowdown in this segment.

Overall, the company has been able to come out with satisfactory performance during the year 2004-05.

		Installed Capacity		*Actual Production*	
Class of goods	*Units*	*2004-05*	*2003-04*	*2004-05*	*2003-04*
Sugar	MT	25250 TCD	24500 TCD	329608	323065
Molasses	MT	0	0	166166	148387
Project and Engg.	Rs. Lacs			4027	2565
Steam and Gas Turbines	Nos.	96	96	80	86
High Speed reduction gears	Nos.	450	450	239	302

The company has an internal control system in order to provide reasonable assurance of

— Safeguarding assets against unauthorized use or disruption and

— Maintenance of proper accounting records and the reliability of financial information used within the business.

The position of working capital of the company is as under:

	2004-05	*2003-04*
Inventories	399.67	365.66
Sundry Debtors	47.06	37.39
Cash and Bank Balances	15.62	11.40
Other Current Assets	1.36	1.41
Loans and Advances	58.96	61.22
Total Current Assets	522.67	477.08
Current Liabilities	156.11	115.87
Bank Borrowing for working Capital	251.41	246.96
Provisions	39.97	35.91
Total Current Liabilities	447.49	398.74
Net Current Assets	75.18	78.34

The above figures are for the company as a whole. Further break-up of various items of the working capital is as under:

Inventories

(Value in Rs. Crores)

	31.03.2005	31.03.2004
Patterns	0.21	0.23
Loose Tools, Jigs and Fixtures	1.07	0.78
Stores and spares	7.88	11.70
Less provision for obsolescence/Slow moving stock	0.31	0.20
Finished Goods	364.83	331.05

Raw Materials and components	10.73	9.22
Less Provision for obsolescence/Slow moving stock	0.10	0.10
Work in progress	15.19	13.02
Scrap	0.17	0.27
Total Inventory	399.67	365.97

Sundry Debtors

Over six months considered good	16.04	15.18
Considered doubtful	0.12	0.11
Less provision for doubtful debts	0.12	0.11
Other Debts – considered goods	31.02	22.21
Total Sundry Debtors	47.06	37.39

Cash and Bank Balances

Cash, Stamps and Cheques in hand	8.95	3.83
Balance with Post Office in savings account	0.04	0.02
Balance with Scheduled banks in		
Current Accounts	2.11	3.23
Savings Account	0.03	0.04
Fixed and margin deposits	4.48	4.28
Total Cash balances	15.61	11.40

Loans and advances

Subsidiary Company	0.14	0.12
Advances, pre-payments and other recoverable in cash or in kind or for value to be received		
Considered Good	49.52	51.48
Considered doubtful	1.77	1.64
Less provision for doubtful advances	1.77	1.64
Deposit – Excise Duty	1.83	1.57
Advance payment of tax	7.48	8.06
Total Loans and advances	58.97	61.22

Current Liabilities and Provisions

Current Liabilities		
Trade and Other Creditors	124.57	86.27
Advance From Creditors	23.08	21.46
Unclaimed Dividend	0.42	0.35
Purchase Tax Payable	0.14	0.11
Interest Accrued but not due	7.90	7.68

Provisions		
Proposed Dividend	2.70	1.84
Gratuity	10.04	8.70
Leave Encashment	1.10	1.29
Income tax on distributed profits	0	0.19
Excise duty on closing stock	25.63	23.55
Others	48.93	33.98
Total	196.06	151.78

Accounting policies of the company in respect of the current assets are as under:

1. Inventories of raw materials and components, stores and spares are valued at lower of cost and net realizable value. Cost of raw materials, stores and spares is ascertained on weighted average basis and in the case of Projects Division, it is ascertained on specific cost basis.
2. Finished goods and work-in-progress (Other than the Projects Division)are valued at lower of cost and net realizable value. Excise Duty is included in the value of finished goods.
3. Work-in-progress relating to project is valued at cost and cost for this purpose includes all direct allocable expenses (including specific selling expenses) and apportioning of all direct expenses.
4. By-Products, Patterns, Loose Tools, Jigs and Fixture and scrap are valued at estimated net realizable value.
5. Sundry Debtors (including those over six months old) are considered good unless provided for.

Case Questions

1. A large amount of inventory holding of the company consists of finished goods. What does it indicate?
2. Are the cash and bank balances entirely liquid? If no, why?
3. From the given data, can you calculate division wise profitability? What additional information would you require for the purpose?

THE CASE OF CONTRACT MANUFACTURING

A living company. That was how S. Venugopalan, the fit-at-55 CEO of Swaraj Limited, liked to describe the organization he headed. “Look at us,” he would point out to anyone who cared to listen, “and look at the way we have managed to re-configure our business over the years to survive and succeed.” Only, circa 2005, with Swaraj in all sorts of trouble, and the only way out requiring the company to restrict its activities, he was having to use these words more often. And their credibility was wearing thin.

He was right. Swaraj did have the resilience of a living company. It had started off in 1979 as a trading firm, which imported refrigerators, air-conditioners, machine-tools, chemicals, and capital goods—and just about anything it thought profitable—

and sold them at margins in excess of 25 per cent. These profits, though huge were not sustainable since the companies whose products it imported were bound to enter the Indian market. To tackle this eventuality, Swaraj focused on building a distribution and service network as well as becoming a manufacturer in its own right. As the then-CEO, Rajesh Singh, who retried in 1997 to make way for Venugopalan, put it: "We have to build a network of external relationships and a set of internal competencies, which will serve as entry-barriers to those planning to invade our territory."

So, Swaraj spent most of the 1990s converting itself into a typical manufacturing company. At a sprawling industrial estate on the outskirts of Delhi, the company began making machine-tools, textile-machinery, air conditioners, and refrigerators, with an investment of Rs. 370 crore that came from the company's reserves and, in part, from a public issue. It adopted a divisional structure, creating 4 around its 4 product-lines, and a fifth for trading (in electrical, industrial, and medico-electronic equipment as well as light engineering products).

Machine-tools and textile machinery, Rajesh Singh soon realized, were businesses whose fortunes depended on those of their user-industries. However, the other 2 divisions offered him an opportunity to build economies of scale and brand equity. By successfully bidding for large projects-domestic as well as international – Swaraj acquired, over the years, a critical understanding of what worked and what didn't in these markets. And this gave the company an edge over its competitors in both the refrigeration and air-conditioning industries.

When Venugopalan took over as CEO, the refrigeration and air-conditioning businesses accounted for 60 per cent of the company's turnover; trading, 20 per cent; and its other businesses, 20 per cent. And the company's brands had become synonymous with refrigerators—with a 21 per cent share, Swaraj was the second-largest player in the market—and central air-conditioner (market share: 45 percent). However, not only were the company's machine-tools and textile-machinery divisions not contributing to its revenues, they were eroding its bottom line.

Venugopalan's first initiative was to recommend to the company's board of directors that they sell off the 2 divisions. The board demurred, but agreed, albeit reluctantly, to hire the services of Richardson & Co., a global consulting firm, to identify the company's key strengths (what C.K. Prahalad and Gary Hamel were to later term core competencies). In fact, Swaraj's core competencies in 1998 were identical to the key strengths identified by Richardson in 1998:

Low working Capital requirements

Swaraj's major line of business—projects in refrigeration and air-conditioning—were funded by client-advances rather than bank-finances. In fact, less than 5 per cent of the company's working capital requirements came from bank financing. Swaraj Managed this by breaking, in consultation with its client, each of its projects into phases, completing each one on time, and following up on collections promptly. Its expertise in projects, in turn, gave the company an edge over its competitors, whose emphasis on unitary products and ducted systems forced them to borrow funds to finance their operations.

Project Engineering Skills

Swaraj's competitors couldn't match its range of capabilities in terms of Engineering, Procurement, and Construction (EPC) skills, products, technologies, and after-sales service. So pleased were its customers that referrals accounted for more than 50 per cent of the company's new business every year.

Technical Talent

With 650 engineers and 1,200 technical support-staff in 2005, the company had the largest concentration of technical specialists in the country.

Trading

Swaraj's trading division, which marketed products sourced from 65 companies overseas, had created a distribution network of more than 2,000 dealers.

Richardson' advice was based on an understanding of these strengths: stick to projects-driven businesses, and sell off the machine-tools and textile-machinery ones. Much to Venugopalan's surprise—after all, he had suggested the same thing 2 years ago—the board, eventually, accepted these recommendations.

Swaraj's problems began with liberalization. Like many companies, it had been carried away by reports that the Indian middle class numbered 250 million and so, had expected the market for, *inter alia*, white goods to boom. Thus, instead of investing the proceeds from divesting in the machine-tools and textile-machinery businesses into its core activity—projects—the company used them to fuel the expansion of its refrigerator and air-conditioner manufacturing-capacities, and strengthen its distribution network.

Both were capital-intensive, as Swaraj soon discovered, and part of the revenues from the profitable projects business was diverted to fund what was expected to be a money-spinner. Its existing economies of scale and a low-cost structure helped Swaraj hold its own against the transnationals that entered the market even as its own facilities were being expanded. But, by end-2002, when they had been completed, Swaraj's dreams too had turned sour.

The problem was the market; the middle-class did not number 250 million. That, by itself, would not have hurt the company. But the capital cost involved in expanding its facilities ended up fattening the fixed-cost component of Swaraj's fabled cost-structure. Suddenly, it wasn't that low-cost a company any more. Expectedly, capacity-utilization plummeted—to an all-time-low of 25 per cent in 2003-04. And that distorted the cost-structure even more. The result: a loss—the first ever in the company's history—of Rs. 15 crore.

(Amt. in Rs. Crores)

Year	*Turnover*	*Net Profit*
1996	422	4
1997	480	4
1998	584	5
Year	*Turnover*	*Net Profit*
1999	644	6
2000	692	7
2001	750	8
2002	839	9
2003	915	11
2004	900	–15
2005	1005	10

Venugopalan responded quickly to the challenge. Total Cost Management became the guiding principle for all activities, costs were pruned mercilessly, and Swaraj re-focused around its basic strength: projects. Operating efficiencies, and a focus on the denominator saw the company back in the black in 2004-05. But the

quantum of profits was small, and Venugopalan knew that he could be back in the red if the slightest thing went wrong.

If there was a millstone around Swaraj's neck, it was its state-of-the-art manufacturing-facility. The only way in which the company could write off the capital charge (per unit) was to produce and sell to capacity till 2010. That was unrealistic. Selling 100,000 refrigerators and air-conditioners year after year would not be easy. It was around this time that Venugopalan was approached by a global refrigerator-manufacturer, looking at the Indian company as a contract-manufacturer, looking at the Indian company as a contract—manufacturer, which offered to book its capacity of 100,000 refrigerators a year for the next 5 years.

Venugopalan immediately realized he couldn't get a better offer. However, becoming a contract-manufacturer required Swaraj to take some hard decisions. At one level, the company would have to stop making refrigerators under its brand name. It was difficult to pin-point the financial implications of this move, but it meant a loss of face and a dilution of the company's brand equity. It could even affect the company's prospects in the refrigeration-projects business. At another, Swaraj would have to lay off the team involved in marketing refrigerators. Most of the employees were executives, and the company did not foresee any labour-problems, but the thought of suddenly asking 320 people to find other jobs was not a pleasant one for Venugopalan.

Like most managers faced with tough decisions, Venugopalan called in a consulting firm. Richardson & Co., which had already worked with the company, was the natural choice. The Firm wasted no time in coming up with its recommendations; it was familiar with corporate India's recession-induced crises.

Recommendation 1. Swaraj should not let go of the contract-manufacturing opportunity, especially since the arrangement was a long-term one. Richardson's managing partner, the avuncular 47 years-old Rohit Jha, pooh-poohed Venugopalan's fears: "You have to let people go. Your decisions have to be based on what is good for the business." But he had no answer when Swaraj's CEO Manubhai Patel, a 35-year-old whiz-kid from the Wharton business School, pointed out the disadvantage of such an arrangement: "Five years down the line, the transnational could terminate the contract and offer to buy us out. And we may have no option but to sell out." This set Venugopalan thinking: if that happened, Swaraj would have to either find another company to supply to—or re-enter the market under its own brand name. Both would not be easy.

Recommendation 2. Swaraj should leverage its skills in the projects side of the air-conditioning business to enter the room air-conditioning market. This was a good move since the market for room air-conditioners was nascent—a penetration-level of less than 1 per cent—and was expected to grow at 40 per cent per annum. Besides, the household nature of this product meant that the company could accommodate most of the people from its refrigerator marketing team in a newly-created cell that would look after sales to this segment.

Recommendation 3. Swaraj should re-focus its energies on projects. "We are already doing it," whispered Patel to Venugopalan. "Why are we paying them Rs. 5 Crore to tell us what we know?"

Recommendation 4. But the consulting firm had saved its best for last. Jha looked around the room, and paused dramatically, before outlining it: "Yours is a business in which technology is not the differentiating factor. What differentiates the winners from the also-rans is after-sales services. Swaraj has acquired skills in servicing capital-equipment cost-effectively. It can become a gateway for global heavy equipment suppliers. And the products you sell are only one component of your business and one link in your relationship with the customer. Our studies indicate that the margins in the services business are 60 per cent higher than in the products business."

"Let me sum up," said Jha. "We think contract-manufacturing is a good idea. Your returns are guaranteed, and Swaraj will be spared the marketing expenditure that is only bound to rise over the years as deep pocketed transnationals enter the market. We also think you should seriously consider becoming a services-provider. Swaraj's expertise in projects can easily be extend to cover this area. Services constitute close to three-quarters of every mature economy. I think Swaraj should jump at the chance of moving into that area at this stage of the evolution of the Indian economy."

Jha's statement caught Venugopalan's attention. "Can we really do this?" he asked himself, as he walked Jha to the door.

A month later, each Swaraj employee received a personal letter from Venugopalan. After outlining the constraints that were forcing Swaraj to re-create itself, he presented his vision of the company's future: "where do I see us 5 years from now? We will no longer be making products for ourselves, but will execute contract-jobs for companies we view as competitors today. We will focus on the services node of the value-chain. There is a flip side, through. We may lose our historical identity. Several skills will become redundant. Several people may become redundant. It will be gut wrenching. The bright side is that Swaraj will re-invent itself as a value-driven company. It will stay on top of circumstances instead of being overwhelmed by them."

Case Questions

1. What are the benefits to Swaraj in contract manufacturing?
2. How does the multinational gain by outsourcing manufacturing to Swaraj?
3. What are the long term losses to Swaraj if it accepts the contract manufacturing offer?
4. Can the company make better use of its facilities and human resources?

THE CASE OF PHILLIPS SHOES

For Rakesh Sharma, the 47-year-old CEO of Phillips Foot-wear, the best thing about being based in Delhi's Connaught Circus was the half-a-kilometer walk from the car-park to the office. Some of the CEOs who continued to operate out of the Capital's fading commercial center always alighted in front of their offices, instructing their drivers to then head for the car-park, but not Sharma. Not that he enjoyed walking; certainly not in the summers when the temperatures, even at 10 in the morning, which was usually when Sharma arrived at work, touched 40°C.

This stroll had nothing to do with fitness either. It was work: an opportunity for Sharma to study the foot-wear-habits of his fellow-pedestrians. Every time he saw a branded foot, Sharma would mumble to himself: “Woodland, Lee Cooper, pass, Matrix, Phillips, pass, Lee Cooper, pass, Woodland, Red Tape, Windsor, Phillips, Hush Puppies, Phillips pass, pass, Phillips, Florsheim!” And with Phillips enjoying a 15 per cent share in a market dominated by the unorganized sector, Sharma would, generally, enter the office on a high note. “Score 27 (or whatever) for Phillips today, Anna,” he would tell his Executive Assistant, Anna Hegg, who had move with him from Phillips’s Italian operations 8 years earlier. “All well with the world.”

The summer of 2005 changed that. To Sharma’s trained eye, it seemed as if, with each passing day, he saw more engineer boots, more shoes with side-walk soles, more chunky shoes, and less of Phillips’s once ubiquitous 6-hole lace-ups. It was obvious; the market was passing Phillips by. And so it was that, finally, one July morning, Sharma huffed his way into office: “score 8 for Phillips today, Anna, and schedule a meeting next Monday with the heads of marketing and finance. And get SB from Works to fly in too.”

Monday. Sharma, who had insisted on driving right up to the office for the past week, entered the conference-room to find Uday Menon, Vice President (Marketing), Pankaj Mishra, Director (Finance), and Sunil Bhatnagar, Executive Vice-President (Operations), in the midst of a animated discussion on the possible reason for the summons. Sharma greeted them effusively—although they reported to him, he considered them more his peers than subordinates—but still held back from mentioning the reason behind the hurriedly-called meeting.

“I am a great believer in history,” he told his astonished audience. “So, I want you to switch off your phones, and pretend we’re back in 1996. I did not move to India till 2 years after, and you, Uday, joined us only in 1999, but Pankaj and SB were here. SB, you’ve been with Phillips the longest. What was our position in 1989?”

Bhatnagar, a 57-year-old Phillips-lifer with a shock of white hair, was only too pleased to reminisce: “Then, as now, we were the market-leaders, with a share of 17 per cent. Our franchise was built around Value-For-Money (V+F+M). Our only objective was to cater to the economy segment of the market. At that time, this segment was all there was to the market, actually, Our low-value, high-volumes strategy helped us build tremendous brand equity with our primary audience: the growing Indian middle-class.”

“I remember,” interrupted Menon, who, at 36, was the youngest in the group, “Shopping in the neighborhood Phillips store as a child. The entire family would visit the store; it was more of an evening outing than shopping-trip. The sales-people were friendly, and the service was unhurried. Quality and affordability were taken as constants.”

“Then we went and did something stupid, didn’t we?” asked Sharma. “We did,” admitted Mishra, 52, who, in a well-cut grey business suit, looked nondescript as only CFOs can. “But there was a method to our madness. And faultless logic behind our folly. A rapid increase in the number of yuppies in the 1990s made it possible for companies to move from utility marketing, which stressed the functionality of products, to lifestyle marketing, where products like foot-wear could be sold as fashion-accessories. However, a review of our portfolio revealed that although we

had a range of products for people belonging to various age-groups, we had nothing distinctive to offer the youth. As a company too. Phillips seemed to have a fuddy-duddy image, crying to be re-worked into a trendy one. The obvious solution to both seemed to be to enter the premium segment of the market."

"Sound reasoning," interjected Sharma, "and, if I had been there, I might well have made the same decision. So, we lunched several sharply-focused, premium brands. But things didn't work out quite the way we though they would, did they?"

Bhatnagar nodded ruefully: "No, they didn't. But the real reason for the downslide was Phillips's change in focus. Suddenly, volumes no longer mattered; value was the new mantra. We went overboard: barely 3 months after we launched our premium footwear, we were selling a range of fashion-accessories that had nothing to do with footwear. A Phillips retail outlet became a mini-departmental store, where footwear jostled for space with ready-to-wear garments, sports goods, leather accessories, like belts and executive bags, and other accessories. As a result, you could pick up a pair of Phillips canvas keds for Rs. 90—or you could pick up a Phillips blazer of Rs. 1,800.."

"This proliferation of offerings created dissonance in the mind of the typical middle-class consumer," concluded Menon. "She felt betrayed, and turned away. And that was the beginning of the rot."

"You're right," agreed Mishra, "but there was more to it than mere customer preference. At the low end, our competitors rushed in to fill in the perceptual position vacated by Phillips. At the premium end, new entrants sprung up to take advantage of the market that we had created. They were nimble and focused, and, unlike us, had no historical baggage…"

"And," continued Menon, "Phillips did not have the marketing expertise to tackle the premium segment. Despite a range of exciting products, our target-audience perceived Phillips as a *janata* branch. At the retail level, too, we failed to get things right. While the ambience in all our stores cried economy, the product-range was skewed towards premium. That turned away both our traditional customers as well as the new ones we hoped to lure. We also seem to have been indiscriminate in choosing the fashion-accessories we could extend the brand to. Moving from low-priced to premium footwear is one thing; moving from low-priced footwear to fashion-accessories is another altogether."

"I went over the entire chapter when I took over in 1998," pointed out Sharma. "four things seems to have gone wrong with our decision to go premium. One, a company that was used to mass-marketing simply did not have the requisite skills to build premium brands. Nor could it divorce the new brands it created from its V-F-M image. Consumers never got around to accepting this basic contradiction. Two, the focus on premium offerings created several operational problems. Designed for mass-production, our manufacturing processes couldn't handle the small batch-sizes the change necessitated."

"Three, our alliances with some footwear transnational, which enabled us to retail top-of-the-line international brands in our stores, never really amounted to anything. With the premium segment accounting for a mere 10 per cent of the market, these offering just added to our inventory problems. And finally, our sales-people were

incapable of becoming the specialized sellers required to interact with such customers. Pankaj, this is something we all know, but could you sum up the financial implications of our decision to change focus?"

"Certainly. Two year after we made the change, in 1998, Phillips recorded its first-ever loss in its 43-year-long existence in India: Rs. 8 crore. The next year was worse: our sales fell by nearly 7 per cent, and our losses rose to Rs. 9 crore."

"Which was around the time I replaced Geoff as CEO," interjected Sharma. "Uday, you were hired specifically for the purpose of turning things around. What were the things that helped us get out of the hole we had dug ourselves into?"

"To begin with, we ended our alliances with the transnational. We also decided to stick to only footwear, and removed fashion-accessories from our portfolio. To strengthen our core position, we launched, between 1999 and 2001, 200 products in the popular, or economy, segment of the market. We replaced our incentive programme, which encouraged our salespeople to promote the sales of high-value products, with one that looked at volumes—and nothing else. And we segmented our 1,100-strong retail chain into 3 categories: a few premium stores, that catered to the top end of the market; many family-stores, which sold the popular range; and as many bazaar-stores that sold seconds at reduced prices.."

"That wasn't all," interrupted Bhatnagar. "We decided to slash our production of premium products, and this caused our raw materials bill to fall by over 45 per cent. We upgraded our logistics and computerized our inventory-management systems to ensure that the right products were available at the right place at the right time. And we slashed our ad-budget in half, and offered a 25 per cent discount throughout 2000 to ensure that people flocked to our stores again."

Year	*Turnover*	*Profit Before Tax*	*Profit After Tax*
1998	402	–8	–8
1999	375	–9	–9
2000	592	4	3
2001	669	18	11
2002	800	30	25
2003	944	43	36
2004	1084	52	43
2005	1205	58	49

"Now for the future," concluded Sharma. "You must all be aware of my personal efforts to contribute to our knowledge of the market. Anna refers to it as RBWA, Research By Walking Around. Well, over the past few months, I have seen more and more people moving towards premium offerings in the shoes market. And I am not just talking about our contemporaries. I am speaking about the salesperson who works in the courier company down the road, or the front-office executive in our own organization. All around us, people are paying more for their footwear. And Phillips is getting nothing out of it…"

Support came from an unexpected quarter, Bhatnagar, “I know. My son, who is 17 years old, says the shoes we make are old-fashioned. He insists on wearing huge, chunky boots.”

“Exactly,” exclaimed Sharma, “For how long can we ignore the young? Although the premium segment may account for a mere 12 per cent of the market, it is growing at the rate of 30 per cent. And that is where the margins are.”

“Aren’t we forgetting 1989?” queried Mishra.

“No way,” said Sharma. “I didn’t get us talking about the past to illustrate how we managed to save the day. I believe that the market wasn’t ready for us in 1996. Today, it is…”

“Even globally, Phillips is known for its sensible V-F-M offerings—not engineer boots,” countered Menon.

“True, “ accepted Sharma, “but the profile of the populations in most developed countries is distinctly tinged with grey. Here, the population is getting younger, and we just can’t afford not be present in the premium segment.”

It was evident to Sharma that Menon and Mishra did not buy his arguments. To them, he was forcing the company to take the same self-destructive path it had tread in 1996. And Bhatnagar was, at best, a silent ally. Doggedly, he pushed on: “I know what you guys will bring up next : manufacturing and distribution. These things can be worked out. But, if we fail to recognize that the market is moving on, no amount of manufacturing effectiveness or reach will help us. Come on, guys. You surely aren’t going to let the memories of 1996 influence Phillips’s strategy forever, are you?”

Case Questions

1. What is the difference between inventory management for mass production and that for premium range manufacturing?
2. If the turnover in the economy ranges is stagnating, how does it affect the profitability of the company?
3. List the causes which resulted in the losses which the company suffered in 1998 and 1999?
4. How can the company reduce its cost of production and improve capacity utilization?

NCR’S RISK MANAGEMENT STRATEGY

In 1997, NCR embarked on a new phase of its existence, which began in 1884 when John H. Patterson founded the National Cash Register Company, maker of the first mechanical cash register. The new NCR, which was acquired by AT & T in 1991 and was subsequently spun off from At & T at the end of 1996, is divided into four major business groups:

— Computer System Group

— Communications Industry Business Unit
— Financial Systems Group
— Retail Systems Group

The Computer System group develops, manufactures, and markets computer systems. The other three groups represent specific industries targeted by NCR.

NCR generated $8 billion in revenues in 1995, the smallest of the AT&T groups (the new AT & T generated $51 billion in revenues, and Lucent Technologies generated $21 billion in revenues). However, NCR is the most international of the group, generating over 50 per cent of its revenues abroad, whereas AT & T as a whole generated only 10.9 per cent of total revenues from abroad. NCR has 3,79,000 employees worldwide, 19,000 of whom are in the United States. It also has 1100 offices and 31 development and manufacturing locations in more than 130 countries. Its top five countries in revenues are Japan, Germany, Switzerland, the United Kingdom, and France.

NCR's leadership team is divided into product groups, geographic areas (Americas Region, Asia/pacific Region, and Europe and Middle East/Africa Region), and functional areas (such as Global Human Resources, Corporate Strategy, and finance and Administration.). The role of the leadership team is to set the vision, mission, and direction for NCR.

Effective July 1, 1996, Earl C. shanks was hired away from Farley Industries Inc. and named as the head of the company's treasury functions. He reports directly to Per-Olof Loof, head of the Financial Systems, Group and member of NCR's leadership team. This was an important appointment, because in 1991 when AT & T acquired NCR, virtually all of NCR's treasury functions were transferred to AT & T. Thus Shank's mission is to rebuild the treasury group from zero. He is responsible for creating a global organization which will manage the company/s worldwide cash flows and foreign-exchange risk, establish adequate borrowing facilities, establish and implement finance and investment objectives and strategies for pension assets and benefits.

In 1990, the last year NCR issued an annual report before the merger, it noted that transfer pricing between geographic divisions is done at market prices. It also emphasized how interdependent its units are: "The methods followed in developing the geographic area data require the use of estimation techniques and do not take into account the extent to which NCR's product development, manufacturing, and marketing depend upon each other. Thus, the information may not be as indicative of results as it would be if the geographic areas were independent organizations".

Similar breakdowns are not found in the AT & T Annual Report, since foreign revenues are only 10.9 per cent of total revenues. AT & T provides revenues, operating income, and identifiable assets for only two geographic segments: United States and other geographic areas. FASB Statement Number 14 does not require the disclosure of geographic segment data if foreign revenues, earnings, and identifiable assets are less than 10 per cent of total revenues. However, AT & T's Annual Report mentions that foreign revenues in its segment disclosures include only revenues from foreign-based operations. Revenues from all international activities, including the foreign-segment revenues and those from international telecommunications services and export sales, provided 26.2 percent of consolidated revenues in 1995. AT & T

had hoped to generate 50 percent of its revenues from abroad by the turn of the century. However, NCR, with nearly 60 percent of its revenues coming from abroad, is clearly more global than AT & T in general.

Prior to the merger, NCR took advantage of foreign capital markets to borrow money. In its 1990 Annual Report, NCR reported notes payable totaling $182 million, classified as short-term borrowings from banks, mainly denominated in foreign currencies. NCR also included long-term obligations denominated in Eurodollars and in Japanese Yen.

If AT & T uses foreign capital markets, it does not disclose much information. AT & T's 1995 Annual Report describes its debt obligations but does not disclose whether any are in a foreign currency. The annual report mentions, however, that a consortium of lenders provides revolving credit facilities to AT & T and AT & T Capital. Both AT & T and AT & T Capital maintain lines of credit with different consortiums of primary foreign banks. In addition, AT & T lists its stock on exchanges in Brussels, Geneva, London, Paris, and Tokyo, in addition to several in the United States, so it is gaining access to equity capital abroad.

The objective of NCR's risk-management strategy was to neutralize economic exposure from foreign-currency fluctuations, first through operational strategies and second with foreign-exchange contracts. To illustrate how significance those contracts were, on December 31, 1990 NCR had $1.271 billion in outstanding forward contracts, of which 60 per cent were in European currencies and 40 per cent were in Pacific currencies. There were no contracts in Latin American currencies, because those financial markets were not developed enough for forward contract.

From an organizational standpoint, NCR put a lot of responsibility on the shoulders of group management. Each geographic unit had a group vice president and finance director responsible for the overall risk-management strategy of the group, subject to the approval of top management and corporate treasury. Each of the eight regions that composed the Latin America/Middle East/Africa group had a general manager and a finance director. Once the risk-management strategy and had been determined, the execution of the strategy was left to the local level, where market conditions vary considerably.

Foreign-exchange Risk Management in the older NCR

Prior to 1991, NCR was organized differently than it is now on a geographic basis. However, it was still considered one of the world's premier MNEs in terms of the amount of foreign to total revenues. Although the new NCR has an Americas division that includes North America and Latin America, the old NCR had a Latin America/Middle East/Africa geographic region that encompassed the world's most volatile regions at the time.

Foreign-exchange Risk Management under AT& T

Foreign-exchange exposure was greater under AT & T than it was for NCR, but international was a smaller part of its total business, so AT & T started with little real expertise in the area. As AT & T began to expand its foreign revenues, both in terms of exports and imports as well as foreign direct investment, it had to develop policies and procedures for managing exposures. When AT & T acquired NCR, it permitted NCR to retain its foreign currency risk-management responsibilities for foreign

operations, but philosophical conflicts arose over the best way to deal with exposures. For example, NCR felt it was important to hedge balance sheet as well as cash flows exposures, whereas AT & T did not feel inclined to hedge balance sheet exposures. In its 1995 annual report, AT & T discussed its general philosophy for hedging foreign-exchange exposures:

We enter into foreign-currency exchange contracts, including forward, option and swap contracts, to manage out exposure to changes in currency exchange rates, principally Canadian dollars, Deutsche marks, pounds sterling and Japanese yen. Some of the contracts involve the exchange of two currencies, according to the local needs of foreign subsidiaries. The use of these derivative financial instruments allows us to reduce our exposure to risk that the eventual dollar net cash inflows and outflows, resulting from the sale of products to foreign customers and purchases from the foreign suppliers, will be adversely affected by changes in exchange rates. Our foreign exchange contracts are designated for firmly committed or forecasted purchases and sales. These transactions are generally expected to occur in less than one year. For firmly committed sales and purchases, gains and losses are recognized as adjustments to the underlying hedged transactions when the future sales and purchases are recognized, or immediately if the commitment is canceled. Gains or losses on foreign exchange contracts that are designated for forecasted transactions are recognized in other income as the exchange rate change.

(*Source:* John D. Daniels and Lee H. Radebauuh, International Business: Environments and opportunities)

Case Questions

1. Prior to being acquired by AT & T, NCR hedged both transaction and translation exposures. What types of exposure did AT & T hedge? Which strategy do you think NCR should pursue?

2. Given the type of company NCR is, describe how you think it should organize its foreign-exchange risk management function. Be sure to draw on the answer to question 2 establishing a foreign-exchange risk management strategy.

VALUATION IN THE PHARMACEUTICAL INDUSTRY

Aurobindo Pharma is a fast track pharmaceutical company headquartered in Hyderabad, producing and marketing some of the most quality conscious active Pharmaceutical Ingredients (bulk actives), intermediates and speciality generic formulations.

It ranks among the top 5 Pharma companies in India and is a multi product, multi technology, transnational company. Today the Company's products are serving consumers in India and over 70 other countries. Aurobindo Pharma is an R&D driven chemistry business house, with a very broad product portfolio. The company has a presence in fast growing life style disease drugs, anti infective drugs and key speciality therapeutics.

The Company is a known leader in the semi synthetic penicillins (SSPs) and cephalosporins. Indeed, Aurobindo seeks to attain significant market presence in every area of its business. After creating a name in producing APIs and intermediates, Aurobindo Pharma sees major growth in its speciality generic formulations business.

Aurobindo Pharma values its contribution to its customers and the medical profession. The Company has accordingly planned its strategic growth, proactively responded to the changing requirements of the medical profession, and enabled its core customers to meet their market needs. The customers of the Company benefit from the most modern and state-of-the-art manufacturing facilities and a quality conscious approach to business. Aurobindo Pharma believes in delivering value in every transaction.

The Company sees its potential both in regulated and other global markets. In regulated markets, Aurobindo Pharma visualizes profits aided by the thrust in building intellectual property. In the large growth segment of other global markets, the Company will succeed by virtue of its cost efficient production. Expanding presence in the remunerative/demand pull segments has ensured volumes. In turn, this has provided economies of scale. Aurobindo Pharma takes care to remain a quality conscious cost efficient producer.

APIs contribute a major portion of the Company's business. The product portfolio is wide and caters to different therapeutic segments. Aurobindo Pharma is a major player in segments like SSPs, cephalosporins, antivirals and certain lifestyle disease drugs.

The Company has grown rapidly by resolving complex chemistry challenges and by launching new generation drugs in every category. Over a period, it has reduced its dependence on any single category or older drugs. The Company has retained its leadership in SSPs, but has reduced its dependence on this segment to one-third of its business. Sterile cephalosporins, which involve complex chemistry and are known to have entry barriers, constitute over 15 per cent of the revenues. The Company has launched newer drugs like cephalosporins (contributing to a quarter of total revenues), life style disease drugs and anti-HIF drugs which constitute the balance. The Company enjoys world's largest product portfolio in anti-AIDS, and ranks among the top in the world in SSPs and cephalosporisn, both oral and sterile.

ABRIDGED PROFIT AND LOSS ACCOUNT

(Rs. Millions)

	2001-2002	*2002-2003*	*2003-2004*	*2004-2005*
Sales	**5500.30**	**7456.00**	**9961.00**	**10377.20**
Other Income	27.90	34.70	116.50	146.80
Gross Profit (PBDIT)	787.20	1207.10	1398.80	1470.40
Interest	171.00	294.00	416.80	423.90
Depreciation	62.90	95.20	147.80	158.10
Tax	51.90	71.90	151.10	203.40
Net Profit	501.40	746.00	683.10	685.10

Presently over 70 drugs in the area of SSPs, cephalosporins, anti AIDS and speciality anti-infectives and over 30 drugs in the area of life style disease drive the API business and its growth.

The speciality generic formulations business has made Aurobindo a truly diversified and integrated pharma major. In addition to broad basing its activities, the speciality generic formulations business has helped the Company climb the value chain and optimize the synergies.

The Company's presence in speciality generic formulations gives an increased visibility with the attendant benefits of long and sustainable business. The joint venture company, Citadel Aurobindo Biotech Ltd is leading the marketing and distribution. Manufacturing for the joint venture would continue to be with your Company.

Industry Development

Risks and concerns

Aurobindo has sensed the threats that face the industry, and has already gone about de-risking its business. The re-engineering of the production facilities, new direction in marketing, efforts to source more economically produced raw materials are part of this endeavor to overcome risks, and gain advantage in the changing market place.

The company recognizes that the facilities may be ready much earlier for catering to regulatory markets, and there could be wait before the roll out of products commences. The investment in facility upgradation is being made in advance, and it is possible that regulatory approvals and ANDAs may take additional time.

The Company has preferred to make the investment, remonstrate its capabilities and remain enabled to meet the requirements of regulatory inspectors and customer visits. Aurobindo will gain with favourable approvals obtained with facilities ready. The risk of loss of interest in the interim is far less than the risk of delayed approvals. Aurobindo has planned its strategic entry in the regulatory markets, and in converting the challenges of the future into opportunities. The company plans to cash them by being ready.

Quality and Cost Management

Aurobindo is a low cost producer, and leadership in conjunction with the reputation for quality has enabled the Company to improve its reach in the global markets. After the restructuring of the facilities, the Company would have further improved its cost of production.

The quality control and quality assurance systems have been strengthened. The Company meets the needs of method development and validations, impurity profiling, process optimization and has a wealth of trained team that enforces the systems.

Financial Management and internal controls

The Company has a disciplined approach to costs and follows prudential norms. Systems are strictly enforced, and costs are held to budgets.

There are certain events or transactions during the last year that need mention. The company decided to shed facilities, equipments and products where the returns

are not commensurate with the investments or effort. The Pondicherry unit had become unviable and it was considered prudent to sell the same.

Similarly, products, which gave low returns, have been shed. At the same time addition to product portfolio has been made where there is competitive advantage.

The company adopted a conservative approach in accounting for the capital receipt of Rs. 3000 million as non-complete fee. This inflow is of an exceptional item and of a capital nature. It was considered prudent to disclose it as such, so maintain the integrity of the revenue and recurring incomes and profits.

SALES MIX

Particulars	*2002-2003*		*2003-2004*		*2004-2005*	
	Rs. Millions	*%*	*Rs. Millions*	*%*	*Rs. Millions*	*%*
SP Bulk drugs	3304.8	44.3	3224.9	32.4	3613.6	34.8
Cephalosporins - Oral	894.6	12.0	1620.0	16.3	1577.2	15.2
Uninolones	466.4	6.3	373.1	3.7	322.4	3.1
High Value Bulk Drugs	445.2	6.0	657.5	6.6	531.2	5.1
SP Sterile	356.5	4.8	378.7	3.8	566.3	5.5
Ephalosporins - Sterile	952.8	12.8	1157.9	11.6	1626.2	15.7
Intermediates	279.5	3.7	328.6	3.3	341.5	3.3
Formulations	270.7	3.6	511.9	5.1	873.3	8.4
Other	485.5	6.5	1708.4	17.2	925.5	8.9
Total	7456.0	100	9961.0	100	10377.2	100

Balance Sheet spread of the company for the preceding four years is given hereunder :

(Rs. In million)

	2001-02	*2002-03*	*2003-04*	*2004-05*
1	*2*	*3*	*4*	*5*
Gross Block	1022	1548	2091	2750
Less Depreciation	115	209	376	490
Net Block	907	1339	1714	2260
Investments	19	24	238	737
Current Assets, Loans and Advances	2528	3122	4440	5746
1	*2*	*3*	*4*	*5*
Less Current Liabilities and Provisions	1100	879	1367	1545
Less Bank Borrowings incl. CP	381	520	902	799
Net Working Capital	1047	1723	2171	3402
Net Tangible Assets	1973	3087	4123	6399
Less Secured Term Loans	549	615	872	1415
Less Unsecured Loans	180	274	484	1145
Net Worth	**1244**	**2197**	**2766**	**3838**

Represented By				
Share Capital	95	100	200	200
Preference Shares	90	90	0	0
Share Capital Suspense	0	0	2	10
Reserves and Surplus	1063	2007	2564	3414
Total	1247	2197	2766	3624
Less Misc. Exp. not written off	3	0	0	6
Deferred Tax Liability	0	0	0	221
Net Worth	1244	2197	2766	3838
Net Worth Excl. Preference Shares	1154	2107	276	3838

Capital Market indicators of the company are as under :

EPS :	34.25
Market Value :	210.05 (16.11.05)
P/E Ratio:	6
Industry P/E Ratio :	12
52 week High/Low :	263/175
180 days moving Average :	228
100 days moving Average :	222
50 days moving Average :	220
30 days moving Average :	216
7 days moving Average :	212

Case Questions

1. What additional information would you need to conduct fundamental analysis of the share value of the company?
2. Is the share undervalued ?
3. Book Value of the share is Rs. 190. What does it indicate about market fancy for the share ?
4. How would you proceed if a technical analysis is to be conducted ?

POSER FOR PROJECT FINANCE

IFCI Ltd. is one of the leading Development Finance Institutions of the country. Following statistics are given about its recent performance :

Financial Results

(Rs. Million)

	2001-02	*2000-01*
Income from operations	22185.3	28799.28
Other income	301.19	104.62

Total Income	**22486.49**	**28903.9**
Profit/(Loss) before Provision for Bad and Doubtful Debts and Investments and Taxation	(2531.27)	2339.67
Profit/(Loss) before Taxation Transfer from General Reserve	(8847.00)	(2619.31)
Surplus brought forward from previous year	0.00	3189.73
Less: Provision for taxation (earlier years)	4.24	115.35
Surplus/(Deficit)	**(8842.76)**	**645.77**
Appropriations		
Dividend on Preference Shares	0.00	482.49
Corporate Dividend tax	0.00	109.04
Debenture Redemption Reserve	0.00	50.00
Balance carried to Balance Sheet	**(8842.76)**	**4.24**

Operating Environment and outlook

The Indian economy has shown resilience to global slowdown, and is expected to records a real GDP growth of 5.4% in 2001-2002 as per revised estimated of CSO. Despite the reasonably higher GDP growth, the economic recovery in 2001-2002 has been uneven. The recovery has been primarily due to a significant rise in agriculture, forestry and fishing' output with growth estimated at 5.7% in 2001-02 compared with 0.2% decline in the previous year. The strong growth of agriculture has resulted in buoyant and sustained performance of the consumer goods industry. However, the growth performance of the other industrial sub-sectors has been nominal, restricting overall industrial growth.

Industrial growth at 2.9% and 2001-02 was the slowest since 1992-93 and was substantially lower compared with 6.2% registered in the previous year. Growth of the manufacturing sector slowed to 2.8% in 2001-02 compared with 6.7% in 2000-01 and was accompanied by slower growth of the mining sector and electricity output during the previous year. The output of capital goods, which is closely correlated with investment trends in the economy, fell by 4% in 2001-02 after registering a meager 1.7% growth in the previous year. Growth of intermediate goods dropped from 4.7% in 2000-01 to 1.5% in 2001-02, while that of basic goods declined from 3.9% to 2.8% during the same period. The above trend was also manifested in lower non-food credit growth of 12.8% during 2001-02 compared to 14.9% in the previous year. However, the services sector recorded a higher growth of 6.5% during 2001-02 compared with 4.8% during 2000-01.

Exports remained more or less flat in 2001-02 with a marginally negative growth of 0.1%. Weak domestic demand also meant that imports too did not increase significantly during the year with overall growth of a mere 1.1%. The foreign exchange reserves, at the end of March 2002, were placed comfortably at US$51.1 billion (excluding gold and SDRs), equivalent to over 12 months' imports.

Inflation, during the period, hovered at historic lows, reflecting slack demand in the economy. Although, comfortable inventories of food grains as well as low fuel

prices have been the other major contributory factors, the muted demand for intermediate input was also responsible for the low inflation.

The government initiated several positive steps toward reviving the economy not only through direct investment in infrastructure but also by providing encouragement to private investment. For this purpose effects were made to inject liquidity into the system by easing monetary policy through a cut in the Cash Reserve Ratio (CRR). Also steps were initiated to bring down the cost of credit, by moving towards softer interest rates. These changes are likely to have a positive impact on credit demand during the current Financial Year.

The overall economic environment in 2001-02 was mixed. While the industrial sector experienced lower demand both in the domestic and export markets, a strong balance-of-payments position, relatively low inflation and falling interest rates emerged as positive indicators of a industrial revival in the coming year. More so, the commitment of government towards speedy implementation of the second-generation reforms is likely to restore investors' confidence and improve investment climate.

In order to face the challenge posed by large quantum of Non-Performing Loans (NPL), the Government has initiated several measures with major breakthrough in financial sector reforms by issue of an Ordinance on Securitisation and Reconstruction of Financial Assets that would strengthen creditors' rights through foreclosure and enforcement of securities, creation of Asset Reconstruction Companies (ARCs) involving the participation of public, private sector banks and financial institutions. The ARCs would initiate measures for taking over the NPLs and develop a market for securitised loans.

Sanctions and Disbursements

IFCI sanctioned aggregate net assistance of Rs. 7,804.58 million to 47 projects during the year 2001-02 compared with Rs, 17,664.52 million to 64 projects in the previous year. Total disbursements during the year 2001-02 amounted to Rs. 10,756.65 million compared with Rs. 21,568.01 million in the previous year. The lower sanctions and disbursements during the year were in line with IFCI's current approach to consolidate business strategy. It was also a reflection of the trends in the industrial sector/investment climate and slow growth of new industrial capacities in the country. During the year 2001-02, miscellaneous service had the highest share in the sanctions (40.8%), followed by iron and steel (13%), power generation (12.1%), petroleum refining (6.4%), telecom services (6.4%) and construction (6.4%). Purpose-wise, while 16.78% of the assistance sanctioned during the year 2001-02 was for new projects, 13.15% was for expansion/diversification/ modernization of existing projects. However, 66.71% of total sanctions during the year was for the purpose of balancing equipment, general corporate purposes, margin money for working capital, financial restructuring etc. Implementation of many assisted projects were delayed, as companies' promoters could not raise the required equity funds due to adverse capital market conditions. Under these circumstances, IFCI, in line with other financial institutions, was required provide necessary additional funding to meet cost over-run these projects.

Facility-wise Sanctions and Disbursements

The share of fund-based assistance sanctioned and disbursed during the year

under review accounted for 95.6% compared with 93.5% and 77.7% respectively in the previous year. No foreign currency loan was sanctioned during the year 2001-02 compared with sanctions of Rs. 1,457 million in the previous year. The share of debentures in total sanctions also declined from 20.5% in 2000-01 to 15.0% in 2001-02.

Undisbursed Sanctions

Undisbursed sanctions or outstanding commitments of IFCI stood at Rs. 15,514 million at the end of 2001-02. The iron and steel sector accounted fro almost 44% of the undisbursed sanctions, followed by the infrastructure (power 9.5%, telecom 4.6% ports 2.5%, and bridges 1.5%), and petroleum sector 7.6. The rest covered a variety of industries including basic chemicals (4.5%), textiles (3.8%), sugar (3.7%) and synthetic resins (2.4%).

Portfolio Analysis

The total outstanding assistance, (excluding equity investments and guarantees) by IFCI at the and of 2001-02 was Rs. 175.48 billion (Rs. 187.55 billion as on March 31, 2001), spread across a number of industries. The drop in outstanding assistance was partly due to prepayments by borrowers of about Rs. 5.6 billion during the year. However, with a view to continuing consolidation of your Company's operations, and in the context of the emerging industrial/regulatory environment, the management's approach will be to maintain the overall level of outstanding assistance at current levels.

Facility-wise outstanding loans are given below:

Facility-wise Outstanding Loans etc.

(Rs. Million)

Facility-wise Loans Outstanding	*As of March 31, 2002*	*As of March 31, 2001*
Rupee Loans	111,845.65	124,603.60
Foreign currency loans	35,670.83	36,974.80
Debentures	25,234.99	23,254.44
Lease Assistance, inc. lease rental receivables	2,726.56	2,716.54
Total	175,478.03	187,549.38

Industry-wise Classification of Portfolio

Other than iron and steel, textiles, and power generation, IFCI's exposure in all other industrial sectors remained below 6% of the total outstanding assistance. The relatively High concentration in respect of iron & steel (21.69) is explained by the fact that most project in this industry are currently under implementation. Once these projects begin operations, it is expected that the repayment from these projects would commence and thus the share of this sector will decline. Further, the Company has taken a conscious decision not to take up financing of any new, green-field steel projects. Though the textile industry accounts for 11.40% of the total outstanding

assistance, it is spread over a large number of units, thereby mitigating the risks considerably. IFCI's exposure in all other industries, except power generation (8.96%), steel/metal products (6.19%), synthetic fibres (5.64%) and petroleum refining (5.11%), ranged between 0.02% to 3.92% of total outstanding assistance.

Industry-wise outstanding as on March 31, 2002

(Amt. in Rs. Million)

Industry	*Total Outstanding*	*% to total*
Infrastructure		
Power Generation	16,983.38	8.96
Port and Port Services	4,169.56	2.20
Telecom Services	3,622.54	1.91
Roads and Bridge construction	100.00	0.05
Total Infrastructure	24,875.58	13.13
Iron and Steel	41,097.52	21.69
Textiles	21,605.40	11.40
Steel/Metal Products	11,729.24	6.19
Synthetic Fibres	10,686.11	5.64
Petroleum Refining	9,680.70	5.11
Basic Chemicals	7,430.99	3.92
Fertilisers	7,006.56	3.70
Synthetic Resins and Plastics	6,799.24	3.59
Cement	5,387.93	2.84
Sugar	3,703.93	1.95
Electronics	3,505.02	1.85
Paper and Paper products	3,200.77	1.69
Hotel and Tourism	3,188.70	1.68
Electrical Machinery	2,917.09	1.54
Machinery and parts	2,886.03	1.52
Others	23,812.25	12.56
Total	1,89,513.10	100.00

Asset Classification

Asset classification of the Company is furnished below. The standard assets constitute 77.79% of total outstanding; Assets comprise loans, debentures, net leased assets and lease rentals receivables.

Asset Classification of Portfolio

(Rs. Million)

Asset Classification of Portfolio	*2001-02*	*2000-01*
Standard Assets	136,501.59 (77.99%)	14,178.78 (70.01%)
Sub-standard Assets	8,952.37 (5.10%)	9,739.64 (5.19%)
Doubtful Assets	30,024.07 (17.11%)	29,630.96 (15.80%)
Total	175,478.03 (100%)	187,549.38 (100%)

Management of Non-Performing Assets

Net Non Performing Assets (NPAs) of the Company as on 31st March, 2002 amounted to Rs. 38,976 million (22.21%) compared with Rs. 39,371 million (20.99%) as on 31st March, 2001. Though the level of NPAs came down marginally from the previous year, the same was relatively higher in percentage terms owing to the drop in the outstanding assistance. Age-wise analysis of NPAs shows that out of the total 1145 cases, 130 cases with an outstanding assistance of Rs. 12,589 million (32.30%) are less than 3 years old, 152 cases with an outstanding assistance of Rs. 14,284 million (36.65%) are 3 to 5 years old, 192 cases with an outstanding assistance of Rs. 4,838 million (14.41%) are 5 to 7 years old and the balance 671 cases with an outstanding assistance of Rs. 7,265 million (18.64%) are more than 7 years old.

The management has been making concerted efforts to contain the level of NPAs by playing a more pro-active role in the restructuring of borrowing concerns. As part of the aforesaid drive, the Board of Directors of the Company had set up a Committee of Directors to take up initially the top 100 NPAs, analyze them on a case-by-case basis, and suggest suitable action on each. As part of strategy to recover NPAs, one-time settlements and negotiated settlements in 92 cases have been agreed upon during the year 2001-02 involving a total amount of Rs. 2,968 million.

For increasing the recovery of dues locked up in BIFR and DRTs, the Company has further strengthened the legal department. As on 31st March, 2002, there were 740 cases involving an amount of Rs. 79.91 billion before various DRTs allover India. This included 105 new recovery applications filed during the year 2001-02. Of the 740 cases, as on 31st March, 2002, 299 cases were also simultaneously pending before the Company court/BIFR/AIFR. In 65 cases pending before BIFR, the company has sought leave of BIFR under section 22(1) of SIC and has so far received requisite permission in respect of 19 cases. After the establishment of DRTs at various centers, particularly more than one Bench in Delhi, Mumbai, Chennai and Kolkata and also, 5 DRTs at Allahabad, Chennai, Delhi, Kolkata and Mumbai, there has been substantial progress in movement of cases.

The Company has been making vigrorous follow-up of cases pending before DRT and Company Courts and for this purpose. Law Officers along with Credit Officers/Relationship Managers assisted by Advocates are attending the DRT proceedings on regular basis at all centers. As a results, recovery certificates have either already been issued or are likely to be issued in near future in almost 1000 cases.

McKinsey & Co., who were appointed to examine the future strategic options and draw a business plan for the Company, have, *inter-alia*, recommended segregation and transfer of non-performing and stressed assets of the Company to an Asset Reconstruction Company (ARC) for ensuring focused attention on their management. Keeping in view the above recommendation, an internal workout team for NPA Management has been formed consisting of 3 Groups. While NPL Group (Group-I) has been assigned with the responsibility of managing non-performing and stressed assets with outstanding Principal of Rs. 250 million and above, NPL Group (Group-II) has been entrusted with the responsibility of managing assets with outstanding principal below Rs. 250 million and Asset Recovery Group (Group-III) would be dealing with cases where recovery certificates have been obtained from DRTs/Courts

and /or winding up orders have been issued by the Courts/BIFR.

The company has already incorporated a company in the name and style of 'Assets Care Enterprise Ltd.' (ACE), with an authorized capital of Rs. 200 million, to function as an ARC. ACE has already obtained Certificate of Commencement of Business on 9th July, 2002. It has been envisaged that ACE would be in private sector and operate as a pilot ARC to eventually take over the stressed assets of other players with other major Banks. Financial Institutions as well as renowned international/multi-lateral Institutions. Agencies to participate in the aforesaid ARC venture.

The Government of India has recently promulgated an Ordinance titled 'The Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Ordinance, 2002.' In terms of the said Ordinance secured creditors (more than 75% in value terms) have been authorized to enforce their security interests without intervention of the court/tribunal. Both the Company and the ARC promoted by it are expected to benefit significantly from the provisions under this ordinance.

BALANCE SHEET AS AT 31st MARCH, 2002

(Rs. Millions)

			As at 31st March, 2002	*As at 31st March, 2001*
			(1)	*(2)*
I.	**SOURCE OF FUNDS**			
	(1) Shareholder's Funds			
	Share Capital		10,679.46	10,879.48
	Reserve and Surplus		4,976.64	5,051.35
	(2) Loan funds (Unsecured)			
	Rupee Loans		174,892.12	166,614.73
	Foreign Currency Loans		22,994.80	33,735.69
	Total		213,543.02	216,281.25
II.	**APPLICATION OF FUNDS**			
	(1) Loans		147,516.49	161,578.40
	(2) Investments		43,270.06	35,232.16
	(3) Fixed Assets		6,317.83	8,248.44
			(1)	*(2)*
	(4) Curent Assets & Advances	20,261.36		22,166.16
	Less: Current Liabilities and			
	(5) Provisions	(13,013.29)		(11,506.86)
	(6) Net Current Assets		7,248.07	10,659.30
	Miscellaneous Expendiutre to the Extent not written off or			
	(7) adjusted		347.83	562.95
	(8) Profit and Loss A/c		8,842.76	—

Significant Accounting Policies and Notes on the Accounts		
Total	213,543.02	216,281.25

PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED 31st MARCH 2002

(Rs. Millions)

		For the year ended 31st March, 2002	*For the year ended 31st March, 2001*
		(1)	*(2)*
I	**Income**		
	Income from Operations	22,185.30	28,799.28
	Other Income	301.19	104.62
	Total Income	22,486.49	28,903.90
II	**EXPENDITURE**		
	Cost of Borrowings	23,934.30	25,200.85
	Payments to and provisions for Employees	348.90	534.42
	Establishment and other expenses	265.04	267.63
	Depreciation	506.82	599.31
	Less: Transferred from Rvaluation Reserve	37.30	(37.98)
III	**Profit/(Loss) Before Provision/Write off for Bad & Doubtful Loans and Debentures/Investments (I-II)**		
	Bad & Doubtful Loans, Debentures, Investments, Debtors	(2,531.27)	2,339.67
	— Provident For	6,263.78	29.36
	— Written Off	51.95	5,824.74
	Provision against standard assets	—	4.40
	Less: Transfer from Provision for Bad and Doubtful Debts	—	(900.52)
		(1)	*(2)*
IV	Operating Results for the year	(8,847.00)	(2,619.31)
	Transferred from General Reserve	—	3,189.73
	Surplus brought forward from previous year	4.24	115.35
	Less: Provision for Taxation	—	40.00
	Surplus available for Appropriation	(8,842.76)	645.77

V **Appropriations:**

-	Proposed Dividend (Preference)	—	482.49
-	Interim	—	—
-	Final	—	409.04
-	Corporate Dividend Tax	—	50.00
-	Debenture Redemption Reserve	(8,842.76)	4.24
-	Balance Carried over to Balance Sheet		
	Total	(8,842.76)	645.77

Case Questions

1. What is the main cause for the losses incurred by the Company during 2001-02?
2. What are your observations about the asset quality of the company?
3. What information can you gather about cost of funds for the company ?
4. In what way shall the ARC help the company ?
5. Shall a pick-up in industrial activity help the company ?

This Test Paper set contains five test papers. Test Paper 1/2008, 2/2008, 3/2008, 4/2008 and 5/2008. The maximum time allowed to attempt each test paper is 3 hours.

Students are advised to attempt atleast **one Test Paper from Test Papers 3/2008, 4/2008 and 5/2008 i.e. either Test Paper 3/2008 or Test Paper 4/2008 or Test Paper 5/2008** and send the response sheet for evaluation to make him/her eligible for Coaching Completion Certificate. However, students may, if they so desire, are encouraged to send more response sheets including Test Paper 1/2008 and 2/2008 for evaluation.

While writing answers, students should take care not to copy from the study material, text books or other publications. Instances of deliberate copying from any source, will be viewed very seriously.

WHILE WRITING THE RESPONSE SHEETS TO THE TEST PAPERS GIVEN AT END OF THIS STUDY MATERIAL, THE STUDENTS SHOULD KEEP IN VIEW THE FOLLOWING WARNING AND DESIST FROM COPYING.

W A R N I N G

Time and again, it is brought to our notice by the examiners evaluating response sheets that some students use unfair means in completing postal coaching by way of copying the answers of students who have successfully completed the postal coaching or from the suggested answers/study material supplied by the Institute. A few cases of impersonation by handwriting while answering the response sheets have also been brought to the Institute's notice. The Training and Educational Facilities Committee has viewed seriously such

PROFESSIONAL PROGRAMME

FINANCIAL, TREASURY AND FOREX MANAGEMENT

TEST PAPER 1/2008

(This Test Paper is based on Study Lesson Nos. 1 to 4)

Time allowed: 3 hours *Maximum marks: 100*

NOTE: *Answer any FIVE questions including question No. 1 which is COMPULSORY.*

1. (a) "Profit maximisation is pre-requisite for shareholders' wealth maximisation" Do you agree? Give a brief account of the advantages and disadvantages of these goals. *(10 marks)*

   (b) "The cash flow approach of measuring future benefits of a project is superior to the accounting approach". Discuss. *(10 marks)*

2. (a) Work out the marginal cost of capital from the following Data:

Particulars	*Rs. in lakhs*	*cost (%)*
Existing Structure		
Equity shares	3,000	15
Retained Earning	500	18
Preference Share	500	10
Debt	2000	12
Additional Demand		
Equity	2,000	18
Retained Earning	500	18
Preference Capital	1,000	12
Debt	1,500	16

What should be the rate of return so that investors stay invested?

(10 marks)

(b) Megha Ltd. is a manufacturing organization. It is manufacturing electronic equipments in which a component A is used which is purchased from a local supplier at a cost of Rs. 40 each. In order to bring down the cost and improve its competitiveness, the company has a proposal to install a machine for the manufacture of component A. It has the following two options.

Option I: Installation of semi-automatic machine involving an annual fixed expenses of Rs.22 lakhs and a variable cost of Rs.18 per component manufactured.

of Rs. 40 lakhs and a variable cost of Rs. 15 per component manufacture.

You are required to—

(i) Find the annual requirement of component A to justify a switch over

from purchase of components to manufacture of the same by installing (1) semi-automatic machine; and (2) automatic machine.

(ii) If the annual requirements of the components A is 8,00,000 units, which machine would you advise the company to install? *(10 marks)*

3. (a) Make a comparison between NPV and IRR methods of capital budgeting highlighting the various similarities and difference between the two. *(10 marks)*

(b) (i) List out the various benefits of issuing bonus share.

(ii) List out the benefits of public deposit to the company as well as to the depositors. *(5 marks each)*

4. (a) Shane Industries Ltd. is expanding its operations and is in the midst of replacing one of its plant (original cost Rs.10,00,000 life-10 years, Depreciation @25% WDV)which has a remaining life of 6 years. This machine has a salvage value of Rs.2,00,000 at present.

The new machine being considered for replacement is costing Rs.15,00,000 (salvage value 10% at the end of 6 years). The important data regarding new machine are as follows:

Incremental Revenue	Rs. 5,00,000
Fixed Assets (excluding depreciation)	un changed
Depreciation Rate	25% WDV
Variable Cost	30%

Evaluate the replacement decision, given that:

(i) The required rate of Return 10%.

(ii) Rate of Tax 30%.

(iii) There are several assets in the same block of assets. *(10 marks)*

(b) The following figures of Suhasini Ltd. are presented to you:

		Rs.
Earning before Interest and Tax		23,00,000
— Debenture Interest @8% per annumn	80,000	
— Long term Loan Interest @11% per annumn	2,20,000	3,00,000
Profit before Tax		20,00,000
Income Tax (50%)		10,00,000
Earning after Tax		10,00,000
No. of equity share of Rs. 10 each		500000
Earning per Share (Rs.)		2

Price-earning ratio	10

The company has undistributed reserves and surplus of Rs.20 lakhs. It is in need of Rs.30 lakhs to pay off debentures and modernizes its plants. It seeks advise on the following alternative modes of raising finance:

Alternative 1 – Raising entire amount as term loan from bank @12% per annumn.

Alternative 2 – Raising part of the funds by issue of 1,00,000 shares of Rs.20 each and the rest by term loan at 12% per annumn.

The company expects to improve its rate of return by 2% as a result of modernisation, but Price Earning Ratio is likely to go down to 8 if the entire amount is raised as term loan.

(i) Advise the Company on the financial plan to be selected.

(ii) If it is assumed that there will be no change in the Price Earning Ratio, if either of the two alternatives are adopted, would your advice still hold good? *(10 marks)*

5. A Company is contemplating whether to replace an existing machine or to spend money on overhauling it. The company currently pays no taxes. The replacement machine costs Rs. 90,000 now and require maintenance of Rs. 10,000 at the end of every year for eight years. At the end of eight years, it would have a salvage value of Rs. 20,000 and would be sold. The existing machine requires increasing amounts of maintenance each year and its salvage value falls each year as follows :

Year	*Maintenance (Rs.)*	*Salvage (Rs.)*
Present	0	40,000
1	10,000	25,000
2	20,000	15,000
3	30,000	10,000
4	40,000	0

The opportunity cost of capital for the company is 15%.

When should the company replace the machine? *(20 marks)*

6. Write short notes of the following:

(i) Recourse factoring

(ii) Loan syndication

(iii) Source of real estate funding

(iv) Financing cost escalation. *(5 marks each)*

TEST PAPER 2/2008

(This Test Paper is based on Study Lesson Nos. 5 to 9)

Time allowed: 3 hours *Maximum marks: 100*

NOTE: *Answer any FIVE questions including question No. 1 which is COMPULSORY.*

1. (a) What are the various factors which affect divided policy of a firm? *(10 marks)*

   (b) "Efficient Cash Management will aim at maximising the availability of cash inflows by decentralizing collections and decelerating cash outflows by centralizing the disbursements". Discuss. *(10 marks)*

2. (a) Honey and Co. has been following a dividend policy which can maximize the market value of the firm as per Walter's model. Accordingly, each year, at dividend time the capital budget is reviewed in conjunction with the earnings for the periods and alternative investment opportunities for the shareholders.

   In the current year, the firm expects earnings of Rs.5,00,000. It is estimated that the firm can earn Rs.1,00,000 if the profits are retained. The investors have alternative investment opportunities that will yield them 10% return. The firm has 50,000 shares outstanding. What should be the dividend payout ratio in order to maximise the wealth of the shareholders? Also find out the current market price of the share. *(6 marks)*

   (b) Sobhagya Limited specializes in the manufacture of a computer component. The component is currently sold for Rs.1,000 and its variable cost is Rs.800. For the year ended 31.12.2007 the company sold on an average 400 components per month.

   At present, the company grants one month credit to its customers. The company is thinking of extending the same to two months on account of which the following is expected:

Increase in sales	25%
Increase in stock	Rs.2,00,000
Increase in Creditors	Rs.1,00,000

   You are required to advise the company on whether or not to extend the credit terms if:

   (a) Old customers avail the extended credit period of two months and

   (b) Existing customers do not avail the credit terms but only the new customers avail the same. Assume in this case the entire increase in sales is attributable to the new customers.

   The company expects a minimum return of 40% on the investment.

(8 marks)

(c) (i) What is the difference between Investment and Speculation.

(ii) Distinguish between Weak Form Theory and Semi Strong Theory of Efficient Market. 606 *(3 marks each)*

3. (a) Discuss the technical aspect of project appraisal. *(8 marks)*

(b) Explain the risk-return trade off of current asset financing. *(6 marks)*

(c) The following information is available from Mrs. Alisha in respect of his portfolio:

Security	*Weight (%)*	*Expected Rate of Return (%)*	*Standard Deviation (%)*
A	50	20	24
B	50	12	16

(i) Find out the correlation between the returns if the standard deviation of the portfolio is 20% or 18%.

(ii) Find out the standard deviation of the portfolio comprising A & B in the ratio of 25% and 75% respectively. *(6 marks)*

4. (a) Manufacturers Ltd. is in the business of manufacturing nut bolts. Some more product lines are being planned to be added to the existing system. The machinery required may be brought or may be taken on lease. The cost of machine is Rs.20,00,000 having a useful life of 5 years with the salvage value of Rs.4,00,000(consider short term capital loss/gain for the Income Tax). The full purchase value of machine can be financed by bank loan at the rate of 20% interest, repayable in five equal instalments falling due at the end of each year. Alternatively, the machine can be procured on a 5 years lease, year-end lease rentals being Rs.6,00,000 per annum. The Company follows the written down value method of depreciation at the rate of 25 per cent. Company's tax rate is 35 per cent and cost of capital is 14 per cent.

(i) Advise the company which option it should choose—lease or borrow.

(ii) Assess the proposal from the lessor's point of view examining whether leasing the machine is financially viable at 14 per cent cost of capital. *(10 marks)*

(b) Calculate the amount of working capital requirement for XYZ Ltd. from the following information:

	Rs. (Per Unit)
Raw material	160
Direct labor	60
Overheads	120
Total Cost	340
Profit	60
Selling price	400

Raw materials are held in stock on an average for one month. Materials are in process on an average for half-a-month. Finished goods are in stock on an average for one month.

Credit allowed by suppliers is one month and credit allowed to debtors is two months. Time lag in payment of wages is 1½ weeks. Time lag in payment of overhead expenses is one month. One fourth of the sales are made on cash basis.

Cash in hand and at the bank is expected to be Rs.50,000: and expected level of production amounts to 1,04,000 units for a year of 52 weeks.

You may assume that production is carried on evenly throughout the year and a time period of four weeks is equivalent to a month.

(10 marks)

5. Write short notes on the following:
   (i) Hedge Fund
   (ii) Bridge Finance
   (iii) Factoring
   (iv) Concurrent Covenants *(20 marks)*

6. (a) Thesis Ltd. has annual sale of Rs. 24,00,000. The selling price per units is Rs. 10 and the variable cost is 70% of the selling price. Required rate on investment for Golden is 20%. Average cost is Rs. 9 per unit . Annual collection expenditure is Rs. 50,000 and percentage of default is 3%. Credit terms are two months. The company is considering the change in credit policy either by following Programme A or Programme B

	Programme A	*Programme B*
Average Collection	1 ½ months	1 month
Annual Collection expenditure	Rs. 75,000	Rs. 1,50,000
% of default	2%	1%

Determine which collection programme the company should follow?

(10 marks)

(b) Discuss the Markowitz Model of efficient portfolio, its assumptions and limitation. *(10 marks)*

TEST PAPER 3/2008

(This Test Paper is based on Study Lesson Nos. 10 to 12)

Time allowed: 3 hours *Maximum marks: 100*

NOTE: *Answer ALL Questions.*

1. (a) Discuss the salient features of risk containment measures developed by National Securities Clearing Corporation Ltd. (NSCCL) for the futures and option segment. *(6 marks)*

   (b) State the main features of Commodity Exchanges in India. *(6 marks)*

   (c) Briefly discuss the various functions of Treasury Management. *(8 marks)*

2. (a) Distinguish between any two of the following with reference to foreign exchange market:

   (i) Fixed exchange rate and flexible exchange rate.

   (ii) Leading and lagging

   (iii) Forward exchange contract and future contract. *(10 marks)*

   (b) Shares of Resham Ltd. are currently selling at Rs.47. Estimate the value of a call with strike price of Rs.50 and expiring six months later. The risk-less interest rate is 10% and the standard deviation of returns on the stock is 0.40 per year. Also find out the value of options on the same stock with identical strike price and expiry using the Black Shales Model. *(6 marks)*

3. (a) Discuss the relationship between Treasury Management and Financial Management. *(8 marks)*

   (b) On March 30, 2008 a customer in Mumbai requested a bank to remit DG 250,000 to Holland in payment of import of diamonds under an irrevocable LC. However, due to bank strikes, the bank could affect the remittance only on April 2, 2008. The interbank market rates were as follows:

	March 30, 2008	*April 2, 2008*
Mumbai	$/Rs.100:3.15-3.10	3.12 – 3.07
London	$/£: 1.7250/60	1.7175/85
DG/£	3.9575/90	3.9380/90

   The bank wishes to retain an exchange margin of 0.125%. How much does the customer stand to gain or lose due to the delay? *(8 marks)*

4. (a) A UK company has imported goods worth $ 3,64,897 payable in 6 months time. The spot and forward rates are :

6 months forward $ 1.5455 - 1.5609

The borrowing rates in UK and US are 7% and 6% respectively and the deposit rates are 5.5% and [illegible] ectively.

Currency Options are available under which one option contract is for 12,500. The option premiums for £ at a strike price of $ 1.70/£ are $ 0.037 (Call Option) and $0.096 (put option) for 6 months period. The company has 3 choices before it: Forward cover, Money Market cover and Currency option. Which is the best alternative for the company? *(8 marks)*

(b) Write short note on

(i) Intrinsic Value of Option

(ii) Time Value of Option *(4 Marks each)*

5. (a) Discuss the settlement of Option Contracts *(6 marks)*

(b) Find out the value of 3 months put option with a strike price of Rs. 50. The current market price is also Rs.50 and the risk-free rate of interest is 10% and volatility is 30%.

What difference will it make if a dividend of Rs.1.50 is expected in two months time? *(10 marks)*

6. (a) "Buying a call option is risky because the holder commits to purchase a share at a later date." Discuss. *(6 marks)*

(b) What are the various techniques to off set the foreign exchange risk? *(10 marks)*

TEST PAPER 4/2008

(This Test Paper is based on the entire study material)

Time allowed: 3 hours *Maximum marks: 100*

NOTE: *Answer any FIVE questions including question No. 1 which is COMPULSORY.*

1. (a) "Internal treasury control is a process of self-improvement". Explain

(8 marks)

(b) "Stability in payment of dividends has a marked bearing on the market price of the shares of a corporate firm." Explain the statement.

(6 marks)

(c) In a portfolio of the company, Rs.2,00,000 have been invested in asset X which has an expected return of 8.5%, Rs.2,80,000 in asset Y, which has an expected return of 10.2% and Rs.3,20,000 in asset Z which has an expected return of 12%. What is expected return for the portfolio?

(6 marks)

2. (a) A Company is considering whether it should spend Rs.4 lacs on a project to manufacture and sell a new product. The unit variable cost of the product is Rs.6. It is expected that the new product can be sold at Rs.10 per unit. The annual fixed costs (only cash) will be Rs.20,000. The project will have a life of six years with a scrap value of Rs.20,000. The cost of capital of the company is 15%. The only uncertain factor is the volume of sales. To start with the company expects to sell at least 40,000 units during the first year.

You are required to find out:

(i) Net Present Value of the project based on the sales expected during the first year and on the assumption that it will continue at the same level during the remaining years.

(ii) The minimum volume of sales required to justify the project.

(10 marks)

(b) Lockers Pvt. Ltd. is considering the use of a lockbox system to handle its daily collections. The company's credit sales are Rs.160 crore per year, and it currently processes 1,300 cheques per day. The cost of the lockbox system is Rs.95,000 per year. The system allows for up to 1,000 cheques per day. Any additional cheques are processed at an additional charge of Rs.1.50 per cheque. The company estimates that the system will reduce its float by 3 days. The firm's discount rate for equally risky projects is 15 per cent, its tax rate is 40 per cent, and its cost of short-term capital is 12 per cent. (Assume a 360-day year).

system is used?

(b) What net benefit will Lockers Ltd. gain from using lockbox system?

(c) Should Lockers Ltd. adopt the proposed lockbox system?

(d) Assume now that the institution that offers the lockbox system requires a Rs.7,00,000 compensating balance to be held for the complete year in a non-interest-bearing account. Should Lockers Ltd. adopt the system? *(6 marks)*

3. (a) The distribution of return of security 'F' and the market portfolio 'P' is given below:

Probability	*(Return %)*	
	F	*P*
0.30	30	-10
0.40	20	20
0.30	0	30

You are required to calculate (i) the expected return of security 'F' and market portfolio 'P', (ii) the covariance between the market portfolio and security and (iii) beta for the security. *(8 marks)*

(b) XYZ Ltd. holds fixed rate bonds with coupon rate of 7%. ABC Ltd. is a recipient of floating rate interest through floating rate bonds with coupons rate of LIBOR + 2%. Both apprehend a fluctuation in interest rate in the coming years. ABC Ltd. and XYZ Ltd. enter into a swap arrangement through a dealer, on the following terms:

— ABC Ltd. to pay floating rate interest of LIBOR + 2%,

— ABC Ltd. to receive from dealer fixed interest of 6.5%,

— XYZ Ltd. to pay a fixed interest of 7%,

— XYZ Ltd. to receive from the dealer a floating rate of LIBRO + 2%.

Show the cash flow position of all the three parties. *(8 marks)*

4. (a) Give the following information:

Exchange rate – Canadian dollar 0.665 per DM (spot)
Canadian dollar 0.670 per DM (3 months)

Interest rates – DM 7% p.a.
Canadian dollar 9%p.a.

What operations would be carried out to take the possible arbitrage gains? *(6 marks)*

(b) (i) Write a short note on operating leverage

(ii) Discuss the various tools of treasury management. *(5 marks each)*

5. (a) The capital structure of the Progressive Corporation consists of ordinary share capital of Rs.10,00,000 (shares of Rs.100 each) and Rs.10,00,000 of 10% debentures. The selling price is Rs.10 per unit; variable costs amount to Rs.6 per unit and fixed expenses amount to Rs.2,00,000. The income tax rate is assumed to be 50%. The sales level is expected to

increase from 1,00,000 units to 1,20,000 units.

(a) You are required to calculate:

(i) The percentage increase in earnings per share;

(ii) The degree of financial leverage at 1,00,000 units and 1,20,000 units

(iii) The degree of operating leverage at 1,00,000 units and 1,20,000 units

(b) Comment on the behaviour of operating and financial leverages in relation to increase in production from 1,00,000 units to 1,20,000 units. *(8 marks)*

(b) A company belongs to a risk-class for which the appropriate capitalization rate is 10%. It currently has outstanding 25,000 shares selling at Rs.100 each. The firm is contemplating the declaration of dividend of Rs.5 per share at the end of the current financial year. The company expects to have a net income Rs.2.5 lacs and a proposal for making new investments of Rs.5 lacs.

Show that under MM assumptions, the payment of dividend does not affect the value of the firm. *(8 marks)*

6. (a) Treasury management has both macro and micro aspects. Discuss. *(6 marks)*

(b) X Ltd. has 8 lakh equity shares outstanding at the beginning of the year 2008. The current market price per share is Rs. 120. The Board of Directors of the company is contemplating Rs. 6.40 per share as dividend. The rate of capitalisation, appropriate to the risk class to which the company belongs, is 9.6%.

(i) Based on M-M Approach, calculate the market price of the share of the company, when the dividend is (a) declared; and (b) not declared.

(ii) How many new shares are to be issued by the company, if the company desires to fund an investment budget of Rs. 3.20 crores by the end of the year assuming net income for the year will be Rs.1.60 crores? *(6 marks)*

(c) Decan Ltd. has an EPS of Rs 2, Expected DP Ratio of 75%, ROE of 12% and equity capitalization rate of 10%.

(a) Find out the growth rate, share value & PE Ratio.

(b) If the company follows a retention ratio of 40%, what would be

ratio? *(4 marks)*

7. Write short notes on:

(a) Advantages of mutual funds
(b) Operating cycle
(c) Securitisation of mortgages
(d) Social cost-benefit analysis. *(4 marks each)*

TEST PAPER 5/2008

(This Test Paper is based on the entire study material)

Time allowed: 3 hours *Maximum marks: 100*

NOTE: *Answer any SIX questions including question No. 1 which is COMPULSORY.*

1. (a) (i) "Depreciation is a non-cash item of an expense and it is said that it is a source of finance." – Discuss.

   (ii) "It is possible for an investor to construct a zero-risk portfolio of two securities." Discuss. *(5 marks each)*

   (b) Explain the Capital Assets Pricing Model. How dose it help in the estimation of expected return of security? *(10 marks)*

2. (a) Twinkle Ltd. is planning to have an access to a machine for a period of 5 years. The company can either have an access through the leasing arrangement or it can borrow money at 14% to buy the machine. The company is in 50% tax bracket.

   In case of leasing, the company will be required to pay annual year-end lease rent of Rs.1,20,000 for 5 years. All maintenance, insurance and other costs are to be borne by the lessee.

   In case of purchasing the machine (which costs Rs.3,43,300); the company would have to repay 14% five-year loan in 5 equal annual instalments; each instalment becoming due at the end of each year. Machine would be depreciated on a straight line basis, with no salvage value. Advise the company which option it should go for, assuming lease rents are paid at the end of the year. *(8 marks)*

   (b) Domicile Ltd. are on the verge of commencing commercial production for which the following projections are available for first 12 months of operations:

   (i) Sales and production: 1 Machine per month

   (ii) Average selling price: Basic price Rs.40,00,000
Excise Duty at 10%
Sales Tax at 5%

   (iii) Material cost: 50% of basic sales price

   (iv) Employment cost:

Category	*Number*	*Monthly Cost*
Managerial	5	Rs.10,000 each
Supervisory	10	Rs.6,500 each

   (v) Power and fuel: Rs.5,00,000 per month

   (vi) Factory Overheads: Rs.1,75,000 per month

   (vii) Selling Overheads: Rs.1,00,000 per machine

(viii) Sales collection 30 days

(ix) Material cost payment 60% in the same month and balance in next

(x) Production time 30 days

(xi) Entire work force is engaged from day 1 of the commercial production and payment to employees is made in the next month. For other expenses the company has a credit of 1 month. Sales tax is payable in the next month of the sale.

(xii) The bank has allowed the company a borrowing limit of Rs.50,00,000 on which interest at the rate of 20% is charged every quarter, which is calculated based on average drawings of each quarter and is payable at the beginning of the next quarter.

Prepare a cash budget for the first 6 months. *(8 marks)*

3. (a) The following is the capital structure of Machenical Ltd. as on 31.12.2007:

Equity Shares: 10,000 shares (of Rs.100 each)	:	Rs.10,00,000
10% Preference Shares (of Rs.100 each)	:	4,00,000
12% Debentures	:	6,00,000
		20,00,000

The market price of the company's share is Rs.110 and it is expected that a dividend of Rs.10 per share would be declared after 1 year. The dividend growth rate is 6%:

(i) If the company is in the 50% tax bracket, compute the weighted average cost of capital.

(ii) Assuming that in order to finance an expansion plan, the company intends to borrow a fund of Rs.10 lacs bearing 14% rate of interest, what will be the company's revised weighted average cost of capital? This financing decision is expected to increase dividend from Rs.10 to Rs.12 per share. However, the market price of equity share is expected to decline from Rs.110 to Rs.105 per share.

(10 marks)

(b) US Dollar is selling in India at Rs.45.50, If the interest rate for a 6-month borrowing in India is 8% per annum and the corresponding rate in USA is 2%.

(i) Do you expect US Dollar to be at a premium or at discount in the Indian forward market?

(iii) What is the rate of forward premium or discount? *(6 marks)*

4. (a) Describe the meaning of 'index futures'. *(4 marks)*

(b) What are the steps taken by financial institutions while appraising the project? How do the financial institutions monitor the projects financed by

them? *(6 marks)*

(c) Following information is available in respect of dividend, market price and market condition after one year.

Market Condition	*Probability*	*Market Price*	*Dividend per share*
Good	0.25	Rs.115	Rs.9
Normal	0.50	107	5
Bad	0.25	97	3

The existing market price of an equity share is Rs.106 (Face value Re.1), which is cum 10% bonus debenture of Rs.6 each, per share, M/s. X Ltd. has offered the buy-back of debentures at face value.

Find out the expected return and variability of returns of the equity shares. And also advise-whether to accept buy back offer? *(6 marks)*

5. (a) From the following selected data, determine the value of the firms, P and Q belonging to the homogeneous risk class under (a) the Net Income (NI) approach, and (b) the Net Operating Income (NOI) approach.

	Firm P	*Firm Q*
EBIT	Rs.2,25,000	Rs. 2,25,000
Interest at 15%	75,000	
Equity capitalization rate, Ke,	20%	
Corporate tax rate	50%	

Which of the two firms has an optimal capital structure under the (i) NI approach, and (ii) NOI approach? *(12 marks)*

(b) Distinguish between 'capital market line' and 'security market line'. *(4 marks)*

6. (a) ABC Motors purchases 9,000 units of spare parts for its annual requirements, ordering one month usage at one time. Each spare part costs Rs. 20. The ordering cost per order is Rs. 15 and the carrying charges are 15% of unit cost. You have been asked to suggest a more economical purchasing policy for the company. What advice would you offer and how much would it save the company per year? *(6 marks)*

(b) (i) What is credit rating and how does it benefit the investors and the company?

of wealth maximization". Explain. *(5 marks each)*

7. Write short notes on:
   (i) Venture Capital
   (ii) Domestic Resource Cost
   (iii) Spot contract v. Forward Contract

(iv) Direct and Indirect Quote. *(4 marks each)*

PROFESSIONAL PROGRAMME

FINANCIAL, TREASURY AND FOREX MANAEMENT

QUESTION PAPERS OF PREVIOUS SESSIONS

Question papers of immediate past two examinations of Financial, Treasury and Forex Management paper are appended to this study material for reference of the students to familiarize with the pattern and its structure. Students may please note that answers to these questions should not be sent to the Institute for evaluation.

JUNE 2010

Time allowed : 3 hours *Maximum marks : 100*

Total number of questions : 7

NOTE: *1. Answer FIVE questions including Question No.1 which is COMPULSORY. All working notes should be shown distinctly.*

2. Tables showing the present value of Re. 1 and the present value of an annuity of Re.1 for 15 years are annexed.

1. Comment on ***any four*** of the following :

(i) While deciding upon the capital structure, the firm has to consider the different life cycle stages.

(ii) Financial services industry encompasses a considerable range and depth of activities.

(iii) Tools and techniques of treasury manager are very specific.

(iv) Traditional approach of business finance considers efficient utilisation of resources.

(v) Playing with float is a risky proposition. *(5 marks each)*

2. (a) Priyanka Ltd. has the following capital structure as on 31st March, 2009 :

	Rs.
Equity shares : 20,000 Shares of Rs.100 each	20,00,000
10% Preference Shares (of Rs.100 each)	8,00,000
12% Debentures (of Rs.1,000 each)	12,00,000
	40,00,000

The company's shares are sold in the market at Rs.110 each and it is expected that a dividend of Rs.10 per share would be declared for the year 2009. The dividend growth rate is likely to remain at 6%.

(i) You are required to calculate the weighted average cost of capital,

if the company comes in the tax bracket of 30%.

(ii) The company is planning to diversify its production activities and intends to borrow a sum of Rs.20 lakh at the rate of 15% per annum. This financing decision is expected to increase dividend from Rs.10 to Rs.12 per share, however, the market price of the equity share is likely to decrease from Rs.110 to Rs.105. What will be the company's revised weighted average cost of capital ?

(iii) Priyanka Ltd. has the following investment opportunities that are typical average risk projects for the company:

Projects	*Cost (Rs. in Lakhs)*	*Rate of Return*
	(t=0)	(%)
A	10	17.4
B	20	16.0
C	10	14.2
D	20	13.7
E	10	10.0

Which project(s) should Priyanka Ltd. accept ? Why ?

(4+3+3=10 marks)

(b) Ratan Enterprises requires 1,80,000 units of a certain item annually. The cost per unit and the cost per purchase order are Rs.6 and Rs.600 respectively. The inventory carrying cost is Rs.6 per unit per year.

(i) What is the economic order quantity ?

(ii) What should the firm do if the supplier offers discount as below:

Order Quantity	*Discount (%)*
9000–11999	2
12,000 and above	3

(6 marks)

(c) On 1st October, Deepak is retiring from service and he will get an amount of Rs.16,32,000 as retirement benefits. He is planning to invest this money in the following three scripts, which he considers grossly under-valued stocks in the market:

Stock	*No. of Shares (Rs.)*	*Price*	*Beta*
X	2,000	300	0.42
Y	3,000	416	0.65
Z	4,600	330	1.72

It is September now and he plans to take advantage of this mispricing in the stock market by using futures market. How many October contracts will you be trading if the spot index is 3,990 and October futures are quoted at 4,062 ? *(4 marks)*

3. (a) An Indian importer has to settle an import bill for $1,30,000. The exporter has given the Indian exporter two options :

(i) Pay immediately without any interest charges.

(ii) Pay after three months with interest @ 5% per annum.

The importer's bank charges 15% per annum on overdrafts. The exchange rates in the market are as follows:

Spot rate (Rs./$) :	48.35/48.36
3-Month forward rate (Rs./$):	48.81/48.83

The importer seeks your advice. Give your advice. *(8 marks)*

(b) Zebra Ltd. was started a year back with paid-up equity capital of Rs.40 lakh. Other details are as under :

Earnings of the year:	Rs.4,00,000
Dividend paid:	Rs.3,20,000
Price-earnings ratio:	12.5
Number of shares:	40,000

You are required to find out whether company's dividend payout ratio is optimal using Walter's Model, giving reasons. *(6 marks)*

(c) A futures contract is available on a company that pays an annual dividend of Rs.5 and whose stock is currently priced at Rs.200. Each futures contract calls for delivery of 1,000 shares of stock in one year, daily marking to market, an initial margin of 10% and a maintenance margin of 5%. The corporate treasury bill rate is 8%.

(i) Given the above information, what should the price of one futures contract be?

(ii) If the company stock price decreases by 7%, what will be the change, if any, in futures price?

(iii) As a result of the company stock price decrease, will an investor that has a long position in one futures contract of this company realises a gain or loss? Why? What will be the amount of this gain or loss? *(6 marks)*

4. Distinguish between ***any four*** of the following:

(i) 'Deep discount bonds' and 'disaster bonds'.

(ii) 'Financial aspects of project appraisal' and 'economic aspects of project appraisal'.

(iii) 'Index futures' and 'index options'.

(iv) 'Initial margin' and 'maintenance margin'.

(v) 'Corporate finance' and 'business finance'. *(5 marks each)*

5. (a) The spot exchange rate is Rs.15/¤ and the three months forward exchange rate is Rs.15.20/¤. The three month interest rate is 8% per annum in India and 5.8% per annum in Germany. Assume that you can borrow as much as Rs.15 lakh or ¤10 lakh.

(i) Determine whether the interest rate parity is currently holding.

(ii) How would you carry out covered interest arbitrage? Show all steps and determine the arbitrage profit. *(4 marks)*

(b) Silver Coin Ltd. is a manufacturing company. It has received an export order of 1,80,000 units. The finance manager of the company is estimating working capital requirements for the production to meet export order. Following information is given for the year 2009-10 :

(i) Production in 2008-09 was 1,80,000 units and it is estimated that in 2009-10 the level will be maintained.

(ii) Each unit will remain in process for one month. Raw material being channelised into the pipelines immediately and the labour and overhead costs accruing evenly during the month.

(iii) Final production will be stored in warehouse awaiting despatch for 3 months.

(iv) Credit allowed by creditors is 1.5 months from the date of delivery of raw materials.

(v) Credit permitted to debtors is 2.5 months from the date of despatch.

(vi) Selling price per unit is Rs.15.

(vii) The expected ratios of cost to the selling price are raw material 50%, direct wages 15% and overheads 20%.

(viii) Raw materials are expected to remain in store for an average of 1.5 months before issue to production.

(ix) There is regular production and sales cycle.

(x) The company maintains Rs.60,000 as cash in hand.

(xi) Wages and overheads are paid on the first of each month for the previous month.

You are required to submit the working capital requirement to the finance manager of Silver Coin Ltd. *(16 marks)*

6. Surya Manufacturers is planning to start a new manufacturing process. Following are the estimated net cash flows and probabilities of the new manufacturing process :

Year	*Net Cash Flows (Rs.)*		
	P=0.2	P=0.6	P=0.2
0	(–) 2,00,000	(–) 2,00,000	(–) 2,00,000
1	40,000	60,000	80,000
2	40,000	60,000	80,000
3	40,000	60,000	80,000
4	40,000	60,000	80,000
5	40,000	60,000	80,000
5 (Salvage)	0	40,000	60,000

Surya Manufacturers cost of capital for an average risk project is 10%.

(a) The project has average risk. Find the project's NPV.

(b) Find the best case and worst case NPVs. What is the probability of occurrence of the worst case if the cash flows are perfectly dependent (perfectly positively correlated) over time and if they are independent over

time ?

(c) Assume that all the cash flows are perfectly positively correlated, that is, there are only three possible cash flow streams over time : (i) the worst case; (ii) the most likely or base case; and (iii) the best case with probabilities 0.2, 0.6 and 0.2 respectively. These cases are represented by each of the columns in the given table. Find the expected NPV, the standard deviation and co-efficient of variation. *(20 marks)*

7. Write notes on ***any four*** of the following :

(i) Types of swaps

(ii) Capital rationing

(iii) Technical aspects of feasibility report

(iv) Trade credit as source of finance

(v) ABC analysis. *(5 marks each)*

DECEMBER 2010

Time allowed : 3 hours *Maximum marks : 100*

NOTE: *1. Answer FIVE questions including Question No.1 which is COMPULSORY. All working notes should be shown distinctly.*

2. Tables showing the present value of Re. 1 and the present value of an annuity of Re.1 for 15 years are annexed.

1. Comment on ***any four*** of the following:

(i) Dividend policy is strictly a financing decision and payment of cash dividend is a passive residual.

(ii) Depository system functions very much like banking system.

(iii) Accounting profit does not take into account all costs of capital invested in business.

(iv) The mark-to-market process is lengthy for index futures.

(v) Financial gearing is a fair weather friend. *(5 marks each)*

2. (a) Following figures relate to Twinkle Ltd. :

	Rs.
Sales (at 3 months' credit)	45,00,000
Materials consumed (suppliers extend 1½ months credit)	11,25,000
Wages paid (1 month in arrear)	9,00,000
Manufacturing expenses outstanding at the end of the year (cash expenses are paid one month in arrear)	1,00,000
Total administration expenses for the year (cash expenses are paid one month in arrear)	3,00,000
Sales promotion expenses for the year (paid quarterly in advance)	6,00,000

The company sells its product on gross profit margin of 25% assuming depreciation as a part of cost of production. It keeps 2 months' stock of finished goods and one month's stock of raw materials as inventory. It keeps cash balance of Rs.1,25,000. Assume a safety margin of 5%.

Work out working capital requirements of the company on cash cost basis. Ignore work-in-process. *(12 marks)*

(b) Gel Corporation presently gives credit terms of 'net 30 days'. It has Rs.600 lakh in credit sales and its average collection period is 45 days. To stimulate sales, the company may give credit terms of 'net 60 days' with sales expected to increase by 15%. After the change, the average collection period is expected to be 75 days with no difference in payment habits between old and new customers. Variable costs are Re.0.80 for every Re. 1 of sales; and the company's before tax required rate of return on investment in receivables is 20%. Assume 360 days in a year. Should the company extend its credit period? *(8 marks)*

3. (a) Sushmita Ltd. produces an electronic component with a selling price of Rs.100. Fixed cost amounts to Rs.2 lakh. 5,000 Units are produced and sold each year. Annual profits amount to Rs.50,000. The company's all equity-financed assets are Rs.5 lakh.

The company proposes to change its production process, adding Rs.4,00,000 to investment and Rs.50,000 to fixed operational costs. The consequences of such a proposal are —

(i) Reduction in variable costs per unit Rs.10;

(ii) Increase in output by 2,000 units; and

(iii) Reduction in selling price per unit to Rs.95.

Assuming an average cost of capital at 10%, examine the proposal and advise whether the company should make the change. Also, measure the degree of operating leverage and break-even point. *(10 marks)*

(b) You are given following information of Alpha Ltd. for the year ended 31st March, 2010:

	Rs. in Thousands
Sales	1,05,000
Variable cost	76,700
Fixed cost Interest	7,500
Income-tax @ 30%	11,000

On the basis of above information, you are required to calculate and interpret operating, financial and combined leverages. *(6 marks)*

(c) Security-A offers an expected rate of return of 14% with a standard deviation of 8%. Security-B offers an expected rate of return of 11% with a standard deviation of 6%. If an investor wishes to construct a portfolio with a 12.8% expected return, what percentage of the portfolio will consist of Security-A? *(4 marks)*

4. Distinguish between ***any four*** of the following:

(i) 'Financial distress' and 'insolvency',

(ii) 'Leasing' and 'hire-purchase'.

(iii) 'Financial viability of a project' and 'commercial viability of a project'.

(iv) 'Clearing mechanism' and 'settlement mechanism'.

(v) 'Return on capital employed' and 'return on net worth'. *(5 marks each)*

5. India Inc.'s dependence on banks for funding appears to be showing decline. With the Reserve Bank of India blocking sub-benchmark prime lending rate route for cheap financing from banks, corporates are looking at non-bank alternatives.

Under the earlier below prime lending rate (BPLR) regime, while large corporates could borrow at low interest rates from banks, the small and medium enterprises (SMEs) and retail borrowers ended up paying high interest rates. The new lending regime is aimed at enhancing transparency in lending rates of banks.

Highly rated corporates are replacing their earlier short-term sub-BPLR loans, by taking recourse to the debt market to keep a lid on borrowing costs and have been able to raise resources around the base rate of banks. However, corporates may not be able to supplant bank finance with funds from the debt capital market. Funding could dry up from debt markets in case

of a liquidity crisis in the financial system.

Although, a bit costly as compared to the debt markets, banks are a steady source of funds for corporates. A bank is unlikely to jeopardize its long-standing relationship with a corporate by choking off funds during a liquidity crisis.

Answer the following questions :

(i) List and describe features of sources of finance other than banks and equity for corporates. *(10 marks)*

(ii) How is base rate system more expensive than prime lending rate for corporates? *(5 marks)*

(iii) How is bank finance superior to funding from debt market for corporates? *(5 marks)*

6. (a) Sushant Ltd. has the following capital structure :

	Rs.
Equity shares	50,00,000
10% Preference shares	10,00,000
14% Debentures	20,00,000
	80,00,000

Equity shares of the company are sold at Rs.25 per share in the market. It is expected that the company will pay next year a dividend of Rs.4 per share which will grow at 8% forever. Assume a tax-rate of 30%.

(i) Compute weighted average cost of capital based on the existing capital structure.

(ii) Compute the new weighted average cost of capital, if the company raises an additional Rs.20,00,000 debt by issuing 15% debentures. This would increase the expected dividend to Rs.5 per share with dividend growth rate unchanged, but the price of share will fall to Rs. 20 per share. *(12 marks)*

(b) A company is considering three methods of attracting customers to expand its business by undertaking — (A) advertising campaign; (B) display of neon signs; and (C) direct delivery service. The initial outlay for each alternative is as under:

A	Rs. 1,00,000
B	Rs. 1,50,000
C	Rs. 1,50,000

If A is carried out, but not B, it has an NPV of Rs.1,25,000. If B is done, but not A, B has an NPV of Rs.45,000. However, if both are done, then NPV is Rs.2,00,000. The NPV of the delivery system C is Rs.90,000. Its NPV is not dependent on whether A or B is adopted and the NPV of A or B does not depend on whether C is adopted.

Which of the investments should be made by the company if (i) firm has no budget constraint; and (ii) the budgeted amount is only Rs. 2,50,000 ? *(8 marks)*

7. Write notes on ***any four*** of the following:

(i) Secured premium note
(ii) Important motives to hold cash
(iii) Domestic resource cost
(iv) Purchasing power parity
(v) Factoring. *(5 marks each)*

TABLE - 1 : PRESENT VALUE OF RUPEE ONE

RATE	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	YEAR 11	YEAR 12	YEAR 13	YEAR 14	YEAR 15
5%	0.9524	0.9070	0.8638	0.8227	0.7835	0.7462	0.7107	0.6768	0.6446	0.6139	0.5847	0.5568	0.5303	0.5051	0.4810
6%	0.9434	0.8900	0.8396	0.7921	0.7473	0.7050	0.6651	0.6274	0.5919	0.5584	0.5268	0.4970	0.4688	0.4423	0.4173
7%	0.9346	0.8734	0.8163	0.7629	0.7130	0.6663	0.6227	0.5820	0.5439	0.5083	0.4751	0.4440	0.4150	0.3878	0.3624
8%	0.9259	0.8573	0.7938	0.7350	0.6806	0.6302	0.5835	0.5403	0.5002	0.4632	0.4289	0.3971	0.3677	0.3405	0.3152
9%	0.9174	0.8417	0.7722	0.7084	0.6499	0.5963	0.5470	0.5019	0.4604	0.4224	0.3875	0.3555	0.3262	0.2992	0.2745
10%	0.9091	0.8264	0.7513	0.6830	0.6209	0.5645	0.5132	0.4665	0.4241	0.3855	0.3505	0.3186	0.2897	0.2633	0.2394
11%	0.9009	0.8116	0.7312	0.6587	0.5935	0.5346	0.4817	0.4339	0.3909	0.3522	0.3173	0.2858	0.2575	0.2320	0.2090
12%	0.8929	0.7972	0.7118	0.6355	0.5674	0.5066	0.4523	0.4039	0.3606	0.3220	0.2875	0.2567	0.2292	0.2046	0.1827
13%	0.8850	0.7831	0.6931	0.6133	0.5428	0.4803	0.4251	0.3762	0.3329	0.2946	0.2607	0.2307	0.2042	0.1807	0.1599
14%	0.8772	0.7695	0.6750	0.5921	0.5194	0.4556	0.3996	0.3506	0.3075	0.2697	0.2366	0.2076	0.1821	0.1597	0.1401
15%	0.8696	0.7561	0.6575	0.5718	0.4972	0.4323	0.3759	0.3269	0.2843	0.2472	0.2149	0.1869	0.1625	0.1413	0.1229
16%	0.8621	0.7432	0.6407	0.5523	0.4761	0.4104	0.3538	0.3050	0.2630	0.2267	0.1954	0.1685	0.1452	0.1252	0.1079
17%	0.8547	0.7305	0.6244	0.5337	0.4561	0.3898	0.3332	0.2848	0.2434	0.2080	0.1778	0.1520	0.1299	0.1110	0.0949
18%	0.8475	0.7182	0.6086	0.5158	0.4371	0.3704	0.3139	0.2660	0.2255	0.1911	0.1619	0.1372	0.1163	0.0985	0.0835
19%	0.8403	0.7062	0.5934	0.4987	0.4190	0.3521	0.2959	0.2487	0.2090	0.1756	0.1476	0.1240	0.1042	0.0876	0.0736
20%	0.8333	0.6944	0.5787	0.4823	0.4019	0.3349	0.2791	0.2326	0.1938	0.1615	0.1346	0.1122	0.0935	0.0779	0.0649
21%	0.8264	0.6830	0.5645	0.4665	0.3855	0.3186	0.2633	0.2176	0.1799	0.1486	0.1228	0.1015	0.0839	0.0693	0.0573
22%	0.8197	0.6719	0.5507	0.4514	0.3700	0.3033	0.2486	0.2038	0.1670	0.1369	0.1122	0.0920	0.0754	0.0618	0.0507
23%	0.8130	0.6610	0.5374	0.4369	0.3552	0.2888	0.2348	0.1909	0.1552	0.1262	0.1026	0.0834	0.0678	0.0551	0.0448
24%	0.8065	0.6504	0.5245	0.4230	0.3411	0.2751	0.2218	0.1789	0.1443	0.1164	0.0938	0.0757	0.0610	0.0492	0.0397
25%	0.8000	0.6400	0.5120	0.4096	0.3277	0.2621	0.2097	0.1678	0.1342	0.1074	0.0859	0.0687	0.0550	0.0440	0.0352

TABLE - 2 : PRESENT VALUE OF ANNUITY OF RUPEE ONE

RATE	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	YEAR 11	YEAR 12	YEAR 13	YEAR 14	YEAR 15
5%	0.9524	1.8594	2.7232	3.5460	4.3295	5.0757	5.7864	6.4632	7.1078	7.7217	8.3064	8.8633	9.3936	9.8986	10.3797
6%	0.9434	1.8334	2.6730	3.4651	4.2124	4.9173	5.5824	6.2098	6.8017	7.3601	7.8869	8.3838	8.8587	9.2950	9.7122
7%	0.9346	1.8080	2.6243	3.3872	4.1002	4.7665	5.3893	5.9713	6.5152	7.0236	7.4987	7.9427	8.3577	8.7455	9.1079
8%	0.9259	1.7833	2.5771	3.3121	3.9927	4.6229	5.2064	5.7466	6.2469	6.7101	7.1390	7.5361	7.9038	8.2442	8.5595
9%	0.9174	1.7591	2.5313	3.2397	3.8897	4.4859	5.0330	5.5348	5.9952	6.4177	6.8052	7.1607	7.4869	7.7862	8.0607
10%	0.9091	1.7355	2.4869	3.1699	3.7908	4.3553	4.8684	5.3349	5.7590	6.1446	6.4951	6.8137	7.1034	7.3667	7.6061
11%	0.9009	1.7125	2.4437	3.1024	3.6959	4.2305	4.7122	5.1461	5.5370	5.8892	6.2065	6.4924	6.7499	6.9819	7.1909
12%	0.8929	1.6901	2.4018	3.0373	3.6048	4.1114	4.5638	4.9676	5.3282	5.6502	5.9377	6.1944	6.4235	6.6282	6.8109
13%	0.8850	1.6681	2.3612	2.9745	3.5172	3.9975	4.4226	4.7988	5.1317	5.4262	5.6869	5.9176	6.1218	6.3025	6.4624
14%	0.8772	1.6467	2.3216	2.9137	3.4331	3.8887	4.2883	4.6389	4.9464	5.2161	5.4527	5.6603	5.8424	6.0021	6.1422
15%	0.8696	1.6257	2.2832	2.8550	3.3522	3.7845	4.1604	4.4873	4.7716	5.0188	5.2337	5.4206	5.5831	5.7245	5.8474
16%	0.8621	1.6052	2.2459	2.7982	3.2743	3.6847	4.0386	4.3436	4.6065	4.8332	5.0286	5.1971	5.3423	5.4675	5.5755
17%	0.8547	1.5852	2.2096	2.7432	3.1993	3.5892	3.9224	4.2072	4.4506	4.6586	4.8364	4.9884	5.1183	5.2293	5.3242
18%	0.8475	1.5656	2.1743	2.6901	3.1272	3.4976	3.8115	4.0776	4.3030	4.4941	4.6560	4.7932	4.9095	5.0081	5.0916
19%	0.8403	1.5465	2.1399	2.6386	3.0576	3.4098	3.7057	3.9544	4.1633	4.3389	4.4865	4.6105	4.7147	4.8023	4.8759
20%	0.8333	1.5278	2.1065	2.5887	2.9906	3.3255	3.6046	3.8372	4.0310	4.1925	4.3271	4.4392	4.5327	4.6106	4.6755
21%	0.8264	1.5095	2.0739	2.5404	2.9260	3.2446	3.5079	3.7256	3.9054	4.0541	4.1769	4.2784	4.3624	4.4317	4.4890
22%	0.8197	1.4915	2.0422	2.4936	2.8636	3.1669	3.4155	3.6193	3.7863	3.9232	4.0354	4.1274	4.2028	4.2646	4.3152
23%	0.8130	1.4740	2.0114	2.4483	2.8035	3.0923	3.3270	3.5179	3.6731	3.7993	3.9018	3.9852	4.0530	4.1082	4.1530
24%	0.8065	1.4568	1.9813	2.4043	2.7454	3.0205	3.2423	3.4212	3.5655	3.6819	3.7757	3.8514	3.9124	3.9616	4.0013
25%	0.8000	1.4400	1.9520	2.3616	2.6893	2.9514	3.1611	3.3289	3.4631	3.5705	3.6564	3.7251	3.7801	3.8241	3.8593