

FINAL (NEW) COURSE

STRATEGIC FINANCIAL MANAGEMENT



Board of Studies
The Institute of Chartered Accountants of India
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New Delhi

FINAL (NEW) COURSE STUDY MATERIAL

PAPER 2

Strategic Financial Management



**BOARD OF STUDIES
THE INSTITUTE OF CHARTERED ACCOUNTANTS OF INDIA**

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PREFACE

Strategic Financial Management is a blend of Strategic Management and Financial Management. It has acquired a critical significance now-a-days, due to recent surge in globalization and massive cross border flow of capital. The study of this subject opens new opportunities for Chartered Accountancy students. The paper stresses the importance of applying the knowledge and techniques of financial management to the planning, operating and monitoring of the finance function in particular as well as the organization in general. Further, this paper not only focuses on these aspects at the domestic level but also at the international level as well.

This study material provides the concepts, theories and techniques relating to Strategic Financial Management and aims to develop the students' ability in understanding the different concepts and their application in the real life situations.

The study material is divided into thirteen chapters. Latest developments in the field of finance including international finance have been incorporated in almost all the chapters. The study material also focuses on the decision making in an international context and it provides comprehensive coverage of important areas like foreign exchange market, derivatives, foreign exchange exposure, risk analysis and management, raising of capital abroad, mergers and acquisitions and portfolio management, capital budgeting and working capital management in a multinational context. Chapters have been organised in such a way so as to provide a logical sequence to facilitate easy understanding. A number of self-examination questions are given at the end of each chapter, which will be useful to test the understanding of concepts discussed in the chapter. Another helpful feature in this study material is the addition of a number of illustrations in each chapter to help students to have a better grasp of the subject. Numerous graphs and figures have also been added to make things more appealing. Some of the chapters also contain Glossary of terms used.

Students are advised to supplement their knowledge by referring to the recommended books and the compilation of the subject. They need to practice the practical problems thoroughly. Students are also advised to update themselves with the latest changes in the financial sector. For this they may refer to academic updates in the monthly journal 'The Chartered Accountant' and the Students 'Newsletter' published by the Board of Studies, financial newspapers, SEBI and Corporate Law Journal etc.

The concerned Faculty of Board of Studies of Strategic Financial Management CA. Ashish Gupta and Ms. Nidhi Singh have put their best efforts in preparing the study material. The Board has also received valuable inputs from CA. Dhaneshchandra P. Revawala of Thane (Maharashtra), for which the Board is thankful to him.

In case students have any suggestions to make this study material more helpful, they are welcome to write to the Director of Studies, The Institute of Chartered Accountants of India, A-94/4, Sector-58, Noida-201 301.

SYLLABUS

PAPER 2 : STRATEGIC FINANCIAL MANAGEMENT

(One paper – Three hours – 100 marks)

Level of Knowledge: Advanced knowledge

Objective:

To apply financial management theories and techniques for strategic decision making.

Contents:

1. Financial Policy and Corporate Strategy

Strategic decision making framework

Interface of Financial Policy and strategic management

Balancing financial goals vis-à-vis sustainable growth.

2. Project Planning and Capital Budgeting

Feasibility study

Cash flow Projections – Impact of taxation, depreciation, inflation and working capital

Capital Budgeting Decisions - Certainty Equivalent approach, Evaluation of Risky Investment Proposals, Risk and Return analysis, Simulation and decision tree analysis, Sensitivity analysis, Capital Rationing, Adjusted Net Present Value, Replacement decisions, Application of Real Options in capital budgeting, Impact of inflation on capital budgeting decisions

Preparation of Project Report

Social cost benefit analysis.

3. Leasing decision including cross border leasing

4. Dividend Decisions

Dividend theories, Determinants of dividend policies.

5. (a) Indian Capital Market including role of various primary and secondary market institutions

(b) Capital Market Instruments

Financial derivatives – stock futures, stock options, index futures, index options

Option valuation techniques : Binomial model, Black Scholes Option Pricing Model, Greeks – Delta, Gamma, Theta, Rho and Vega

Pricing of Futures – Cost of carry model

Imbedded derivatives

(c) Commodity derivatives

(d) OTC derivatives -Swaps, Swaptions, Forward Rate Agreements (FRAs), Caps, Floors and Collors.

6. Security Analysis

Fundamental analysis - Economic analysis, Industry analysis and Company Analysis

Bond valuation, Price Yield relationship, Bond Price forecasting – application of duration and convexity, Yield curve strategies

Technical Analysis – market cycle model and basic trend identification, different types of charting, support and resistance, price patterns, moving averages, Bollinger Bands, momentum analysis.

7. Portfolio Theory and Asset Pricing

Efficient Market Theory – Random walk theory ; Markowitz model of risk return optimization

Capital Asset Pricing Model (CAPM)

Arbitrage Pricing Theory (APT)

Sharpe Index Model

Portfolio Management - Formulation, Monitoring and Evaluation

Equity Style Management

Principles and Management of Hedge Funds

International Portfolio Management.

8. Financial Services in India

Investment Banking

Retail Banking

On Line Share Trading

Depository Service.

9. (a) Mutual Funds: Regulatory framework, formulation, monitoring and evaluation of various schemes of Mutual funds, Money market mutual funds.

(b) Exchange Traded Funds.

10. Money Market operations

11. (a) Foreign Direct Investment, Foreign Institutional Investment.

(b) International Financial Management

Raising of capital abroad - American Depositary Receipts, Global Depositary Receipts, External Commercial Borrowings and Foreign Currency Convertible Bonds

International Capital Budgeting

International Working Capital Management.

12. Foreign Exchange Exposure and Risk Management

Exchange rate determination, Exchange rate forecasting

Foreign currency market

Foreign exchange derivatives – Forward, futures, options and swaps

Management of transaction, translation and economic exposures

Hedging currency risk.

13. Mergers, Acquisitions and Restructuring

Meaning of mergers and acquisition, categories, purposes

Process of mergers and acquisition – Identification and valuation of the target, acquisition through negotiation, due diligence, post – merger integration

Legal and regulatory requirements

Merger and Acquisition agreement

Reverse merger

Potential adverse competitive effects of mergers

Corporate Takeovers: Motivations, Co-insurance effect, Cross-border takeovers, Forms of takeovers, Takeover defenses

Going Private and Other Control Transactions: Leveraged Buyouts (LBOs), Management Buyouts (MBOs), Spin Offs and Asset Divestitures

Corporate Restructuring : Refinancing and rescue financing, reorganizations of debtors and creditors, Sale of assets, targeted stock offerings, downsizing and layoff programmes, negotiated wage give-backs, employee buyouts.

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FINANCIAL POLICY AND CORPORATE STRATEGY

1.0 STRATEGIC MANAGEMENT DECISION MAKING FRAME WORK

Strategic management intends to run an organization in a systematized fashion by developing a series of plans and policies known as strategic plans, functional policies, structural plans and operational plans. It is a system approach, which is concerned with where the organization wants to reach and how the organization proposes to reach that position. In other words, it deals with aims and means of a corporate enterprise by following a unified second-generation planning technique. By second generation planning we mean assessment of the likely states of environment, development of plans according to different states of the environment and the objective(s) and also contingency plans for switching over from plan to another in case of a change in the state of the environment. Thus the strategic plan is comprehensive and integrated too according to planning approach of Glueck. There is an emergent approach according to Mintzberg who believes that strategy is a pattern, observed in a stream of decisions or actions of a firm. In this sense, strategy is not confined to what an organization intends or plans to do; it embraces what an organization also does. This approach stresses upon the need for recognizing the fact that strategies are mostly emergent in nature and the top management needs to nurture potentially good emergent strategies and block the bad ones. Strategic management is basically concerned with futurity of the current decisions without ignoring the fact that uncertainty in the system is to be reduced, to the extent possible, through continuous review of the whole planning and implementation process. This highlights on importance of internal adjustment according to external environmental changes. It has been observed over years that those organizations which refuse to listen to environmental changes and act accordingly, either go out of business in the long run or experience dramatic downward shift in market share. It is therefore necessary for an organization interested in long run survival and command over the market, should go for strategic planning and the planning process must be holistic, a periodic, futuristic intellectual and creative with emphasis given on critical resources of the firm otherwise, the organization will fall in the traps of tunneled vision, inertia myopia frenzy and dilution. In this era of discrete changes, no firm can afford to be late runner. A late runner, according to Miles and Friesen, when swings up stream becomes a failing archetype. A successful archetype is an adaptive firm which plans or pro acts and not reacts only.

1.2 Strategic Financial Management

1.1 STRATEGY AT DIFFERENT LEVELS:

Strategies at different levels are the outcomes of different planning needs. At the corporate level planners decide about the objective or objectives of the firm along with their priorities. And based on objectives, decisions are taken on participation of the firm in different product fields. Basically a corporate strategy provides with a framework for attaining the corporate objectives under values and resource constraints, and internal and external realities. It is the corporate strategy that describes the interest in and competitive emphasis to be given to different businesses of the firm. It indicates the overall planning mode and propensity to take risk in the face of environmental uncertainties. There are two extreme modes of planning namely proactive mode and reactive mode. Actual mode of functioning of a firm may lie in between these two extremes. Similarly; value system of the top executives in respect of risk may be described with reference to two extreme states, viz. high risk taking state and low risk taking state. For example, in a turbulent environment the preferred mode of planning is the proactive mode that assumes high propensity to take risk. For a nearly stable environment a reactive mode of functioning may yield better result than a proactive mode of functioning.

Plan at this apex level not only deals with product mix, customer mix, competitive emphasis and geographic boundaries of the market but also assigns priorities for allocation of corporate resources among the various business units. Specially, the deployment of critical resources among the business units is closely related with corporate achievement and needs close attention of the top management. It also acts as an instrument for resolution of conflicts.

Business strategy, on the other hand, is the managerial plan for achieving the goal of the business unit. However, it should be consistent with the corporate strategy of the firm and should be drawn within the framework provided by the corporate planners. Given the overall competitive emphasis, business strategy specifies the product market power i.e. the way of competing in that particular business activity. It also addresses coordination and alignment issues covering internal functional activities. The two most important internal aspects of a business strategy are the identification of critical resources and the development of distinctive competence for translation into competitive advantage. According to Prahalad and Hamel, it is the proper nurturing of the core competence of a firm that leads to long lasting competitive advantage in the market. Over the years core competence becomes the key weapon of a firm that cannot be easily copied by the rival players. It gives business, reduced cost, improves quality and leads to product development.

Functional strategy is the low level plan to carryout principal activities of a business. In this sense, functional strategy must be consistent with the business strategy, which in turn must be consistent with the corporate strategy. Thus strategic plans come down in a cascade fashion from the top to the bottom level of planning pyramid and performances of functional strategies trickle up the line to give shape to the business performance and then to the corporate performance. This close interlink between functional plans and corporate plan demands for close interaction between functional planning and corporate planning.

Among the different functional activities viz production, marketing, finance, human resources and research and development, finance assumes highest importance during the top down and bottom up interaction of planning. Corporate strategy deals with deployment of resources and

financial strategy is mainly concerned with mobilization and effective utilization of money, the most critical resource that a business firm likes to have under its command. Truly speaking, other resources can be easily mobilized if the firm has adequate monetary base. To go into the details of this interface between financial strategy and corporate strategy and financial planning and corporate planning let us examine the basic issues addressed under financial planning.

1.2 FINANCIAL PLANNING:

Financial planning is the backbone of the business planning and corporate planning. It helps in defining the feasible area of operation for all types of activities and thereby defines the overall planning framework. Outcomes of the financial planning are the financial objectives, financial decision-making and financial measures for the evaluation of the corporate performance. Financial objectives are to be decided at the very outset so that rest of the decisions can be taken accordingly. The objectives need to be consistent with the corporate mission and corporate objectives.

There is a general belief that profit maximization is the main financial objective. In reality it is not. Profit may be an important consideration but not its maximization. According to Drucker, profit is the least imperfect measure of organizational efficiency and should remain the main consideration of a firm to cover the cost of survival and to support the future expansion plans. But profit maximization as a financial objective suffers from multiple limitations. Firstly the level of operation for long run profit maximization may not match with the optimum levels under short run profit maximization goal. In that case, if one assigns more importance to short run profit maximization and avoids many activities like skill development, training programme, machine maintenance and after sales service, long run survival even may be at a stake and long run profit maximization may become a day dreaming concept. In the reverse case, short run shortcomings may have telling effects on the organizational performance and hence long run profit maximization may gradually become an impossible proposition in comparison to stronger competitor's performances.

Profit maximization also ignores an important aspect of strategic planning. Risk consideration has rarely been incorporated in the profit maximization rule. As a result two projects with same expected profit are equally good under profit consideration. Under the profit cum risk consideration the project with lesser variability will be preferred by the investor than the one with higher variability. Higher variability means higher risk and lower variability means lower risk. Problem becomes more involved when both expected profits and their variability are unequal and reversibly ordered. Decision making based on usual expected profit consideration will be of limited use for such situations.

It is also worth pointing out that profit maximization objective does not take into consideration effects of time, It treats inflows of equal magnitude to be received at different time points as equal and thereby ignores the fact that money values changes over time. Conceptually a benefit of an amount A_k received in the k -th year cannot be identical with a series of benefits received at the rate A for each of the k years. The later scheme may be more beneficial for a firm than the former one. Unfortunately profit maximization or benefit maximization approach fails to discriminate between these two alternatives and remains indifferent.

1.4 Strategic Financial Management

In view of the above limitations of the profit maximization approach choice of financial objective needs a strategic look. The obvious choice in that case may be expressed in terms of wealth maximization where wealth is to be measured in terms of its net present value to take care of both risk and time factors. Wealth ensures financial strength of the firm, long term solvency and viability. It can be used, as a decision criterion in a precisely defined manner and can reflect the business efficiency without any scope for ambiguity. There are some related issues that may draw attention of the planners during the interface of financial planning and strategic planning. Cash flow, credit position and liquidity are those three critical considerations.

Cash flow is the most vital consideration for the business firm. It deals with the movement of cash and as a matter of conventions, refers to surplus of internally generated funds over expenditures. To prepare a cash flow statement, all the factors that increase cash and those that decrease cash are to be identified from the income and expenditure statements. This information is to be then presented in a consolidated form for taking strategic decisions on new investments and borrowings. A substantially positive cash flow may enable the firm to fund new projects without borrowing cash from investors or bankers. Borrowing means paying interest and is some sort of weakness for the firm. Internal generation of cash and internal funding of projects add to the strength of the firm. Thus objective should be to enjoy an attractive cash flow situation.

Generation of cash from internal activities depends on the industry life cycle. At the initial stage, i.e. the stage of introduction and the stage of growth, the firm makes reinvestment of cash in operations to meet cash needs of the business. By operations we refer to activities that change the utility of any input. Product research and product design are the key operations during the stage of introduction. Installation of plant and facilities and addition to capacity for meeting the increased demand are the key operational requirements during the stage of growth. The stage of growth is also marked in the aggressive promotional activities. And all these operations need huge investment. During the stage of shakeout and maturity, the need for excess investment declines sharply. This enables the firm to generate positive cash flow. Thus, the cash flow position of a firm changes from weakness to strength as the industry of the other matures. During the stage of decline reversal of this process take place; the decrease in demand increases the cost of production. The cost of promotion increases so rapidly that the outflow of cash soon takes over the inflow of the same resulting in cash drainage. Thus industry life cycle has a role to play in cash flow planning.

Credit position of the business firm describes its strength in mobilizing borrowed money. In case the internal generation of cash position is weak, the firm may exploit its strong credit position to go ahead in the expansion of its activities. There are basically two ways of strengthening the credit position. The first way is to avoid unnecessary borrowings. If the level of current debt is low the firm is likely to enjoy reasonable credit in future. The other way of enjoying credit facilities is to create the awareness about the future business prospect. For example if awareness can be created in the mind of the investors and others about quick and high growth and steady and long maturity prospects of an industry then it will be easier for the company to get external funds irrespective of its current cash flow position.

Conversely borrowing will be extremely difficult if the industry enters into a declining stage of life cycle curve. Since bankers and investors are generally interested in long run results and benefits and are willing to forego short run benefits, choice of the business field is very important for attracting investors and creditors. Thus to be in or not be in is dependent on cash flow position and credit position of the firm and these are in turn dependent on the position of the offer in respect of the life cycle curve, market demand and available technology is main.

Liquidity position of the business describes the extent of idle working capital. It measures the ability of the firm in handling unforeseen contingencies. Firms into major investments in fixed assets are likely to enjoy less liquidity than firms with lower level of fixed assets. The liquidity of the firm is measured in terms of current assets and current liabilities. If the current assets are more than the current liabilities the firm is said to be liquid. For example a drop in demand due to sudden arrival of competitive brand in the market may cause a crisis for liquid cash. In case the firm has excess current assets which are easily encashable, it will be able to overcome the crisis in the short run and draw new strategic plan and develop new strategic posture to rewinover the competitors in the long run.

2.0 INTERFACE OF FINANCIAL POLICY AND STRATEGIC MANAGEMENT

The inter face of strategic management and financial policy will be clearly understood if we appreciate the fact that the starting point of an organization is money and the end point of that organization is also money. No organization can run an existing business and promote a new expansion project without a suitable internally mobilized financial base or both internally and externally mobilized financial base.

Sources of finance and capital structure are the most important dimensions of a strategic plan. We have already emphasized on the need for fund mobilization to support the expansion activity of firm. The generation of funds may arise out of ownership capital and or borrowed capital. A company may issue equity shares and / or preference shares for mobilizing ownership capital. Preference Share holders as the name stands enjoy preferential rights in respect of dividend and return of capital. Holders of equity shares do not enjoy any such special right regarding dividend and return of capital. There are different types of preference shares like cumulative convertible preference shares which are convertible into equity shares between the end of the third year and the fifth year. Rate of dividend paid till conversion into equity shares remains constant. Debentures, on the other hand, are issued to raise borrowed capital. These are of varying terms and conditions in respect of interest rate, conversion into shares and return of investment. Public deposits, for a fixed time period, have also become a major source of short and medium term finance. Organizations may offer higher rates of interest than banking institutions to attract investors and raise fund. The overdraft, cash credits, bill discounting, bank loan and trade credit are the other sources of short term finance.

Along with the mobilization of funds, policy makers should decide on the capital structure to indicate the desired mix of equity capital and debt capital. There are some norms for debt equity ratio. These are aimed at minimizing the risks of excessive loans, for public sector organizations the norm is 1:1 ratio and for private sector firms the norm is 2:1 ratio. However

1.6 Strategic Financial Management

this ratio in its ideal form varies from industry to industry. It also depends on the planning mode of the organization under study. For capital intensive industries, the proportion of debt to equity is much more higher. Similar is the case for high cost projects in priority sectors and for projects in under developed regions.

Another important dimension of strategic management and financial policy interface is the investment and fund allocation decisions. A planner has to frame policies for regulating investments in fixed assets and for restraining of current assets. Investment proposals mooted by different business units may be divided into three groups. One type of proposal will be for addition of a new product to the fold of offer of the firm. Another type of proposal will be to increase the level of operation of an existing product through either an increase in capacity in the existing plant or setting up of another plant for meeting additional capacity requirement. There is yet another type of proposal. It pleads for cost reduction and efficient utilization of resources through a new approach and or closer monitoring of the different critical activities. Now, given these three types of proposals a planner should evaluate each one of them by making within group comparison in the light of capital budgeting exercise, In fact project evaluation and project selection are the two most important jobs under fund allocation. Planner's task is to make the best possible allocation under resource constraints.

Dividend policy is yet another area for making financial policy decisions affecting the strategic performance of the company. A close interface is needed to frame the policy to be beneficial for all. Dividend policy decision deals with the extent of earnings to be distributed as dividend and the extent of earnings to be retained for future expansion scheme of the firm. From the point of view of long term funding of business growth, dividend can be considered as that part of total earnings, which cannot be profitably utilized by the company. Stability of the dividend payment is a desirable consideration that can have a positive impact on share price. The alternative policy of paying a constant percentage of the net earnings may be preferable from the point of view of both flexibility of the firm and ability of the firm. It also gives a message of lesser risk for the investors. Yet some other companies follow a different alternative. They pay a minimum dividend per share and additional dividend when earnings are higher than the normal earnings. In actual practice, investment opportunities and financial needs of the firm and the shareholders preference for dividend against capital gains resulting out of share are to be taken into consideration for arriving at the right dividend policy. Alternatives like cash dividend and stock dividend are also to be examined while working out an ideal dividend policy that supports and promotes the corporate strategy of the company.

It may be noted from the above discussions that financial policy of a company cannot be worked out in isolation of other functional policies. It has a wider appeal and closer link with the overall organizational performance and direction of growth. These policies being related to external awareness about the firm, specially the awareness of the investors about the firm, in respect of its internal performance. There is always a process of evaluation active in the minds of the current and future stake holders of the company. As a result preference and patronage for the company depends significantly on the financial policy framework. And hence attention of the corporate planners must be drawn while framing the financial policies not at a later stage but during the stage of corporate planning itself. The nature of interdependence is the crucial factor to be studied and modelled by using an in depth analytical approach. This is a

very difficult task compared to usual cause and effect study because corporate strategy is the cause and financial policy is the effect and sometimes financial policy is the cause and corporate strategy is the effect. This calls for a bipolar move.

3.0 BALANCING FINANCIAL GOALS VIS-À-VIS SUSTAINABLE GROWTH

Question concerning right distribution of resources may take a difficult shape if we take into consideration the rightness not for the current stakeholders but for the future stake holders also. To take one illustration let us refer to fuel industry where resources are limited in quantity and a judicious use of resources is needed to cater to the need of the future customers along with the need of the present customers. One may have noticed the save fuel campaign, a demarketing campaign that deviates from the usual approach of sales growth strategy and preaches for conservation of fuel for their use across generation. This is an example of stable growth strategy adopted by the oil industry as a whole under resource constraints and the long run objective of survival over years. Incremental growth strategy, profit strategy and pause strategy are other variants of stable growth strategy.

The very weak idea of sustainability requires that the overall stock of capital assets should remain constant. The weak version of sustainability refers to preservation of critical resources to ensure support for all, over a long time horizon. The strong concept of sustainability is concerned with the preservation of resources under the primacy of ecosystem functioning. These are in line with the definition provided by the economists in the context of sustainable development at macro level

In terms of economic dimension sustainable development rejects the idea that the logistic system of a firm should be knowingly designed to satisfy the unlimited wants of the economic person. A firm has to think more about the collective needs and less about the personal needs. This calls for taking initiatives to modify, to some extent, the human behaviour. Sustainability also means development of the capability for replicating one's activity on a sustainable basis. The other economics dimension of sustainability is to decouple the growth in output of firm from the environmental impacts of the same. By decoupling we mean development of technology for more efficient use of resource. Complete decoupling is unrealistic from the thermodynamic angle but the materials balance principle demands for decoupling and hence attempts should be made by the firm to be more and more decoupled

3.1 PRINCIPLES OF VALUATION

The evaluation of sustainable growth strategy calls for interface of financial planning approach with strategic planning approach. Choice of the degree of sustainability approach for sustainability and modification in the sustainability principle must be based on financial evaluation of the alternative schemes in terms of financial and overall corporate objectives. Basically there are two alternative methods for evaluation. One is known as valuation method and the other one is known as pricing method. Valuation method depends on demand curve approach by either making use of expressed preferences or making use of revealed preference. Pricing method is a non demand curve approach that takes into consideration either opportunity costs or alternative costs or shadow

1.8 Strategic Financial Management

projects or government payments or those response method depending on the nature of the problem and environmental situation. Valuation methods are in general more complex in implementation than pricing methods. But demand curve methods are more useful for cases where it seems likely that disparity between price and value is high.

After the evaluation comes the question of policy choice. In case of sustainable growth the conventional cost benefit analysis may not be an appropriate tool for making choice decision. This is due to the fact that conventional cost benefit analysis is based on the principle of allocation of resources for maximizing internal benefit. It has no in built sustainability criterion to guarantee that a constant stock of natural resources will be passed between current and future users. This problem comes up because conventional cost-benefit analysis draws no distinction between natural capital and man made capital and is considered to be equitable.

One proposed sustainability criterion is due to Turner and Pearce who advocated the constant natural assets rule. Their compensation principle requires the passing on the future users a stock of natural assets which no smaller than the stock in the possession of current users. According to them Hicks Kaldor potential compensation rule should be extended further so that there will be actual compensation rule for natural resources. Within the constant natural assets rule the extended cost-benefit analysis can still retain the flavour of economic efficiency if one takes into consideration how resources should be best allocated among the competing users. The constant natural assets rule is directly applicable for renewable assets. But all the resources are not renewable is nature. In case of non-renewable assets, actual compensation rule should be interpreted not in terms of providence of actual assets but in terms of the services rendered by the actual assets. For example, oil, the black liquid cannot be preserved in constant quantity across time. But the services that oil provides to current users must be provided in future so that actual compensation remains the same. These are all high level strategic decisions but come under the purview of financial strategic planning. Only a close interface can help in arriving at an acceptable situation and plan

Self-examination Questions

1. What is Strategic Management?
2. Outline the assumptions and limitations of corporate finance theory.
3. How the interface between financial policies and corporate strategy is done.
4. What type of interaction between various financial policies exists?
5. Comment on shareholders value creation?
6. What type of relationship exists between growth, economic profitability and the shareholder value?

PROJECT PLANNING AND CAPITAL BUDGETING

1.0 FEASIBILITY STUDY

Project feasibility is a test by which an investment is evaluated. There are three types of feasibilities evaluated for a project viz. 1) market feasibility 2) technical feasibility and 3) financial feasibility. For projects evaluated by government, economic and social feasibility is also considered.

1.1 MARKET FEASIBILITY:

Products having high sales potential are less risky to invest in. For conducting market feasibility study, the type of proposed product is important. Indicators of buyer behavior in response to a new product have to be taken into account for estimating the potential demand. A proposed product, if new in a country, but successfully marketed in other countries, then its market feasibility is assessed through comparison of some broad economic and cultural indicators in both the countries. Each country will experience an identical buying pattern and preference for products, if the economic indicators are comparable. Cultural differences should be adjusted so as to draw conclusions about the demand, per-capita incomes, income disparity levels, pattern indicating shifts in consumption, literacy level and other economic factors indicating the potential demand for a particular product.

A proposed project for an addition to the existing capacity, the task of market feasibility study shall be different. Historical data analysis and study of factors influencing consumption trends become essential. The market feasibility study for a product already selling in the market consists of (a) study of economic factors and indicators (b) demand estimation (c) supply estimation (d) identification of critical success factors (e) estimation of demand-supply gap.

- (a) Economic Indicators: A change in demand and a change in one or some economic indicators may take place simultaneously.

2.2 Strategic Financial Management

- (b) Demand Estimation: Projection of demand is most important step in project feasibility study. These include:
- End-user profile
 - Study of influencing factors
 - Regional, national and export market potential
 - Infra-structure facilities facilitating or continuing demand
 - Demand forecasting
- (c) End-user profile: A product may have different uses and end-users. Total demand is made up of different end-users. Different market segments may not be interlinked. Demand for cement is divided into two categories, housing/ maintenance and infrastructure viz. irrigation, canal, railways, road and ports. The end-users are also classified into government and non-government demand, urban and rural demand.
- (d) Influencing Factors – Demand for a product is a derived demand. Demand for fertilizer sales is dependent on monsoons while sale of steel and industrial growth are associated with each other.
- (e) Market Potential – Regional, national and export market potential of a product may be different. Study of national demand may not be adequate due to regional imbalances caused by several constraints. Assessment of export potential is another important exercise. Economic distance to which a product can be exported must be evaluated. Importing countries must be identified, and countries that have no exportable surplus. Cost and quality aspects of goods must be compared with other potentially exporting countries. International relations, import and export barriers in countries, and other factors need to be understood.
- (f) Infrastructure Facility – It needs to be assessed properly. Exportability depends more on high cost of transportation.
- (g) Demand Forecasting – It is an important step in the assessment of demand potential. Growth in demand in past can be indicative of future demand. There are various methods of demand forecasting. Some factors influencing consumption behaviour in the past will continue to influence the future, others provide for adjustment of some economic indicators likely to be different in the future.
- (h) Supply Estimation: Past trends of supply of goods can be studied and further extrapolated. Projections so made need to be adjusted with additional information, projects undertaken in the economy, import possibility as governed by import policy, import tariff and international prices. Information regarding entry barrier is necessary. A long gestation period and a high capital to labour ratio may create a natural entry barrier. Government licensing policy, availability of required input like materials and skilled labour also cause entry on barrier. A product whose entry barrier is high is unlikely to find a sudden spur in supply, offering more comfortable position to existing players.

- (i) Identification of Critical Success Factors: For choice of location and to find the risk of a project, it is necessary to identify critical factors, which determine the success of project. Availability of raw material supply and cost of power, transportation facilities, supply of skilled manpower or other variables could be the critical success factors. They are product and region specific. The right choice of location may reduce the cost of a project and the uncertainty regarding the availability of resources. If some crucial factors are subject to volatile changes, then the impact of their variability on the net profitability of a project has to be separately evaluated.
- (j) Estimation of the Demand-Supply Gap – Demand and supply estimates have to be fine-tuned with new or changed factors and then compared with each other for determining the gap. The demand-supply gap is fruitful for a geographical territory. The forecast of demand and supply may not be a single point forecast. A multiple point forecast gives the most adverse, most likely and most favourable forecast of demand and supply.

To find Demand Supply Gap,

Demand Surplus : Minimum = Min demand – Max supply

Likely = Likely demand – Likely supply

Maximum = Max demand – Likely supply

1.2 Technical Feasibility:

The factors considered are:

- i) Availability of commercially viable technology and its alternatives.
- ii) Suitability of the technology to local environment and its usefulness is to be assessed by the quality of material, power, skilled labour, environmental conditions, water supply etc.
- iii) Technological innovation rate of the product.
- iv) Production processes.
- v) Capacity utilization rate and its justification.
- vi) Availability of raw material and other resources e.g. power, gas, water, compressed air, labour etc.
- vii) Plant and equipment with fabrication facilities.
- viii) Feasible product mix with possibilities of joint and by-products.
- ix) Facilities for affluent disposal.

The commercial side of technical details has to be studied along with the technical aspects so that commercial viability of the technology can be evaluated.

2.4 Strategic Financial Management

1.3 Financial Feasibility:

Demand and price estimates are determined from the market feasibility study. Project costs along with operating costs are derived from technical feasibility study. The estimates have to be made from (a) tax implications of the prevailing tax laws, (b) financial costs involved from financing alternatives for the project. Financial feasibility study requires detailed financial analysis based on certain assumptions, workings and calculations such as:

- 1) Projections for prices of products, cost of various resources for manufacturing goods, capacity utilization. The actual data of comparable projects are included in the estimates.
- 2) Period of estimation is determined on the basis of product life cycle, business cycle; period of debt funds etc. and the value of the project at the terminal period of estimation are forecasted.
- 3) Financing alternatives are considered and a choice of financing mix made with regard to cost of funds and repayment schedules.
- 4) Basic workings in different schedules like Interest and repayment schedule, working capital schedule, working capital loan, interest and repayment schedule, depreciation schedule for income tax purposes, depreciation schedule for the purpose of reporting under Companies Act, 1956 (if policy is different from income tax rules).
- 5) Financial statements prepared in the project feasibility report viz. profit and loss account, balance sheet and cash flow statements for the proposed project.
- 6) Financial indicators calculated from data available in various financial statements. Basic financial parameters used for judging the viability of the project are debt-service coverage ratio (DSCR), net present value (NPV) or internal rate of return (IRR). Some firms use payback period interest coverage ratio, net present value (NPV), as alternate additional tools.

Interest coverage ratio indicates the safety and timely payment of interest to lenders of money given by

$$\text{Interest coverage ratio} = \frac{\text{PAT} + \text{Depreciation} + \text{Interest}}{\text{Interest}}$$

The ratio indicates how many times the operating cash flow before interest is earned against the interest liability. However, it is not an important indicator of project viability.

Debt-service coverage ratio (DSCR) uses the same numerator as the interest coverage ratio, but it is compared with the interest payment and principal sum repayment in a year given by

$$\text{DSCR} = \frac{\text{PAT} + \text{Depreciation} + \text{Interest}}{\text{Interest} + \text{Principal Sum Repayment}}$$

An average DSCR of 1.5 is considered good. It is the safety indicator for lenders of money. A project generating sufficient funds during the period of loan taken for a project is considered good from the business angle.

1.4 Risk Assessment

Basic indicators of financial viability use profit and cash flow estimates subject to risk or uncertainty. Evaluation of risk is necessary through the adoption of Break Even and Sensitivity Analysis.

1.5 Financial Projections:

In assessing the financial viability of a project it is necessary to look at the forecasts of financial condition and flows viz.

- Projected balance sheet
- Projected cash flow statement

1.6 PROJECTED BALANCE SHEET

The balance sheet, showing the balance in various asset and liability accounts, reflects the financial condition of the firm at a given point of time.

Format of Balance Sheet

Liabilities	Assets
Share capital	Fixed assets
Reserves and surplus	Investments
Secured loans	Current assets, loans and advances
Unsecured loans	Miscellaneous expenditure and losses
Current liabilities and Provisions	

Liabilities side of the balance sheet shows the sources of finance employed by the business. Assets side of the balance sheet shows how funds have been used in the business.

For preparing the projected balance sheet at the end of year n+1, information about the following is required:

- Balance sheet at the end of year n
- Projected income statement and the distribution of earnings for year n+1

2.6 Strategic Financial Management

- Sources of external financing proposed to be tapped in year $n+1$
- Expected changes in current liabilities in year $n+1$
- Proposed repayment of debt capital during year $n+1$
- Outlays on and the disposal of fixed assets during year $n+1$
- Changes in level of current assets during year $n+1$
- Changes in assets and certain outlays pre-operative and preliminary expenses during year $n+1$

Example:

The balance sheet at the end of year n is as follows:

Rs. in Crores

<i>Liabilities</i>	<i>Rs.</i>	<i>Assets</i>		<i>Rs.</i>
Share capital	100	Fixed assets		180
Reserves and surplus	20	Investments		...
Secured loans	80	Current assets		180
Unsecured loans	50	Cash	20	
Current liabilities	90	Receivables	80	
Provisions	20	Inventories	80	
	360			360

The projected income statement and distribution of earnings for year $n+1$

(Rs. in Cr)

Sales	400
Cost of goods sold	300
Depreciation	20
Earnings before interest and taxes	80
Interest	20
Profit before tax	60
Tax	30
Profit after tax	30
Dividends	10
Retained earnings	20

During year n+1 firm plans to raise secured term loan of Rs. 20 crores repay previous term loan to the extent of 5, increase unsecured loans by 10. Current liabilities and provisions expected to remain unchanged. Firm plans to acquire fixed assets worth 30, increase its inventories by 10, Receivables expected to increase by 15, other assets remain unchanged, except cash. Level of cash to be the balancing amount in the projected balance sheet. Projected balances in various assets/liabilities are worked out as follows.

Projected Balances in Assets & Liabilities

Account Category	Opening Balance	Changes during the year	Rs. in Cr. Closing Balance
Liabilities			
Share capital	100		100
Reserved and surplus	20	+20 (Retained earnings)	40
Secured loan	80	+20 (Additional term loan) -5 (Repayment)	95
Unsecured loans	50	+10 (Proposed increased)	60
Current liabilities	90		90
Provisions	20		<u>20</u>
		Total	405
Fixed Assets	180		
Investments		+30 (Additional outlay) <u>-20 (Depreciation)</u>	<u>190</u>
Current assets	180		
Cash	20	+10 (Bal. Fig)	30 (Bal fig)
Inventories	80	+10 (Proposed increase)	90
Receivables	80	+15 (Expected increase)	95
		Total	<u>215</u>
			405

1.7 PROJECTED CASH FLOW STATEMENT

Cash flow statement shows the sources and disposition of cash and the net change in cash balance.

Projected Cash Flow statement

(A) Sources of Funds

Share issue

Profit before taxation with interest added back

2.8 Strategic Financial Management

Depreciation provision for the year

Specific Reserves

Increase in secured medium and long-term borrowings for the project

Other medium/long term loans

Increase in unsecured loans and deposits

Increase in bank borrowings for working capital

Increase in liabilities for deferred payment (including interest)

Sale of fixed assets

Sale of investments

Other income

Total

(B) Disposition of Funds

Capital expenditures for the project

Other capital expenditures

Increase in working capital

Decrease in secured medium and long-term borrowings – Financial institutions/Banks

Decrease in unsecured loans and deposits

Decrease in bank borrowings for working capital

Decrease in liabilities for deferred payments (including interest) to machinery

Increase in investments in other companies

Interest on term loans

Interest on bank borrowings for working capital

Taxation

Dividends – Equity/Preference

Other expenditures

- Opening balance of cash in hand and at bank
- Net surplus/deficit (A-B)
- Closing balance of cash in hand/at bank

Projected Cash Flow Statement

Rs. (Cr.)

(A)	Sources of Funds	
	Profit before tax with interest added back	80.00
	Depreciation	20.00
	Increase in secured loans	15.00
	Increase in unsecured loans	10.00
	Total	125.00
(B)	Disposition of Funds	
	Capital expenditure	30.00
	Increase in working capital	25.00
	Interest	20.00
	Taxation	30.00
	Dividends- equity	10.00
	Total	115.00
	Opening balance of cash in hand and at bank	20.00
	Net surplus/deficit (A-B)	10.00
	Closing balance of cash in hand and at bank	30.00

1.8 COMBINED MULTI-YEAR PROJECTIONS

We take up an illustration showing combined projection of balance sheet, sources and uses of funds statement, and cash flow statement over several years. The expected outlays and proposed financing during the construction and the first two operating years are given hereunder:

Proposed Outlays and Financing

(Rs in Cr)

<i>Construction</i>	<i>1st Operating</i>	<i>2nd operating</i>
<i>Period</i>	<i>Year</i>	<i>Year</i>

Outlays

Preliminary and

Pre-operative

2.10 Strategic Financial Management

Expenses	20	-	-
Fixed assets	200	200	100
Current assets- (Other than cash)		200	100
Financing			
Share capital	100	150	-
Term loan	150	150	75
Short-term bank Borrowing	-	120	60

The projected revenues and costs for the first two operating years are given below.

- i) the tax rate will be 60 per cent,
- ii) no deductions (relief's) are available
- iii) preliminary and preoperative expenses will not be written off during the first two operating years, and
- iv) no dividend will be paid in the first two operating years.

Projected Revenues and Costs

	<i>(Rs. In Cr.)</i>	
	<i>1st operating Year</i>	<i>2nd Operating Year</i>
Sales	300	600
Cost of sales (excluding interest and depreciation)	300	400
Interest	48	64
Depreciation	20	28

Projected Statements

The projected income statement (profit and loss statement) is prepared in the following way:

Projected Income Statement

(Rs. In Cr.)

	<i>1st Operating Year</i>	<i>2nd Operating Year</i>
Sales	300	600
Cost of sales (excluding Depreciation and interest)	300	400
Interest	48	64
Depreciation	20	28
Losses (absorbed)	-	68
Profit before tax	(68)	40
Tax	-	24
Profit after tax	(68)	16

From the given, the projected balance sheets and the projected cash flow statements are displayed in the following manner:

Projected Balance Sheet

(Rs. in Cr.)

Liabilities	End of Constn. Period	End of 1st Operating Year	End of 2nd Operating year	Assets	End of Constn. Period	End of 1st Operating year	End of 2nd Operating year
Share Capital	100	250	250	Fixed assets	200	380	452
Reserves and Surplus			16	Current Assets			
					(Bal. Fig.)	(Bal. Fig.)	(Bal. fig.)
Secured Loan				Cash	30	2	49
Term Loan	150	300	375	Others	--	200	300
				Miscellaenous Expenditure and losses			
Short term Bank borrowing	-	120	180	Preliminary and Pre-operative expense	20	20	20
				Profit and Loss account	--	68	---
	250	670	821	Balance	250	670	821

2.12 Strategic Financial Management

Projected Cash Flow Statement

(Rs. in Cr.)

	Construction Period	1st Operating Year	2 nd Operating year
Sources of Funds			
Share issue	100	150	
Profit before taxation and Interest added back*		(20)	172
Depreciation provision for the year		20	28
Increase in secured medium and long-term borrowings for the project	150	150	75
Increase in bank borrowings for working capital	-	120	60
Total (A)	250	420	335
Disposition of Funds			
Capital expenditure for the Project	200	200	100
Increase in working capital	-	200	100
Interest	--	48	64
Other expenditure (Preliminary and Pre-operative expenses)	20	-	-
Taxes	-	-	24
Total (B)	220	448	288
Opening balance of cash in hand and cash at bank	-	30	2
Net surplus/deficit (A-B)	30	(28)	47
Closing balance of cash in hand and at bank	30	2	49

2.0 CONTENTS OF A PROJECT REPORT

The following aspects need to be taken into account for a Project Report -

1. **Promoters:** Their experience, past records of performance form the key to their selection for the project under study.

* This takes into account losses absorbed.

2. **Industry Analysis:** The environment outside and within the country is vital for determining the type of project one should opt for.
3. **Economic Analysis:** The demand and supply position of a particular type of product under consideration, competitor's share of the market along with their marketing strategies, export potential of the product, consumer preferences are matters requiring proper attention in such type of analysis.
4. **Cost of Project:** Cost of land, site development, buildings, plant and machinery, utilities e.g. power, fuel, water, vehicles, technical know how together with working capital margins, preliminary/pre-operative expenses, provision for contingencies determine the total value of the project.
5. **Inputs:** Availability of raw materials within and outside the home country, reliability of suppliers cost escalations, transportation charges, manpower requirements together with effluent disposal mechanisms are points to be noted.
6. **Technical Analysis:** Technical know-how, plant layout, production process, installed and operating capacity of plant and machinery form the core of such analysis.
7. **Financial Analysis:** Estimates of production costs, revenue, tax liabilities profitability and sensitivity of profits to different elements of costs and revenue, financial position and cash flows, working capital requirements, return on investment, promoters contribution together with debt and equity financing are items which need to be looked into for financial viability.
8. **Social Cost Benefit Analysis:** Ecological matters, value additions, technology absorptions, level of import substitution form the basis of such analysis.
9. **SWOT Analysis:** Liquidity/Fund constraints in capital market, limit of resources available with promoters, business/financial risks, micro/macro economic considerations subject to government restrictions, role of Banks/Financial Institutions in project assistance, cost of equity and debt capital in the financial plan for the project are factors which require careful examinations while carrying out SWOT analysis.
10. **Project Implementation Schedule:** Date of commencement, duration of the project, trial runs, cushion for cost and time over runs and date of completion of the project through Network Analysis have all to be properly adhered to in order to make the project feasible.

2.1 SPECIMEN OF PROJECT FEASIBILITY REPORT

You have been asked by the Board of Directors of XYZ & Co. Ltd. to submit a project feasibility report on the introduction of a new product 'α' in the paint market as a Chief Finance Officer.

2.14 Strategic Financial Management

To

The Board of Directors,

XYZ & Co. Ltd.

From:

The Chief Finance Officer

RE: IN DEPTH STUDY OF A PRODUCT 'A' BEING INTRODUCED IN THE MARKET PROPOSED.

The Company proposes to introduce a new product 'α' in the paint Market at Delhi. The present study is an effort to see whether the project under consideration should be taken up or not.

COMMERCIAL VIABILITY (MARKET):

Aim in Market Share:

The in depth market study and research reveals the following facts:

Total Demand of the product 'α' type	- 1,00,000 tonnes p.a.
Installed Capacity	- 90,000 tonnes p.a.
Production	- 80,000 tonnes p.a.
Potential Demand Gap	- 20,000 tonnes p.a.

The company proposes to manufacture 10,000 tonnes of 'α' thus aiming at 10% share of the market or 50% of unfulfilled demand.

Market Leader & Competition:

The market leader of this group of products has a share of 40% and rest of market is shared by a number of small manufacturers. Thus company expects little competition from the market leader.

Availability of Inputs:

Raw Materials:

Raw Materials constitute a major portion of the total cost of output. In fact, 70% of value added output cost is raw material. About 5% of petroleum byproducts are used as additives and these are subject to price fluctuations due to change in international prices. Such increases are passed on to the consumers in the shape of increased prices thereby keeping contribution margin in tact. As government is the sole supplier of additives there is a fear that company may have to stop production if supply is discontinued.

Power:

As the project will require very little power it is expected that power shortage will not create a very big hazard.

Capital cost of the Project -*Rs. (lakhs)*

(1) Land & Building	5.00
(2) Plant & Machinery	6.00
(3) Other Fixed Assets including Tanks	4.00
(4) Pre Operative Expenses	1.00
(5) Margin Money for Working Capital	2.00
(6) Provision for contingencies	2.00
	20.00

Financial Plan -*Rs. (lakhs)*

(1) Equity Shares	5.00
(2) Retained Earnings	5.00
(3) Term Loans	10.00
	20.00

Technical Feasibility:**Knowhow:**

As the total investment in Plant & Machinery is Rs.6 (lakhs), it is presumed that complex technical know how is not required.

Right Plant & Machinery:

The company being the market leader in paints it has been able to select the right kind of plant & Machinery at optimum cost. As per market quotations, the cost of Plant & Machinery, seems to be reasonable.

Storage Tanks:

The cost that will incur if storage tanks are erected is estimated at Rs. 2 (lakhs) and the expense has been considered very much necessary for the purpose.

New Factory/(Industrial Estate New Co.):

The company is proposing to set up a factory nearer to the existing one where locational facilities are available (Nearness to market, transport facilities, Tax Holiday Benefits, Availability of skilled labour, free trade zone etc.)

2.16 Strategic Financial Management

Plant layout, Blue Print:

A plant layout, blue print as per engineer's and technician's report has been attached with the schedule.

Financial Feasibility:

Projected Profitability and Cash Flow Statement

Rs. (Lakhs)

Year	Profit after Tax	Depreciation	Cash Flow
1	8.00	1.50	9.50
2	5.00	1.50	6.50
3	5.00	1.50	6.50
4	5.00	1.50	6.50
5	5.00	1.50	6.50
6	5.00	1.50	6.50
7	4.00	1.50	5.50
8	4.00	1.50	5.50
9	4.00	1.50	5.50
10	5.00	1.50	6.50
Total	50.00	15.00	65.00

The cash flow of Rs.65 (lakhs) when discounted at the company's cost of capital rate gives net cash flow of Rs.30 (lakhs). Hence net present value of Rs.10 (lakhs) is available [Net Cash Flow – Capital Cost]. Thus the project seems to be feasible.

Disposal of Waste/Effluents/Pollution Control:

The production process is such that it will release very little waste & effluents and so disposal is not a very great problem. Public health is thus not endangered. No special measures are required to be undertaken for pollution control.

Repayment Schedule:

A loan repayment schedule (Subject to negotiation) is being given herewith.

Years	Repayment (Rs. in Lakhs)
1	-
2	2
3	2

4	2
5	2
6	2
Total	10

S/d

Dated

Chief Finance Officer

2.2 POST COMPLETION AUDIT:

Post-completion audit evaluates actual performance with projected performance. It verifies both revenues and costs. The advantages of conducting a post completion audit are:

1. The experience gained is highly valuable for future decision making it can since highlight mistakes that can be avoided and areas of improvements brought about .
2. Identify individuals with superior abilities in planning and forecasting.
3. It helps in discovering biases in judgment.
4. It induces healthy caution among the sponsors of projects as projects sponsors make over-optimistic projections for their proposals.
5. It serves as a useful training ground for promising executives needing experience and exposure into a wide range of factors like market behaviour, pricing, cost structure, input availability, productivity, regulatory environment, financial system and industrial relations.

Post Completion Audit is the most neglected aspect of capital budgeting. The reasons are

- a) It is difficult to isolate the cash flows attributable to individual investments from financial accounts compiled as a whole and based on accrual principle.
- b) Apprehension that it may be used for punitive purposes.

First problem is overcome by using estimates and approximations where it is not possible to obtain accurate data. Second problem is overcome by making it clear to project sponsors that purpose of post audit is to promote learning as it provides feedback for future improvements.

Post-completion audit involves effort and cost. It is to be conducted for investments above a certain size.

Post-completion audit is conducted when project is commissioned or the operations of the project stabilizes or the project is terminated, or at any other time in the life of the project. If conducted earlier review data may not be meaningful and if conducted towards end of project life utility of the lessons drawn is not useful.

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Post-completion audit should not be entrusted to the sponsoring group since the group has a bias in favour of the project. It should be performed by an independent group consisting of economists, engineers, accountants and executives requiring training in capital budgeting.

SOCIAL COST BENEFIT ANALYSIS

3.0 WHAT IT IS?

Social cost benefits analysis is an approach for evaluation of projects. A technique for appraising isolated projects from the point of view of society as a whole. It assesses gains/losses to society as a whole from the acceptance of a particular project. Social gains/losses (quantifiable/measurable) regarded as additions to and subtractions from something that the society desires. UNIDO advocates aggregate consumption as unit of measurement. OED advocates, on the other hand, use of uncommitted social income in the hands of the government as yardstick of measurement since consumption has both time dimension (present/future) and distributional dimension (consumption by group/region of the country).

3.1 FEATURES

- 1) It includes many economic activities having indirect effects on which there is no possibility of putting a market value. For example, a project may have beneficial effects on the rest of society viz. training imparted to workers quitting the project before/after completion and joining other projects where trained personnel are available without any extra payment or environmental pollution causing damage to property. These are regarded as external effects for which no market compensations are made.
- 2) If savings are inadequate; money going into investment is regarded more valuable than money going into current consumption.
- 3) Society values given quantum of additional consumption going to different sections of the population differently. So distributional considerations are important.
- 4) For society, taxes are transferred from the project in hand to government and does not involve real cost.
- 5) Relative valuation placed on future consumption compared to current consumption is different for the society. Also effect of perceived uncertainties may be different.
- 6) Society may want to discourage consumption of certain goods and promote that of others.
- 7) External effects exist on consumption side e.g. person getting inoculation against infectious disease will be conferring some benefit to society by preventing the spreading over of the disease.

- 8) Output from large projects has significant impact on the market for the good/services and neither pre project market price nor expected post project market price would be correct indicators of the social value of project output. Market prices are not true indicators of social gains/losses but can be suitably adjusted to reflect social valuations.

3.2 TECHNIQUE OF SOCIAL COST BENEFIT ANALYSIS:

Estimation of shadow prices form the core of social cost benefit methodology. Economic resources have been categorised into goods, services, labour, foreign exchange, shadow price of investment vis-à-vis consumption, shadow price of future consumption vis-à-vis present consumption viz. social rate of discount.

3.3 GOODS & SERVICES

Social gain/losses from outputs and inputs of a project are measured by the willingness of the consumers to pay for the goods. This is reflected by market price if:

- a. Perfect competition exists in all relevant markets.
- b. Project unable to make substantial additions to or withdrawals from existing supply of goods.

For consumer goods, absence of rationing/controls, condition a) as specified above is required. If rationing/control exist, market price understates willingness to pay and so upward adjustment is necessary. If condition b) as specified above is violated neither old nor new market price shall reflect the willingness to pay. However an average of the two may serve the purpose and the demand has to be estimated once again.

For producer goods in addition to absence of rationing/controls and condition b) as specified above, not only competitive conditions must prevail in the market for the goods itself but in all subsequent markets through which the goods passes in successive stages of processing.

Public irrigation project sells water to sugarcane farmers who sell cane to sugar mills. If sugar mills enjoy monopoly power in sugar markets their willingness to pay for sugarcane will be higher than market price they pay and market price farmer pays for irrigation water will understate their willingness to pay if competitive conditions existed everywhere. Society's gain from additional irrigated water higher than market price of irrigation water.

3.4 LABOUR

Social cost of labour is lower than market wage because of massive un/under employment along with traditions, changes in life style etc. Removal of labour from farms should not cause reduction in agricultural output as other members work harder to offset the loss. Employing labour on non farm activities is costless. Shadow wage is zero. Un/under

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employment is a seasonal phenomenon. During busy months there shall be full employment but full time withdrawal leads to reduction of output in villages. Wage rates in urban areas are higher than rural areas. Substantial migration takes place from rural areas. Every job created in urban areas at the going wage may lead to migration of more workers. Urban unemployment is a severe problem due to large influx into cities thereby straining their capacity to provide minimum basic overheads. Migrants come from productive part of labour force.

3.5 FOREIGN EXCHANGE:

Existence of extensive trade controls leads to official undervaluation of foreign exchange. Official exchange rate understates the benefit of exports and costs of imports in terms of domestic resources. An upward adjustment is necessary.

3.6 SOCIAL RATE OF DISCOUNT:

Market rate of interest does not reflect society's preference for current consumption over future consumption. Choice of social discount rate is based on value judgment about weights to be attached to the welfare of future generations compared to that of present generations. This is treated as a parameter and computations are carried out for a number of values within a certain range. Final decision rests with the policy maker.

3.7 SHADOW PRICE OF INVESTMENT:

Society as a whole gives importance to future generations than that accorded by private decision makers. Imperfections of capital markets lead to less than optimal total investment. Money devoted to investment in terms of immediate consumption is much more than money itself.

3.8 OTHER CONSIDERATIONS:

1. Certain amount of redistribution benefits flow to different groups in certain proportions. Costs may not be borne by same people or not in proportion to benefits they receive. Policy makers place different weights on net benefits flowing to different sections of population, project analyst should accommodate these weights.
2. Employment is always into the analysis by low shadow wages and distributional consideration does not warrant further weight to be attached.
3. Income generated in a region through multiplier effects of direct expenditures on the project. Intangibles-increased pollution, destruction of wild life, scenic beauty etc. Effects are spread over distant future and not enough is known about nature and extent-effect on rainfall in an area due to heavy exploitation of forests for a paper mill. Quantification is not possible here.

4. Uncertainty about future outputs, inputs, timely execution is to be considered. Some expected value maximization is resorted to for incorporation of quantifiable uncertainties.

3.9 LIMITATIONS:

- i) Successful application depends upon reasonable accuracy and dependability of the underlying forecasts as well as assessment of intangibles.
- ii) Technique does not indicate whether given project evaluated on socio-economic considerations is best choice to reach national goals or whether same resources if employed in another project would yield better results.
- iii) Cost of evaluation by such technique could be enormous for smaller projects.
- iv) Social Cost Benefit Analysis takes into consideration those aspects of social costs and benefits which can be quantified. Other aspects like happiness, satisfaction, aesthetic pleasure, better quality of life cannot be quantified.

4.0 CAPITAL BUDGETING UNDER RISK AND UNCERTAINTY

RISK

Risk denotes variability. Measures of variability used for risk:

$$(1) \text{ Range } (R_g) = R_h - R_l$$

Where, $R_g \rightarrow$ range of distribution

$R_h \rightarrow$ highest value of distribution

$R_l \rightarrow$ lowest value of distribution

$$(2) \text{ Mean Absolute Deviation (M.A.D) } = \sum_{i=1}^n p_i | R_i - \bar{R} |$$

Where, $p_i \rightarrow$ prob. with i th possible value

$R_i \rightarrow i$ th possible value of variable

$\bar{R} \rightarrow$ Arithmetic Mean of distribution / variable

$| R_i - \bar{R} | \rightarrow$ absolute deviation of i th value from mean.

$$(3) \text{ Standard Deviation } (\sigma) = [\sum p_i (R_i - \bar{R})^2]^{1/2}$$

$$(4) \text{ Variance } = \sigma^2$$

$$(5) \text{ C.V. } = \sigma / \bar{R}$$

$$(6) \text{ S.V. } = \sum p_i (R_i - \bar{R})^2$$

$$(R_i - \bar{R}) = (R_i - \bar{R}) \text{ when } R_i < \bar{R}$$

$$= 0 \text{ when } R_i > \bar{R}$$

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Example:

Outcome	Probability
Rs. 900	0.2
Rs. 600	0.5
Rs. 200	0.3

Calculate Measures of dispersion.

$$R_g = R_h - R_l = 900 - 200 = \text{Rs.}700$$

$$\begin{aligned} \text{MAD} &= 0.2 (360) + 0.5 (60) + 0.3 (340) \\ &= \text{Rs.} 204 \end{aligned}$$

$$\sigma = [0.2 (900 - 540)^2 + 0.5 (600 - 540)^2 + 0.3 (200 - 540)^2]^{1/2} = \text{Rs.} 250$$

$$\text{CV} = 250/540 = 0.46$$

$$\text{SV} = 0.2 (0)^2 + 0.5 (0)^2 + 0.3 (340)^2 = \text{Rs.}34,680$$

Risk of project may be assessed by (1) Simulation Analysis (2) Sensitivity Analysis.

4.1 STEPS FOR SIMULATION ANALYSIS:-

1. Modelling the project. The model shows the relationship of N.P.V. with parameters and exogenous variables. (Parameters are input variables specified by decision maker and held constant over all simulation runs. Exogenous variables are input variables, which are stochastic in nature and outside the control of the decision maker).
2. Specify values of parameters and probability distributions of exogenous variables.
3. Select a value at random from probability distribution of each of the exogenous variables.
4. Determine N.P.V. corresponding to the randomly generated value of exogenous variables and pre-specified parameter variables.
5. Repeat steps (3) & (4) a large number of times to get a large number of simulated N.P.V.s.
6. Plot frequency distribution of N.P.V.

Example:

Uncertainty associated with two aspects of the project: Annual Net Cash Flow & Life of the project. N.P.V. model for the project is

$$\sum_{t=1}^n [CF_t / (1+i)^t] - I$$

Where $i \rightarrow$ Risk free interest rate, $I \rightarrow$ initial investment are parameters.

With $i = 10\%$, $I = \text{Rs. } 13,000$, CF_t & n stochastic exogenous variables with the following distribution will be as under:

<i>Annual Cash Flow</i>		<i>Project Life</i>	
<i>Value (Rs.)</i>	<i>Probability</i>	<i>Value (Year)</i>	<i>Probability</i>
1,000	0.02	3	0.05
1,500	0.03	4	0.10
2,000	0.15	5	0.30
2,500	0.15	6	0.25
3,000	0.30	7	0.15
3,500	0.20	8	0.10
4,000	0.15	9	0.03
		10	0.02

Ten manual simulation runs are performed for the project. To perform this operation, values are generated at random for the two exogenous variables viz., Annual Cash Flow and Project Life. For this purpose, we (1) set up correspondence between values of exogenous variables and random numbers (2) choose some random number generating device.

Correspondence between Values of Exogenous Variables and two Digit Random Numbers:

<i>Annual Cash Flow</i>				<i>Project Life</i>			
<i>Value (Rs.)</i>	<i>Probability</i>	<i>Cumulative Probability</i>	<i>Two Digit Random No.</i>	<i>Value (Year)</i>	<i>Probability</i>	<i>Cumulative Probability</i>	<i>Two Digit Random No.</i>
1,000	0.02	0.02	00 – 01	3	0.05	0.05	00 – 04
1,500	0.03	0.05	02 – 04	4	0.10	0.15	05 – 14
2,000	0.15	0.20	05 – 19	5	0.30	0.45	15 – 44
2,500	0.15	0.35	20 – 34	6	0.25	0.70	45 – 69
3,000	0.30	0.65	35 – 64	7	0.15	0.85	70 – 84
3,500	0.20	0.85	65 – 84	8	0.10	0.95	85 – 94
4,000	0.15	1.00	85 - 99	9	0.03	0.98	95 – 97
				10	0.02	1.00	98 - 99

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RANDOM NUMBER

53479	81115	98036	12217	59526
97344	70328	58116	91964	26240
66023	38277	74523	71118	84892
99776	75723	03172	43112	83086
30176	48979	92153	38416	42436
81874	83339	14988	99937	13213
19839	90630	71863	95053	55532
09337	33435	53869	52769	18801
31151	58295	40823	41330	21093
67619	52515	03037	81699	17106

For random numbers, we can begin from any-where taking at random from the table and read any pair of adjacent columns, column/row wise. For the first simulation run we need two digit random numbers (1) For Annual Cash Flow (2) For Project Life. The numbers are 53 & 97 and corresponding value of Annual Cash Flow and Project Life are Rs. 3,000 and 9 years respectively.

Simulation Results

<i>Annual Cash Flow</i>			<i>Project Life</i>		
<i>Run</i>	<i>Random No.</i>	<i>Corres. Value of Annual Cash Flow</i>	<i>Random No.</i>	<i>Corres. Value of Project Life</i>	<i>N.P.V.</i>
1	53	3,000	97	9	4277
2	66	3,500	99	10	8507
3	30	2,500	81	7	830
4	19	2,000	09	4	(6660)
5	31	2,500	67	6	(2112)
6	81	3,500	70	7	4038
7	38	3,000	75	7	1604
8	48	3,000	83	7	1604
9	90	4,000	33	5	2164
10	58	3,000	52	6	65

4.2 ADVANTAGES OF SIMULATION ANALYSIS:

Strength lies in Variability. Handle problems characterised by (a) numerous exogenous variables following any kind of distribution. (b) complex inter-relationships among parameters, exogenous variables and endogenous variables. Such problems defy capabilities of analytical methods.

- (1) Compels decision maker to explicitly consider the inter-dependencies and uncertainties featuring the project.

4.3 SHORTCOMINGS

- (1) Difficult to model the project and specify probability distribution of exogenous variables
- (2) Simulation is inherently imprecise. Provides rough approximation of probability distribution of N.P.V. Due to its imprecision, simulation probability distribution may be misleading when a tail of distribution is critical.
- (3) Realistic simulation model being likely to be complex would probably be constructed by management expert and not by the decision maker. Decision maker lacking understanding of the model may not use it.
- (4) Determine N.P.V. in simulation run, risk free discount rate is used. It is done to avoid pre - judging risk, which is reflected in the dispersion of the distribution of N.P.V. The measure of N.P.V. takes a different meaning from its usual value, which is difficult to interpret.

4.4 SENSITIVITY ANALYSIS:-

Also known as "What if" Analysis

Example:

What will happen to N.P.V. if sales are 5,000 units rather than expected 8,000 units or economic life of project is only 5 years against expected life of 8 years.

Procedure:

- (1) Set up relationship between the basic underlying factors (quantity sold, unit Sales Price, life of project etc.) & N.P.V. (Some other criterion of merit).
- (2) Estimate the range of variation & the most likely value of each of the basic underlying factors.
- (3) Study the effect of N.P.V. of variations in the basic variables (One factor is valued at a time.)

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Solution:

$$\text{N.P.V.} = \sum_{t=1}^n \frac{[Q(-P - V) - F - D] (1 - T) + D}{(1+k)^t} + \frac{S}{(1+k)^n} - I$$

Where, N.P.V. = net present value of project,

Q = No. of units sold annually.

P = Selling price per unit.

V = Variable cost per unit.

F = Total fixed costs excluding depreciation & interest.

D = Annual Depreciation charge.

T = Income Tax Rate.

K = Cost of Capital.

n = Life of project (years)

S = Net Salvage value.

I = Initial Cost.

Range & Most likely value of Basic Variables

Variable	Range	Most likely Value
Q	1,000 – 2,000	1,600
P	Rs. 600 – Rs. 1,000	Rs. 750
V	Rs. 300 – Rs. 500	Rs. 400
F	Rs. 1,20,000 – Rs. 1,20,000	Rs. 1,20,000
D	Rs. 1,60,000 – Rs. 1,60,000	Rs. 1,60,000
T	0.60 – 0.60	0.60
k	0.08 – 0.11	0.10
n	5 – 5	5
S	Rs. 4,00,000 – Rs. 4,00,000	Rs. 4,00,000
I	Rs. 12,00,000 – Rs. 12,00,000	Rs. 12,00,000

The impact of variation in each variable on N.P.V., holding other variables constant at their most likely values. For illustration of the nature of analysis, the relationship between (1) k & N.P.V. (2) P & N.P.V.

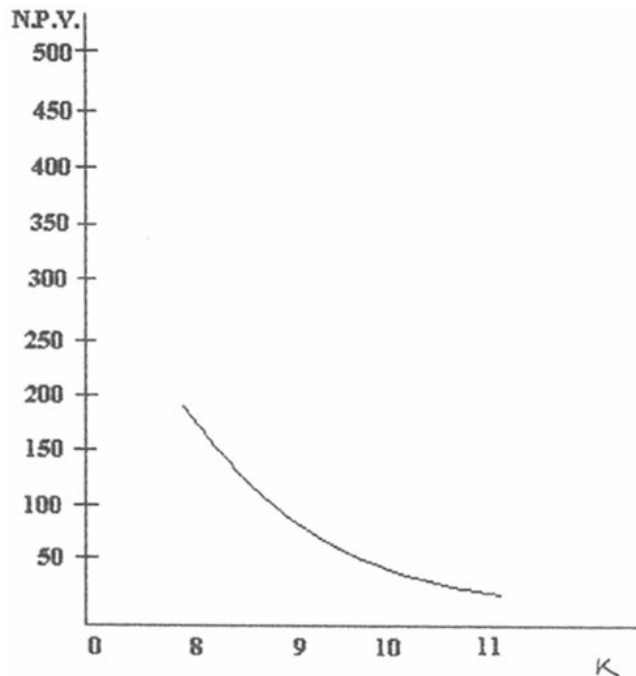
Where, k stands for cost of capital and P stands for selling price per unit.

k & N.P.V.

$$\begin{aligned}
 \text{N.P.V.} &= \sum_{t=1}^5 \{ [1,600(750 - 400) - 1,20,000 - 1,60,000] (1 - 0.6) + 1,60,000 \} / (1+k)^t \\
 &+ 4,00,000 / (1+k)^5 - 12,00,000 \\
 &= \sum_{t=1}^5 [2,72,000 / (1+k)^t] + [4,00,000 / (1+k)^5] - 12,00,000 \\
 &= 11,72,898 + 272,233 - 12,00,000 \\
 &= 2,45,131
 \end{aligned}$$

N.P.V. for various value of K are as follows:

k	8%	9%	10%	11%
N.P.V. (Rs.)	158,329	118,052	79,521	42,692

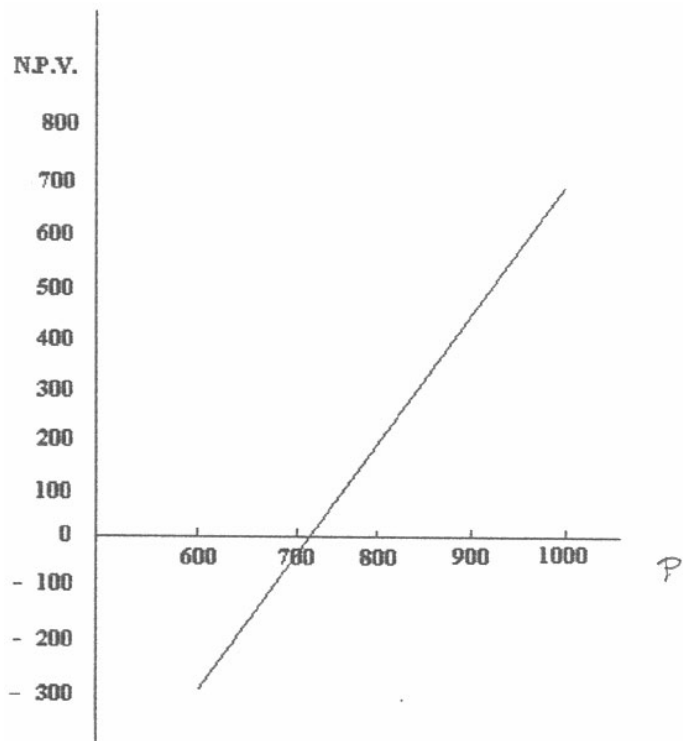


P & N.P.V.

$$\begin{aligned}
 \text{N.P.V.} &= \sum_{t=1}^5 \{ [1,600(P - 400) - 1,20,000 - 1,60,000] (1 - 0.6) + 1,60,000 \} / (1.10)^t \\
 &+ 4,00,000 / (1.10)^5 - 12,00,000 \\
 &= \sum_{t=1}^5 640P / (1.10)^t - \sum_{t=1}^5 2,08,000 / (1.10)^t + 4,00,000 / (1.10)^5 - 12,00,000
 \end{aligned}$$

P	600	700	750	800	900	1000
N.P.V. (Rs.)	(-),2,84,416	(-),41,792	79,520	2,00,832	4,43,456	6,86,080

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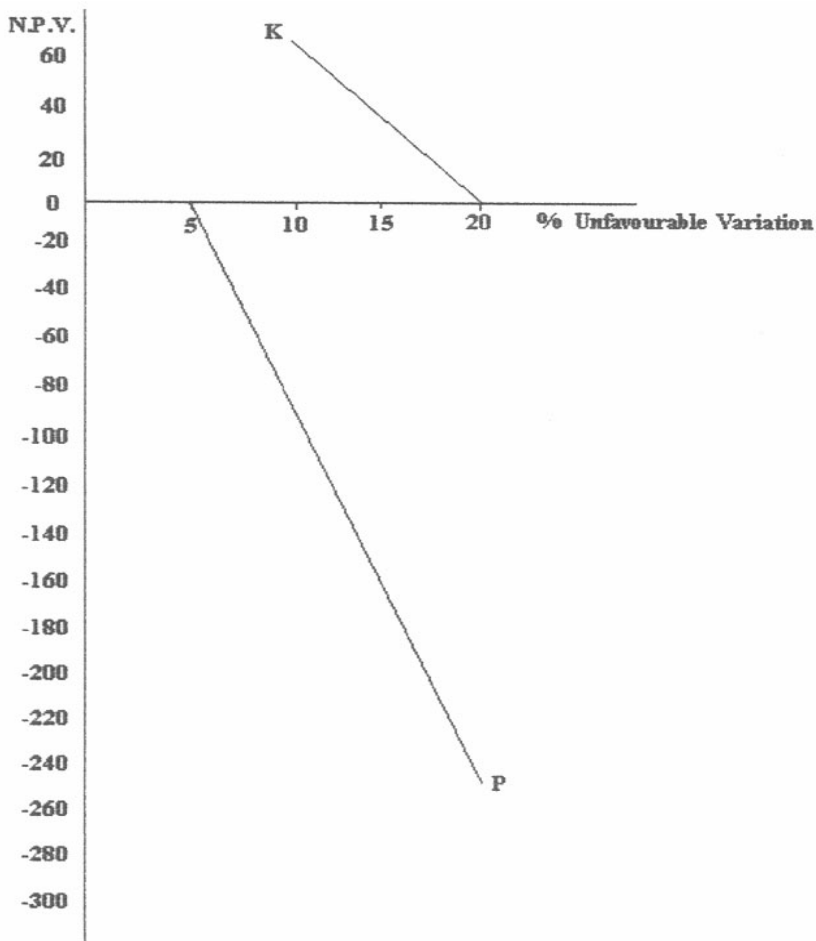
Presenting the results of sensitivity analysis, we are to show how N.P.V. behaves for different percentage of unfavourable change (from their most likely values) in the basis variables. The behaviour of N.P.V. when there is 5%, 10%, 15% & 20% unfavourable change in k, other factors remaining unchanged at their most likely levels is given below.

% of Unfavourable Variation	Value of k	N.P.V.
5	10.5	60,418
10	11.0	42,692
15	11.5	24,681
20	12.0	7,530

The behaviour of N.P.V. when there is 5%, 10% & 20% unfavourable variation in P is given below.

% of Unfavourable Variation	Value of P	N.P.V.
5	713	(10,308)
10	675	(1,02,500)
15	638	(1,92,267)
20	600	(2,84,384)

The behaviour of N.P.V. for various unfavourable % variations of k & P . Such a visual presentation is helpful in identifying variable, which are crucial for the success of the project.



4.4.1 Merits

- (1) Forces management to identify underlying variables and their inter- relationship.
- (2) Shows how robust / vulnerable a project is to changes in underlying variables.
- (3) Indicates the need for further work.. If N.P.V. and I.R.R. is highly sensitive to changes in some variable, it is desirable to gather further information about the variable.

4.4.2 Demerits

- (1) Fail to provide leads - if sensitivity analysis presents a complicated set of switching values, (switching value of a variable is its value for which N.P.V. becomes 0.) it may not shed light on the risk characteristics of the project.

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- (2) Study of impact of variation in one factor at a time, holding other factors constant may not be very meaningful when underlying factors are likely to be inter-related. What sense does it make to consider the effect of variation in price when holding quantity (which is likely to be closely related to price) remains unchanged?

5.0 SELECTION OF PROJECTS

Two methods:

- 1) Risk Adjusted Discount Rate Method.
- 2) Certainty Equivalent Method.

5.1 RISK ADJUSTED DISCOUNT RATE METHOD:

Adjusting discount rate to reflect project risk. If risk of project is greater than, equal to, less than risk of existing investments of firm, discount rate used is higher than, equal to or less than average cost of capital as the case may be.

Risk Adjusted Discount Rate for Project 'k' is given by

$$r_k = i + n + d_k$$

Where,

$i \rightarrow$ risk free rate of interest.

$n \rightarrow$ adjustment for firm's normal risk.

$d_k \rightarrow$ adjustment for different risk of project 'k'.

$i+n \rightarrow$ firm's cost of capital.

d_k is positive/negative depending on how the risk of the project under consideration compares with existing risk of firms. Adjustment for different risk of project 'k' depends on management's perception of project risk and management's attitude towards risk (risk - return preference).

If the project's risk adjusted discount rate (r_k) is specified, the project is accepted if N.P.V. is positive.

$$N.P.V. = \sum_{t=1}^n \frac{A_t}{(1 + r_k)^t} - I$$

$A_t \rightarrow$ expected cash flow for year 't'.

$r_k \rightarrow$ risk adjusted discount rate for project 'k'.

Example:

Investment Rs. 10,00,000

Year	Cash Flow
1	Rs. 2,00,000 ($r_k = 18\%$)
2	Rs. 3,00,000
3	Rs. 4,00,000
4	Rs. 3,00,000
5	Rs. 2,00,000

$$\text{N.P.V.} = 2,00,000 / (1.18) + 3,00,000 / (1.18)^2 + 4,00,000 / (1.18)^3 + 3,00,000 / (1.18)^4 + 2,00,000 / (1.18)^5 - 10,00,000$$

$$= (-) \text{Rs. } 1,29,442$$

Project not feasible.

Firms used different discount rate related to risk factor for different types of investment projects. Discount rate is low for routine replacement investments, moderate for expansion investments and high for new investments.

Limitations:

- (1) Difficult to estimate d_k consistently - determined by adhoc basis.
- (2) Risk increases with time at constant rate - not a valid assumption.

5.2 CERTAINTY EQUIVALENT METHOD

Reflects two aspects:

- (1) Variability of outcomes.
- (2) Attitude towards risk.

Certainty Equivalent Coefficients transform expected values of uncertain flows into their Certainty Equivalents.

$$\text{N.P.V.} = \sum_{t=1}^n \alpha_t \hat{A}_t / (1+i)^t - I$$

$\hat{A}_t \rightarrow$ expected cash flow for year 't'.

$\alpha_t \rightarrow$ certainty equivalent coefficient for cash flow of year 't'.

$i \rightarrow$ risk free interest rate.

$I \rightarrow$ initial investment (no uncertainty assumed).

Example:

Investment Proposal - Rs. 45,00,000

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Year	Expected cash flow	Certainty Equivalent coefficient
1	Rs. 10,00,000	0.90
2	Rs. 15,00,000	0.85
3	Rs. 20,00,000	0.82
4	Rs. 25,00,000	0.78

$i = 5\%$

Calculate N.P.V.

$$\text{N. P. V.} = 10,00,000(.90) / (1.05) + 15,00,000(.85) / (1.05)^2 + 20,00,000(.82) / (1.05)^3 + 25,00,000(.78) / (1.05)^4 - 45,00,000$$

$$= \text{Rs. } 5,34,570$$

Value of Certainty Equivalent Coefficient lies between 0 & 1.

1 - Cash flow is certain or management is risk neutral. In individual situation, cash flows are generally uncertain and managements usually risk averse. Certainty Equivalent Coefficients are typically less than 1.

Certainty Equivalent Method is superior to Risk Adjusted Discount Rate Method as it does not assume that risk increases with time at constant rate. Each year's Certainty Equivalent Coefficient is based on level of risk characterising its cash flow. Despite its soundness, it is not preferable like Risk Adjusted Discount Rate Method. It is difficult to specify a series of Certainty Equivalent Coefficients but simple to adjust discount rates.

6.0 CAPITAL BUDGETING UNDER CAPITAL RATIONING

Availability of funds may be limited because of the difficulty in obtaining funds externally or due to restrictions imposed by management. Investment appraisals under capital rationing should be to maximise N.P.V. of the set of investments selected. Due to disparity in the size of the projects, the objective cannot be fulfilled by merely choosing projects on the basis of individual N.P.V. ranking till the budget is exhausted.

Project	Outlay (Rs.)	N.P.V.	Rating
A	15,00,000	6,00,000	1
B	10,00,000	4,50,000	2
C	8,00,000	5,00,000	3
D	7,00,000	3,00,000	4
E	6,00,000	2,50,000	5

The firm has a capital budget constraint of Rs. 25,00,000. If selection is based on individual N.P.V. ranking projects A & B included in capital budget exhausts the amount of Rs. 25,00,000. On, the other hand, if projects B, C, D are selected they can be accommodated with a capital budget constraint of Rs. 25,00,000 having a combined N.P.V. of Rs. 12,50,000 against combined N.P.V. of Rs. 10,50,000 for projects A & B.

Combinations Approach

- (1) Find all combinations of projects, which are feasible given the capital budget restriction and project interdependencies.
- (2) Select the feasible combination having highest N.P.V.

Firm has capital budget constraint of Rs. 30,00,000

<i>Project</i>	<i>Outlay (Rs. In lakhs)</i>	<i>N.P.V. (Rs. In lakhs)</i>
A	18.0	7.5
B	15.0	6.0
C	12.0	5.0
D	7.5	3.6
E	6.0	3.0

Projects B & C mutually exclusive while other projects are interdependent. Consideration of feasible combination & their N.P.V.

<i>Feasible Combination</i>	<i>Outlay (Rs. In lakhs)</i>	<i>N.P.V. (Rs. In lakhs)</i>
A	18.0	7.5
B	15.0	6.0
C	12.0	5.0
D	7.5	3.6
E	6.0	3.0
A & C	30.0	12.5
A & D	25.5	11.1
A & E	24.0	10.5
B & D	22.5	9.6
B & E	21.0	9.0
C & D	19.5	8.6
C & E	18.0	8.0
B, D & E	28.5	12.6
C, D & E	25.5	11.6

Desirable feasible combination of projects consists of B, D & E giving highest N.P.V.

7.0 CAPITAL BUDGETING UNDER INFLATION

Adjustment for inflation is a necessity for capital investment appraisal. This is because inflation will raise the revenues & costs of the project. The net revenues after adjustment for inflation shall be equal to net revenues in current terms. The considerations, which cause distortion, are:

- (1) Depreciation charges are based on historical costs. Tax benefits accruing from depreciation charges do not keep parity with inflation.
- (2) Costs of capital considered for investment appraisals contain a premium for anticipated inflation.

1. Annual after tax cash inflow of a project is equal to

$$(R - C - D)(1 - T) + D = (R - C)(1 - T) + DT$$

Where, $R \rightarrow$ Revenue from project, $C \rightarrow$ Costs (apart from depreciation) relating to the project, $D \rightarrow$ Depreciation charges, $T \rightarrow$ Tax Rate.

Here $(R - C)(1 - T)$ tends to move in line with inflation as inflation influences revenues & costs similarly. DT does not depend on inflation as depreciation charges are based on historical costs. The effect of inflation is to reduce the actual rate of return.

Example:

Initial outlay of a project	– Rs. 80,000
Expected life	– 4 years
Salvage value	– Nil
Annual revenues	– Rs. 60,000
Annual costs other than depreciation	– Rs. 20,000
Tax Rate	– 50%

Depreciation on straight-line basis presuming as if there is no inflation.

Year	1	2	3	4
Revenues	Rs. 60,000	Rs. 60,000	Rs. 60,000	Rs. 60,000
Costs other than depreciation	Rs. 20,000	Rs. 20,000	Rs. 20,000	Rs. 20,000
Depreciation	Rs. 20,000	Rs. 20,000	Rs. 20,000	Rs. 20,000
Taxable profit	Rs. 20,000	Rs. 20,000	Rs. 20,000	Rs. 20,000
Tax	Rs. 10,000	Rs. 10,000	Rs. 10,000	Rs. 10,000
Profit after tax	Rs. 10,000	Rs. 10,000	Rs. 10,000	Rs. 10,000
Net cash inflow	Rs. 30,000	Rs. 30,000	Rs. 30,000	Rs. 30,000

If there is inflation @ 10% applicable to revenues & cost of project.

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
Revenues	Rs. 66,000	Rs. 72,600	Rs. 79,860	Rs. 87,846
Costs other than depreciation	Rs. 22,000	Rs. 24,200	Rs. 26,620	Rs. 29,282
Depreciation	Rs. 20,000	Rs. 20,000	Rs. 20,000	Rs. 20,000
Taxable profit	Rs. 24,000	Rs. 28,400	Rs. 33,240	Rs. 38,564
Tax	Rs. 12,000	Rs. 14,200	Rs. 16,620	Rs. 19,282
Profit after tax	Rs. 12,000	Rs. 14,200	Rs. 16,620	Rs. 19,282
Net cash inflow	Rs. 32,000	Rs. 34,200	Rs. 36,620	Rs. 39,282

The actual net cash flow stream after deflating for inflation rate of 10% .

RealNet Cash Flow	Rs. 29,091	Rs. 28,264	Rs. 27,513	Rs. 26,830
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So actual net cash flows are less than net cash flow if there is no inflation.

2. Due to inflation investors require the normal rate of interest to be equal to the actual required rate of return + Rate of inflation.

$$R_N = R_R + P$$

$R_N \rightarrow$ required rate of return in nominal terms.

$R_R \rightarrow$ required rate of return in real terms.

$P \rightarrow$ anticipated inflation rate.

If cost of capital (required rate of return) contains a premium for anticipated inflation, the inflation factor has to be reflected in the projected cash flows.

If there is no inflation, consider the following case:

Initial Outlay of project	Rs. 40,000
Annual revenues	Rs. 30,000
Annual costs excluding depreciation	Rs. 10,000
Useful life	4 years
Salvage value	Nil
Tax Rate	50%
Cost of Capital	12% (Including inflation premium of 5%)

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Year	1	2	3	4
Revenues	Rs. 30,000	Rs. 30,000	Rs. 30,000	Rs. 30,000
Costs other than depreciation	Rs. 10,000	Rs. 10,000	Rs. 10,000	Rs. 10,000
Depreciation	Rs. 10,000	Rs. 10,000	Rs. 10,000	Rs. 10,000
Taxable profit	Rs. 10,000	Rs. 10,000	Rs. 10,000	Rs. 10,000
Tax	Rs. 5,000	Rs. 5,000	Rs. 5,000	Rs. 5,000
Profit after tax	Rs. 5,000	Rs. 5,000	Rs. 5,000	Rs. 5,000
Net cash inflow	Rs. 15,000	Rs. 15,000	Rs. 15,000	Rs. 15,000

N.P.V. using inflation adjusted discount rate of 12%

$$= 15,000 / 1.12 + 15,000 / (1.12)^2 + 15,000 / (1.12)^3 + 15,000 / (1.12)^4 - 40,000$$

$$= \text{Rs. } 5,561$$

If there is inflation of 10% (using revenue & costs to rise in that respect).

Year	1	2	3	4
Revenues	Rs. 33,000	Rs. 36,300	Rs. 39,930	Rs. 43,923
Costs other than depreciation	Rs. 11,000	Rs. 12,100	Rs. 13,310	Rs. 14,641
Depreciation	Rs. 10,000	Rs. 10,000	Rs. 10,000	Rs. 10,000
Taxable profit	Rs. 12,000	Rs. 14,200	Rs. 16,620	Rs. 19,282
Tax	Rs. 6,000	Rs. 7,100	Rs. 8,310	Rs. 9,641
Profit after tax	Rs. 6,000	Rs. 7,100	Rs. 8,310	Rs. 9,641
Net cash inflow	Rs. 16,000	Rs. 17,100	Rs. 18,310	Rs. 19,641

N.P.V. after applying inflation adjusted discount rate (12%) to inflation adjusted cash flow stream.

$$= 16,000 / 1.12 + 17,100 / (1.12)^2 + 18,310 / (1.12)^3 + 19,641 / (1.12)^4 - 40,000$$

$$= \text{Rs. } 13,433$$

which is higher than N.P.V. obtained without adjusting inflation factor for cash flow stream.

N.P.V. based on consideration of inflation in revenues & costs is given by (effect of inflation on projected cash flows when discount factor contains inflation premium).

$$\text{N.P.V.} = \sum_{t=1}^n \{ [R_t \cdot \sum_{r=1}^t (1+i_r) - C_t \cdot \sum_{r=1}^t (1+i_r)] \} (1-T) + D_t T / (1+k)^t - I_0$$

$R_t \rightarrow$ revenues for the year 't' with no inflation.

$i_r \rightarrow$ annual inflation rate in revenues for 'r' th year.

$C_t \rightarrow$ costs for year 't' with no inflation.

$i_d \rightarrow$ annual inflation rate of costs for year 'r'.

$T \rightarrow$ tax rate.

$D_t \rightarrow$ depreciation charge for year 't'.

$I_0 \rightarrow$ initial outlay.

$K \rightarrow$ cost of capital (with inflation premium).

Example:

XYZ Ltd. requires Rs. 8,00,000 for an unit. Useful life of project - 4 years. Salvage value - Nil. Depreciation Charge Rs. 2,00,000 p.a. Expected revenues & costs (excluding depreciation) ignoring inflation.

Year	1	2	3	4
Revenues	Rs. 6,00,000	Rs. 7,00,000	Rs. 8,00,000	Rs. 8,00,000
Costs	Rs. 3,00,000	Rs. 4,00,000	Rs. 4,00,000	Rs. 4,00,000

Tax Rate 60% cost of capital 10%.

Calculate N.P.V. of the project if inflation rates for revenues & costs are:

Year	Revenues	Costs
1	10%	12%
2	9%	10%
3	8%	9%
4	7%	8%

N.P.V. =

$$\begin{aligned}
 & \{ [6,00,000(1.10) - 3,00,000(1.12)] (1-0.6) + 2,00,000 \times 0.6 \} / 1.10 + \\
 & \{ [7,00,000(1.10)(1.09) - 4,00,000(1.12)(1.10)] (1-0.6) + 2,00,000 \times 0.6 \} / (1.10)^2 + \\
 & \{ [8,00,000(1.10)(1.09)(1.08) - 4,00,000(1.12)(1.10)(1.09)] (1-0.6) + 2,00,000 \times 0.6 \} / (1.10)^3 + \\
 & \{ [8,00,000(1.10)(1.09)(1.08)(1.07) - 4,00,000(1.12)(1.10)(1.09)(1.08)] (1-0.6) + 2,00,000 \times 0.6 \} / (1.10)^4 - 8,00,000 \\
 & = 2,26,909 + 2,13,719 + 2,40,055 + 2,26,303 - 8,00,000 = \text{Rs. } 106,986
 \end{aligned}$$

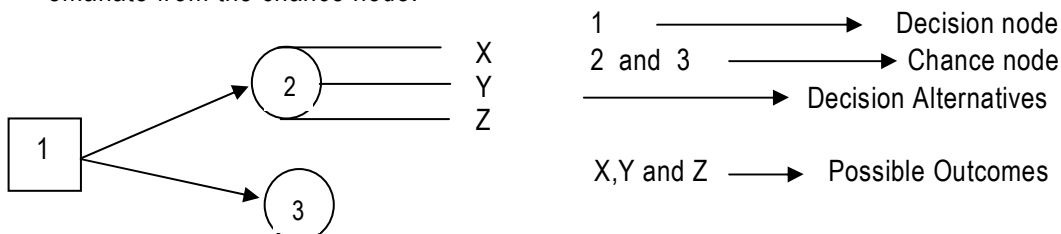
8.0 DECISION TREES

In Capital Budgeting, the decision taker has to identify and find out the various alternatives available to an investment decision. By drawing a decision tree, the alterations are highlighted through a diagram, giving the range of possible outcomes. The stages set for drawing a decision tree is based on the following rules.

1. It begins with a decision point, also known as decision node, represented by a rectangle while the outcome point, also known as chance node, denoted by a circle.
2. Decision alternatives are shown by a straight line starting from the decision node.
3. The Decision Tree Diagram is drawn from left to right. Rectangles and circles have to be next sequentially numbered.
4. Values and Probabilities for each branch are to be incorporated next.

The Value of each circle and each rectangle is computed by evaluating from right to left. This procedure is carried out from the last decision in the sequence and goes on working back to the first for each of the possible decisions. The following rules have been set for such evaluation.

- (a) The expected monetary value (EMV) at the chance node with branches emanating from a circle is the aggregate of the expected values of the various branches that emanate from the chance node.

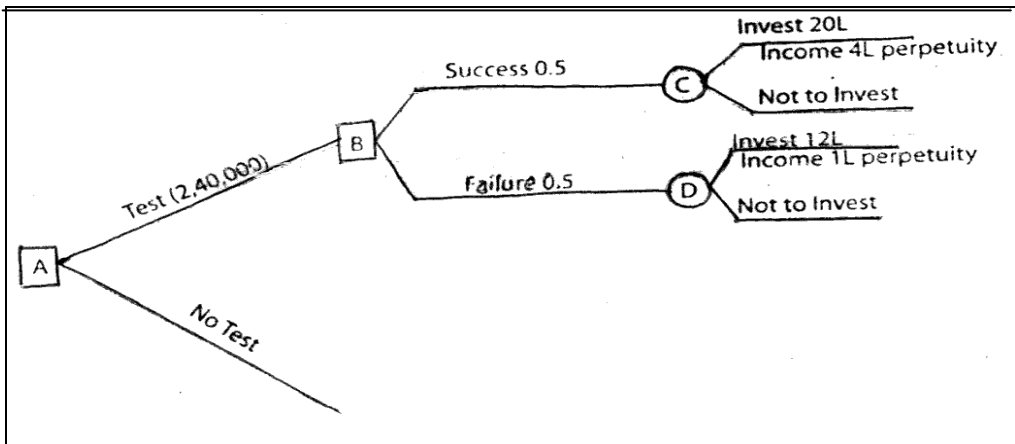


The expected value at a decision node with branches emanating from a rectangle is the highest amongst the expected values of the various branches that emanate from the decision node.

Problem

L & R Limited wishes to develop new virus-cleaner software. The cost of the pilot project would be Rs.2,40,000. Presently, the chances of the product being successfully launched on a commercial scale are rated at 50% . In case it does succeed. L&R can invest a sum of Rs. 20 lacs to market the product. Such an effort can generate perpetually, an annual net after tax cash income of Rs. 4 lacs. Even if the commercial launch fails, they can make an investment of a smaller amount of Rs. 12 lacs with the hope of gaining perpetually a sum of Rs. 1 lac. Evaluate the proposal, adopting a decision tree approach. The discount rate is 10%.

Decision tree diagram is given below



Evaluation

At C : The choice is between investing Rs. 20 lacs for a perpetual benefit of Rs. 4 lacs and not to invest. The preferred choice is to invest, since the capitalized value of benefit of Rs. 4 lacs (at 10%) adjusted for the investment of Rs. 20 lacs, yields a net benefit of Rs. 20 lacs.

At D: The choice is between investing Rs. 12 lacs, for a similar perpetual benefit of Rs. 1 lac. and not to invest. Here the invested amount is greater than capitalized value of benefit at Rs. 10 lacs. There is a negative benefit of Rs. 2 lacs. Therefore, it would not be prudent to invest.

At B : Evaluation of EMV is as under (Rs. in lacs).

Outcome	Amount (Rs)	Probability	Result (Rs.)
Success	20.00	0.50	10.00
Failure	0.00	0.50	00.00
Net result			10.00

EMV at B is, therefore, Rs.10 lacs.

At A : Decision is to be taken based on preferences between two alternatives. The first is to test, by investing Rs, 2,40,000 and reap a benefit of Rs. 10 lacs. The second is not to test, and thereby losing the opportunity of a possible gain.

The preferred choice is, therefore, investing a sum of Rs. 2,40,000/- and undertaking the test.

9.0 CAPITAL ASSET PRICING MODEL APPROACH TO CAPITAL BUDGETING

The Capital Asset Pricing Model is based on the presumption that total risk of an investment consists of two components (1) Systematic risk (2) Unsystematic risk.

Systematic risk arises from the effect of economic factors e.g. inflation, governmental expenditure, money supply, having a bearing on the existence of every firm although the level of effect vary from firm to firm Systematic risk cannot be overcome by diversification. Unsystematic risk arises from factors which are specific to a firm: development of a new process, plant breakdown, access to market, etc. It can be eliminated by diversification.

To measure systematic risk and unsystematic risk, the regression relationship used is:

$$R_{jt} = \alpha_j + \beta_j R_{mt} - e_{jt}$$

Where, R_{jt} = return on investment j (a project) in period t

R_{mt} = return on the market portfolio in period t

α_j = intercept of the linear regression relationship between R_{jt} and

R_{mt}

β_j = slope of the linear regression relationship between R_{jt} and R_{mt}

The properties assigned to the error term e_{jt} are:

- It has an expected value of zero and a finite variance:

$$E(e_{jt}) = 0$$

$$\text{Var}(e_{jt}) = Q^2$$

- It is not correlated with the return on the market portfolio:
- $\text{Cov}(e_{jt}, R_{mt}) = 0$
- It is not correlated over time:

$$\text{Cov}(e_{jt}, e_{jt+n}) = 0 \text{ for all values of } n$$

The capital asset pricing model is based on the assumption that the error term for project j is not correlated with the error term for any other project.

$$\text{i.e., } \text{Cov}(e_{it}, e_{jt}) = 0$$

The expected value and variance of R_{jt} are:

$$E(R_{jt}) = E(\alpha_j + \beta_j R_{mt} + e_{jt}) = E(\alpha_j) + E(\beta_j) E(R_{mt}) + E(e_{jt})$$

$$= \alpha_j + \beta_j E(R_{mt}) + 0 = \alpha_j + \beta_j E(R_{mt})$$

$$\text{Var}(R_{jt}) = \text{Var}(\alpha_j + \beta_j R_{mt} + e_{jt}) = E[(\alpha_j + \beta_j R_{mt} + e_{jt}) - E(\alpha_j + \beta_j R_{mt} + e_{jt})]^2$$

$$\begin{aligned}
 &= E [\alpha_j + \beta_j R_{mt} + e_{jt} - \alpha_j - \beta_j E(R_{mt})]^2 = E [\beta_j(R_{mt} - E(R_{mt})) + e_{jt}]^2 \\
 &= E [\beta_j^2 (R_{mt} - E(R_{mt}))^2 + e_{jt}^2 + 2\beta_j (R_{mt} - E(R_{mt})) e_{jt}] \\
 &= E(\beta_j)^2 E(R_{mt} - E(R_{mt}))^2 + E(e_{jt}^2) + 2E(\beta_j) E(R_{mt} - E(R_{mt}))E(e_{jt}) \\
 &= \beta_j^2 \sigma_m^2 + Q^2 + 0 = \beta_j^2 \sigma_m^2 + Q^2
 \end{aligned}$$

The total risk associated with investment j measured by its variance is the sum of two components: (i) Risk associated with the responsiveness of the return of the investment to market index: $\beta_j^2 \sigma_m^2$ (ii) Risk associated with the error term: Q^2 . (i) represents systematic risk and (ii) represents unsystematic risk. Systematic risk arises from the responsiveness of the return of the projected changes in economic activity (measured by R_{mt}) which influences the return on all other investments. Thus, systematic risk cannot be diversified. Unsystematic risk, under capital asset pricing model, indicates that error terms of investments are uncorrelated and can be eliminated by diversification. So the risk, as per the capital asset pricing model, is the systematic risk. Also it is known as non-diversifiable risk.

To measure the systematic risk of a project, the slope of the regression is necessary. The estimate of the slope of the regression model is:

$$\beta_j = \rho_{jm} \sigma_j \sigma_m / \sigma_m^2$$

Here β_j = estimate of the slope in the regression model

ρ_{jm} = coefficient of correlation between the return on investment j
and the return on investment m

σ_j = standard deviation of the return on investment j

σ_m = standard deviation of the return on market portfolio

9.1 ESTIMATING THE BETA OF A CAPITAL PROJECT

The procedure consists of finding the regression relationship between the series of one period return on the security and the series of one period return on the market index.

While applying this procedure to determine the beta of a capital project, a problem arises. The profitability of a capital project is measured by its net present value or internal rate of return. These measures involving multi-period time frames are not compatible with the single period return calculated for the market index. Alternatives suggested are:

- (a) *Calculation of Project Beta on the Project's Market Values* One-period return of a project.

$$R_{jt} = (A_{jt} + V_{jt} - V_{j,t-1}) / V_{j,t-1}$$

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Where R_{jt} = return on project j for period t
 A_{jt} = cash flow of project j for period t
 V_{jt} = market value of project j at the end of period t
 $V_{j,t-1}$ = market value of project j at the end of period $t - 1$

Estimating the value of the project at the end of the period is a difficult task.

- (b) *Development of Beta on the Basis of Accounting Data* An accounting measure of annual return for the project, i.e. return on assets, is regressed on an economy-wide index of returns to obtain a measure for beta. It uses data which is easily available. Studies have shown that the relationship between accounting and market beta for companies is statistically significant. But, the relationship is not strong enough to warrant the use of accounting betas as substitutes for market betas.
- (c) *Use of Beta of a Company whose Operations are Similar to that of the Proposed Project* If the proposed project is similar to some existing company, the beta of the latter can be used as a proxy for the beta of the proposed project.

9.2 PROJECT SELECTION

The relationship between risk (as measured by beta) and return is to be determined as per the capital asset pricing model. This relationship is given by the security market line.

$$R_z = R_f + \beta_z [E (R_m) - R_f]$$

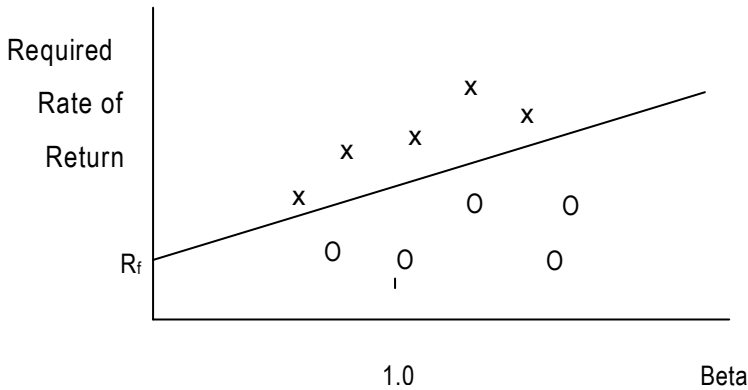
where R_z = rate of return required on project z
 R_f = risk-free rate of return
 β_z = beta of project z
 $E(R_m)$ = Expected rate of return on market portfolio

Since the beta of market portfolio, β_m , is 1, $[E (R_m) - R_f]$ may be regarded as the price per unit of risk.

Required rate of return
on project z = Risk free rate of return – Risk premium
= Risk free Level of risk Price per
rate of + for project × unit of
return z risk

if the expected rate of return for a project exceeds its required rate of return as per the security market line relationship, the project is worthwhile. If not, the project is not worthwhile. In the diagram, projects lying above the security market line marked by X's,

are acceptable and projects lying below the security market line, marked by O's, are not acceptable.



A project is acceptable if its expected risk premium equalised for its risk exceeds the market risk premium. A project z is acceptable when:

$$[E(R_z) - R_f] / \beta_z > E(R_m) - R_f$$

10.0 REPLACEMENT DECISION

Capital budgeting refers to the process we use to make decisions concerning investments in the long-term assets of the firm. The general idea is that the capital, or long-term funds, raised by the firms are used to invest in assets that will enable the firm to generate revenues several years into the future. Often the funds raised to invest in such assets are not unrestricted, or infinitely available; thus the firm must budget how these funds are invested. Among various capital budgeting decision, Replacement decision is one of the most important classification of capital budgeting.

Replacement decision—a decision concerning whether an existing asset should be replaced by a newer version of the same machine or even a different type of machine that does the same thing as the existing machine. Such replacements are generally made to maintain existing levels of operations, although profitability might change due to changes in expenses (that is, the new machine might be either more expensive or cheaper to operate than the existing machine).

Replacement analysis—evaluation of replacement projects is slightly more involved compared to expansion projects because an existing asset is being replaced. When identifying the cash flows for replacement projects, keep in mind that the cash flows associated with the existing (replaced) asset will no longer exist if the new asset is purchased. Therefore, we must not only determine the cash flows that the new asset will generate, but we must also determine the effect of eliminating the cash flows generated by the replaced asset. For example, if a new asset that will produce cash sales equal to

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Rs.100,000 per year is purchased to replace an existing asset that is generating cash sales equal to Rs.75,000, then the incremental, or marginal, cash flow related to sales is Rs.25,000. Likewise, if the asset that is replaced can be sold for Rs.350,000, then the purchase price of the new asset effectively is Rs.350,000 less than its invoice price. In other words, for replacement decisions, we must determine the overall net effect of purchasing a new asset to replace an existing asset—the cash flows associated with the old asset will be replaced with the cash flows associated with the new asset. Two items that you must remember to include when determining the incremental cash flows are depreciation—not because it is a cash flow, but because it affects cash flows through taxes—and taxes, both of which generally change when an older asset is replaced with a newer asset.

Therefore analysis of replacement decision follows certain steps:

Step I. Net cash outflow (assumed at current time):

- a. Book value of old system - market value of old system = operating profit/loss from sale
- b. Operating profit/loss x tax rate = Tax payable/savings from sale
- c. Cost of new system - (tax payable/savings from sale + market value of old system) =
Net cash outflow

Step.II. Estimated change in cash flows per year if replacement decision is implemented

Change in cash flow = ((Change in sales + Change in operating costs)-Change in depreciation)) (1-tax rate) + Change in depreciation

Step III. Present value of benefits = Present value of yearly cash flows + Present value of estimated salvage of new system

Step IV. Present value of costs = Net cash outflow

Step V. Net present value = Present value of benefits - Present value of costs

Step VI. Decision rule: accept when present value of benefits > present value of costs.

Reject when the opposite is true.

Illustration: A Company named Roby's cube decided to replace the existing Computer system of their organisation. Original cost of old system was Rs.25,000 and it was installed 5 years ago. Current market value of old system is Rs.5,000. Depreciation of the old system was charged with life of 10 years Depreciation of the new system will be charged with life over 5 years. Estimated Salvage value of the old system was Nil. Present cost of the new system is Rs.50,000. Estimated Salvage value of the new system is Rs.1,000. Estimated cost savings with new system is Rs.5,000 per year. Increase in sales with new system is assumed at 10% per year based on original total sales of

Rs.100000. Company follows straight line method of depreciation. Cost of capital of the company is 10% whereas tax rate is 30%.

Solution:

Step I. Net cash outflow (assumed at current time):

- a. Book value of old system - market value of old system = operating profit/loss from sale
Or, $(25000 - 5 \times 2500) - 5000 = 7500$ (loss)
- b. Operating profit/loss \times tax rate = Tax payable/savings from sale
Or, $7500 \times 0.30 = 2250$
- c. Cost of new system - (tax payable/savings from sale + market value of old system) =
Net cash outflow
Or, $50000 - (2250 + 5000) = 42750$

Step II. Estimated change in cash flows per year if replacement decision is implemented

Change in cash flow = ((Change in sales + Change in operating costs) - Change in depreciation) $(1 - \text{tax rate})$ + Change in depreciation

Or, $[100000 \times 0.1 + 5000 - (49000/5 - 25000/10)] (1 - 0.3) + (49000/5 - 25000/10)$

Or, 12690

Step III. Present value of benefits = Present value of yearly cash flows + Present value of estimated salvage of new system

Or, $12690 \times \text{PVIFA}(10\%, 5) + 1000 \times \text{PVIF}(10\%, 5)$

Or, 48723

Step IV. Present value of costs = Net cash outflow

Or, 42750

Step V. Net present value = Present value of benefits - Present value of costs

Or, $48723 - 42750$

Or, 5973

Step VI. Decision rule: accept when present value of benefits $>$ present value of costs.

Reject when the opposite is true. Or, ACCEPT.

11.0 REAL OPTION IN CAPITAL BUDGETING*

The traditional measure of investment decision criterion, NPV, does not take into account the value of options inherent in capital budgeting. This may cause selection of projects

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with positive NPVs and no managerial flexibility over projects with lower NPVs and greater flexibility.

Source: Taken from Bruner, Robert F, "Supplemental Note 2," for "Diamond Chemicals PLC (A) and (B)," in "Case Studies in Finance," McGraw-Hill Irwin, 2003 and a.damodar.stern.nyu.edu.

Managerial flexibility is not the only source of real options. Bruner suggests that investments may also create managerial commitment contingent upon future events.

Not every manager ignores valuable real options. Damodaran (2000) argue that managers undertake negative NPV investments by suggesting that the presence of real options makes them valuable.

An option gives the holder of the option the right, but not the obligation to buy or sell a given amount of underlying asset at a fixed price (strike price or exercise price) at or before the expiration date of the option. The most important part of this clause is the "right, but not the obligation" to take an action. The two basic types of options are calls and puts. A call option gives the buyer the right to purchase the underlying assets and a put option gives the buyer the right to sell the underlying asset. These are "long" positions since the holder of the option has the right. The writer of the option maintains a short position. If the holder of the option decides to exercise his/her option then the option writer (short position holder) has to honor the option. This should make sense because long options require upfront payments (value of option) to acquire the option.

Options in Capital Budgeting:

The following is a list of options that may exist in a capital budgeting project.

Long call:

- Right to invest at some future date, at a certain price
- Generally, any flexibility to invest, to enter a business.

Long put:

- Right to sell at some future date at a certain price
- Right to abandon at some future date at zero or some certain price
- Generally, any flexibility to disinvest, to exit from a business.

Short call:

- Promise to sell if the counterparty wants to buy
- Generally, any commitment to disinvest upon the action of another party

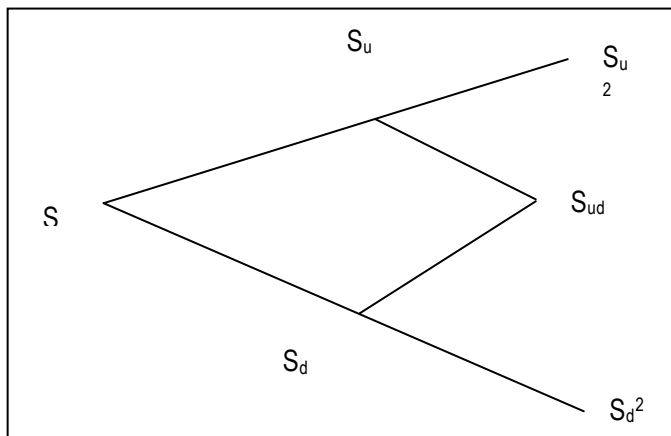
Short put:

- Promise to buy if the counterparty wants to sell
- Generally, any commitment to invest upon the action of another party

Three of the most common real call options in capital budgeting include: (1) option to delay until key variables change favorably, (2) option to expand if a project turns out to be more promising and (3) option to abandon if worse case occurs.

The Binomial Model of Option pricing:

The binomial option-pricing model is based upon a simple formulation for the asset price process, in which the asset, in any time period, can move to one of two possible prices. The general formulation of a stock price process that follows the binomial is shown in the figure below.



In this figure, S is the current stock price; the price moves up to S_u with probability p and down to S_d with probability $1-p$ in any time period.

Creating A Replicating Portfolio

The objective in creating a replicating portfolio is to use a combination of risk-free borrowing/lending and the underlying asset to create the same cash flows as the option being valued. The principles of arbitrage apply here, and the value of the option must be equal to the value of the replicating portfolio. In the case of the general formulation above, where stock prices can either move up to S_u or down to S_d in any time period, the replicating portfolio for a call with strike price K will involve borrowing $Rs.B$ and acquiring of the underlying asset, where:

$$\Delta = \text{Number of units of the underlying asset bought} = (C_u - C_d) / (S_u - S_d)$$

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where,

C_u = Value of the call if the stock price is S_u

C_d = Value of the call if the stock price is S_d

In a multi-period binomial process, the valuation has to proceed iteratively; i.e., starting with the last time period and moving backwards in time until the current point in time. The portfolios replicating the option are created at each step and valued, providing the values for the option in that time period. The final output from the binomial option pricing model is a statement of the value of the option in terms of the replicating portfolio, composed of shares (option delta) of the underlying asset and risk-free borrowing/lending.

Value of the call = Current value of underlying asset * Option Delta - Borrowing needed to replicate the option

The Black-Scholes Model

While the binomial model provides an intuitive feel for the determinants of option value, it requires a large number of inputs, in terms of expected future prices at each node. The Black-Scholes model is not an alternative to the binomial model; rather, it is one limiting case of the binomial.

The binomial model is a discrete-time model for asset price movements, including a time interval (t) between price movements. As the time interval is shortened, the limiting distribution, as t approaches 0, can take one of two forms. If as t approaches 0, price changes become smaller, the limiting distribution is the normal distribution and the price process is a continuous one. If as t approaches 0, price changes remain large, the limiting distribution is the Poisson distribution, i.e., a distribution that allows for price jumps. The Black-Scholes model applies when the limiting distribution is the normal distribution, and it explicitly assumes that the price process is continuous and that there are no jumps in asset prices.

THE MODEL

The version of the model presented by Black and Scholes was designed to value European options, which were dividend-protected. Thus, neither the possibility of early exercise nor the payment of dividends affects the value of options in this model.

The value of a call option in the Black-Scholes model can be written as a function of the following variables:

S = Current value of the underlying asset

K = Strike price of the option

t = Life to expiration of the option

r = Riskless interest rate corresponding to the life of the option

σ^2 = Variance in the \ln (value) of the underlying asset

The model itself can be written as:

$$\text{Value of call} = S N(d_1) - K e^{-rt} N(d_2)$$

where

$$d_1 = [\ln(S/K) + (r + \sigma^2/2)t] / \sigma\sqrt{t} \text{ and } d_2 = d_1 - \sigma\sqrt{t}$$

The value of a put is can be derived from the value of a call with the same strike price and the same expiration date through an arbitrage relationship that specifies that:

$$C - P = S - K e^{-rt}$$

where C is the value of the call and P is the value of the put (with the same life and exercise price).

Real Options in Capital Budgeting: Formulation of Option to Exchange One Asset for Another – Option to Switch

$$\text{Value of Option to Switch} = P_G N\{d_1\} - P_J N\{d_2\}$$

Where,

P_G = exercise price of making investment G

P_J = exercise price of making investment J

V_G = standard deviation of the uncertain returns on investment G

V_J = standard deviation of the uncertain returns on investment J

ρ = correlation of NPV_G and NPV_J

$V^2 = V_J^2 + V_G^2 - 2V_G V_J \rho$ = variance of return in the exchange, and

T = term to maturity in years

$$d_1 = [\ln(P_G/P_J) + v^2 T/2] / V\sqrt{T}$$

$$d_2 = d_1 - V\sqrt{T}$$

The $N\{d_1\}$ and $N\{d_2\}$ are the cumulative normal distribution for a given z value of d . This can be obtained with “=NORMSDIST (d_1 or d_2).”

An Illustration*

Assume that you are interested in acquiring the exclusive rights to market a new product that will make it easier for people to access their email on the road. If you do acquire the rights to the product, you estimate that it will cost you \$ 500 million up-front to set up the infrastructure needed to provide the service. Based upon your current projections, you

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believe that the service will generate only \$ 100 million in after-tax cash flows each year. In addition, you expect to operate without serious competition for the next 5 years.

From a purely static standpoint, the net present value of this project can be computed by taking the present value of the expected cash flows over the next 5 years.

Assuming a discount rate of 15% (based on the riskiness of this project), we obtain the following net present value for the project:

$$\begin{aligned}\text{NPV of project} &= - 500 \text{ million} + \$ 100 \text{ million (PV of annuity, 15\%, 5 years)} \\ &= - 500 \text{ million} + \$ 335 \text{ million} = - \$ 165 \text{ million}\end{aligned}$$

This project has a negative net present value.

The biggest source of uncertainty on this project is the number of people who will be interested in this product. While the current market tests indicate that you will capture a relatively small number of business travelers as your customers, the test also indicates a possibility that the potential market could get much larger over time. In fact, a simulation of the project's cash flows yields a standard deviation of the 42% in the present value of the cash flows, with an expected value of \$ 335 million.

To value the exclusive rights to this project, we first define the inputs to the option-pricing model:

Value of the Underlying Asset (S) = PV of Cash Flows from Project if introduced now =
\$ 335 million

Strike Price (K) = Initial Investment needed to introduce the product = \$ 500 million
Variance in Underlying Asset's Value = $0.42^2 = 0.1764$

Time to expiration = Period of exclusive rights to product = 5 years

Dividend Yield = $1/\text{Life of the patent} = 1/5 = 0.20$

Assume that the 5-year riskless rate is 5%. The value of the option can be estimated as follows:

$$\text{Call Value} = 335 \exp(-0.2)(5) (0.2250) - 500 (\exp(-0.05)(5) (0.0451)) = \$ 10.18 \text{ million}$$

The right to this product, which has a negative net present value if introduced today, is \$10.18 million. Note though that the likelihood that this project will become viable before expiration is low (4.5%-22.5%) as measured by $N(d1)$ and $N(d2)$.

Source: Taken from "The Promise & Peril of Real Options" by Aswath Damodaran.

Self-Examination Questions

1. What is Project Planning and Capital Budgeting? Explain the concept "feasibility study".
2. How can an investment decision be taken? Outline various techniques used for this purpose.

3. What are the different steps to be taken in strategic capital investment process?
4. What are the various assumptions which needs to be considered in DCF techniques of Capital Budgeting?
5. What are the various non-financial factors which influence Capital Budgeting decisions?
6. How do the following factors affects the Capital Budgeting decisions?
 - (i) Inflation.
 - (ii) Taxation.
 - (iii) Investment incentives.
7. Why capital rationing is undertaken? What are the ways of Capital Rationing?
8. A firm is considering the introduction of a new product which will have a life of five years. Two alternatives of promoting the product have been identified:

Alternative 1

This will involve employing a large number of agents. An immediate expenditure of Rs.5,00,000 will be required to advertise the product. This will produce net annual cash inflows of Rs.3,00,000 at the end of each of the subsequent five years. However, the agents will have to be paid Rs.50,000 each year. On termination of the contract, the agents will have to be paid a lump sum of Rs.1,00,000 at the end of the fifth year.

Alternative 2

Under this alternative, the firm will not employ agents but will sell directly to the consumers. The initial expenditure on advertising will be Rs.2,50,000. This will bring in cash inflows at the end of each of 5 years of Rs.1,50,000. However, this alternative will involve out-of-pocket costs for sales administration to the extent of Rs.50,000. The firm also proposes to allocate fixed costs worth Rs.20,000 per year to this product if this alternative is pursued.

Required:

- (a) Advise the management as to the method of promotion to be adopted.
 - (b) Define internal rate of return. Calculate the internal rate of return for Alternative 2. You may assume that the firm's cost of capital is 20% p.a.
 9. Paraffin Wax Ltd. (P.W.L) produces different grades of lube-base stocks of various grades. These stocks are dewaxed to remove paraffinic waxes as slack waxes to meet certain technical specifications. The slack waxes are presently merely blended into furnace oil. PWL now (2006) proposes to install a solvent deoiling plant to refine slack waxes to produce paraffin wax. The residual oil will be routed to furnace oil again.
- The estimated investment cost for the new plant is Rs.4.54 crores (financed internally) of which the foreign exchange component is Rs.1.68 crores. No extra land is required for this plant. The plant will employ 30 people. The sum of Rs.3,00,000 as royalty for foreign technology, included in Rs.1.68 crores will be paid in three equal instalments (i)

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upon execution of licence agreement, (ii) upon the start up of the licensed unit, and (iii) on the first anniversary of the start up. The proposed plant will have a production capacity of 20,000 T.P.A.

The finance department of PWL has gone about working out the detailed financial projections of the new plant. It finds that the working capital requirement is Rs.26.3 lacs, and the annual operating costs of the plant are Rs.90.4 lacs. The details of capital cost are:

	<i>Rs./lacs</i>	<i>Foreign Exchange Cost Dollar/lacs</i>
Equipment	263.00	4.61
Tankage	18.00	---
Packaging facilities	50.00	5.50
Royalties (including GOI taxes @ 40%)	70.25	4.80
Engineering Fees (including GOI taxes @ 40%)	52.50	3.50
	453.75	18.41

The total outlay on the project was to be spread over three years as Rs.1.5, Rs.2.00 and Rs.1.04 crores. In the first year of operation 80% of the capacity would be utilized. Thereafter, it would be 100% price formula for sales is assumed to allow a return of 15% on net fixed assets and 15% return on working capital, in addition to covering other operating costs. Depreciation on fixed assets is assumed @ 10% p.a. on income tax method (i.e., written down value method) for pricing. In the first year of operation raw material cost is 16,000 MT Rs.598.16 and in subsequent years 20,000 MT's @ Rs.598.16. Other operating costs, excluding depreciation, for the first year are Rs.78.6 lacs, and for subsequent years Rs.90.4 lacs. Working Capital is assumed at 1½ months' of all manufacturing units. For computing the internal rate of return for the enterprise a debt/equity ratio of 1:1 has been assumed. Terminal value after 15 years of operation is assumed @ 30% of capital cost. The GOI holds 75% of the share capital of PWL. The new project will enjoy a tax concession for the first 5 years of operations on profits equal to 7.5% on capital employed. Corporate income tax rate is applicable at the rate of 57.75%. Compute the IRR (internal rate of return) for the project. How would you assess if the IRR is good enough or not?

10. Navyug Enterprises is considering the introduction of a new product. Generally, the company's products have a life of about five years, after which they are usually dropped from the range of products the company sells. The new product envisages the purchase of new machinery costing Rs.4,00,000 including freight and installation charges. The useful life of the equipment is five years, with an estimated salvage value of Rs.1,57,500

at the end of that time. The machine will be depreciated for tax purposes by reducing balance method at a rate of 15% on the book value.

The new product will be produced in a factory which is already owned by the company. The company built the factory some years ago at Rs.1,50,000. the book value on the written down value basis is zero.

Today the factory has a resale value of Rs.3,50,000 which should remain fairly stable over the next five years. The factory is currently being rented to another company under a lease agreement, which has five years to run, and which provides for an annual rental of Rs.5,000. Under the lease agreement if the lessor wishes to cancel the lease, he can do so by paying the lessee compensation equal to one year's rental payment. This amount is not deductible for income tax purposes.

Additions to current assets will require Rs.22,500 at the commencement of the proposal which, it is assumed, is fully recoverable at the end of year 5. The company will have to spend Rs.50,000 in year I towards market research.

The net cash inflows from operations before depreciation and income tax are:

Year	Rs.
1	2,00,000
2	2,50,000
3	3,25,000
4	3,00,000
5	1,50,000

It may be assumed that all cash flows are received or paid at the end of each year and that income taxes are paid in the year in which the inflow occurred. The Company's tax rate may be assumed to be 50% and the company's required return after tax is 10%.

Required: Evaluate the proposal.

11. YAM enterprises proposes to install a central air-conditioning system in their city office building. As a part of the Company's long range plan, the office building is due to be disposed off on 31st December, 2006 and the company believes that whichever system is installed, it will add some Rs.1 lakh to resale value at that time. Three systems-gas, oil and solid fuel-are regarded as feasible. YAM enterprises estimate that the costs of installing and running the three systems are follows:

- (i) Installation costs (payable on 1st January, 2004):

	Rs.
Gas	1,70,000
Oil	1,50,000
Solid Fuel	1,40,000

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- (ii) Annual fuel costs (payable at the end of each year):

Annual fuel costs will depend on the severity of the weather each year and on the rate of increase in fuel prices. At the prices expected to exist during 2004, annual fuel costs will be:

	Rs. <i>Severe weather</i>	Rs. <i>Mild weather</i>
Gas	40,000	24,000
Oil	53,000	37,000
Solid Fuel	45,000	36,000

The Company estimates that in each year there is a 70% chance of severe weather and a 30% chance of mild weather. The chance of particular weather in any one year is independent of the weather of other years.

Fuel prices during 2005 and 2006 are expected to increase at either 15% per annum (probability equal to 0.4) or 25% per annum (probability equal to 0.6). Whichever rate of price increase obtains in 2005 will be repeated in 2006.

- (iii) Maintenance costs (payable at the end of the year in which they are incurred)

	Rs.
Gas	2,500 per annum
Oil	2,000 per annum
Solid Fuel	10,000 in 2005

All maintenance costs are fixed by contract when the system is installed. YAM enterprises feel that the systems are equivalent for air-conditioning purposes. They have a cost of capital of 20% per annum in money terms.

- (a) Prepare calculations showing which central air-conditioning system should be installed, assuming that the decision will be based on the expected present values of the costs of each system.
- (b) The discounting factors at 20% for years 1,2 and 3 are 0.833, 0.694 and 0.579 respectively.
12. A firm needs a component in an assembly operation. If it wants to do the manufacturing itself, it would need to buy a machine for Rs.4 lakhs which would last for 4 years with no salvage value. Manufacturing costs in each of the four years would be Rs.6 lakhs, Rs.7 lakhs; Rs.8 lakhs and Rs.10 lakhs respectively. If the firm had to buy the component from a supplier the component would cost Rs.9 lakhs, Rs.10 lakhs; Rs.11 lakhs and Rs.14 lakhs respectively in each of the four years.

However, the machine could occupy floor space which have been used for another machine. This latter machine could be hired at no cost to manufacturing an item, the

sale of which would produce net cash flows in each of the four years of Rs.2 lakhs; it is impossible to find room of both the machines and there are no other external effects. The cost of capital is 10% and PV factors for each of the 4 years is 0.909, 0.826, 0.751 and 0.683 respectively. Should the firm make the component or buy from outside?

13. A company has just installed a machine Model A for the manufacturing of a new product at capital cost of Rs.1,00,000. The annual operating costs are estimated at Rs.50,000 (excluding depreciation) and these costs are estimated on the basis of an annual volume of 1,00,000 units of production. The fixed costs at this volume of output will amount to Rs.4,00,000 per annum. The selling price is Rs.5 per unit of output. The machine has a five year life with no residual value.

The company has now come across another machine called Super Model which is capable of giving the same volume of production at an estimated annual operating costs of Rs.30,000 exclusive of depreciation. The fixed costs will, however, remain the same in value. The machine also will have a five year life with no residual value. The capital cost of this machine is Rs.1,50,000.

The company has an offer for the sale of the machine Model A (which has just been installed) at Rs.50,000 and the cost of removal thereof will amount to Rs.10,000. Ignore tax.

In view of the lower operating cost, the company is desirous of dismantling the machine Model A and installing the Super Model machine. Assume that the Model A has not yet started commercial production and that the time lag in the removal thereof and the installation of the Super Model machine is not material.

The cost of capital is 14% and the P.V. factors for each of the five years respectively are 0.877, 0.769, 0.675, 0.592 and 0.519.

State whether the company should replace Model A machine by installing the Super Model machine. Will there be any change in your decision if the Model A machine has not been installed and the company is in the process of consideration of selection of either of the two models of the machine? Present suitable statements to illustrate your answer.

14. The MN Company Limited has decided to increase its productive capacity to meet an anticipated increase in demand for its products. The extent of this increase in capacity is still to be determined and a management meeting has been called to decide which of the following two mutually exclusive proposals-I and II should be undertaken. On the basis of the information given below you are required to:
 1. evaluate the profitability (ignoring taxation) of each of the proposals and;
 2. on the assumption of a cost of capital of 8% advise the management of the matters to be taken into consideration when deciding between *Proposal I* and *Proposal II*.

Rs.

	I	II
Capital expenditure;		
Building	50,000	1,00,000
Plant	2,00,000	3,00,000
Installation	10,000	15,000
Working Capital	50,000	65,000
<i>Net Income:</i>		
Annual pre-depreciation profits (Note a)	70,000	95,000
<i>Other relevant income/expenditure:</i>		
Sales promotion (Note b)	-	15,000
Plant scrap value	10,000	15,000
Building disposable value (Note c)	30,500	60,000

Notes:

- (a) The investment life is ten years.
- (b) An exceptional amount of expenditure on sales promotion of Rs.15,000 will require to be spent in year 2 on Proposal II.
- (c) It is not the intention to dispose of the building in ten year's time, however, it is company policy to take a notional figure into account for project evaluation purposes.

The present value of Re.1 due	1 year hence at 8%	= 0.926
	2	= 0.857
	3	= 0.794
	4	= 0.735
	5	= 0.681
	6	= 0.630
	7	= 0.583
	8	= 0.540
	9	= 0.500
	10	= 0.463
	11	= 0.429

15. X Ltd. is considering a project with the following cash flows:

<i>Year</i>	<i>Purchase of plant</i>	<i>Running Cost</i>	<i>Savings</i>
	<i>Rs.</i>	<i>Rs.</i>	<i>Rs.</i>
0	(7,000)		
1		2,000	6,000
2		2,500	7,000

The cost of capital is 8%. Measure the sensitivity of the project to changes in the levels of Plant Value, Running costs and Savings (considering each factor at a time) such that Net Present Value becomes zero. Which factor is most sensitive to affect the acceptability of the project. The Present value factors at 8% are as follows:

<i>Year</i>	<i>Factor</i>
0	1.00
1	0.93
2	0.86

16. Forward Planning Ltd. is considering whether to invest in a project which would entail immediate expenditure on capital equipment of Rs.40,000. Expected sales from the project are as follows:

<i>Probability</i>	<i>Sales Volume</i> <i>(Units)</i>
0.10	2,000
0.25	6,000
0.40	8,000
0.15	10,000
0.10	14,000

Once sales are established at a certain volume in the first year, they will continue at that same volume in subsequent years. The unit selling prices will be Rs.10, the unit variable cost Rs.6 and the additional fixed costs will be Rs.20,000 (all cash items).

The project would have a life of 6 years after which the equipment would be sold for scrap which would fetch Rs.3,000.

You are required to find out:

- the expected value of the NPV of the project.
- the minimum volume of sales per annum required to justify the project.

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The cost of capital of the company is 10%. Discount factor of Re.1 per annum for 6 years at 10% is 4.355 and the discount factor of Re.1 at the end of the sixth year at 10% is 0.5645. Ignore taxation.

17. Electromatic Excellers Ltd. specialize in the manufacturing of novel transistors. They have recently developed technology to design a new radio transistor capable of being used as an emergency lamp also. They are quite confident of selling all the 8,000 units that they would be making in a year. The capital equipment that would be required will cost Rs.25 lakhs. It will have an economic life of four years and no significant terminal salvage value. During each of the first four years promotional expenses are planned as under:

Year	1	2	3	4
Advertisement (Rs.)	1,00,000	75,000	60,000	30,000
Other Expenses (Rs.)	50,000	75,000	90,000	1,20,000

Variable costs of producing and selling the unit would be Rs.250 per unit. Additional fixed operating costs incurred because of this new product are budgeted at Rs.75,000 per year.

The company's profit goals call for a discounted rate of 15% after taxes on investments on new products. The income-tax rate on an average works out to 40%. You can assume that the straight line method of depreciation will be used for tax and reporting.

Work out an initial selling price per unit of the product that may be fixed for obtaining the desired rate of return on investment.

Present value of annuity of Re.1 received or paid in a steady stream throughout four years in the future at 15% is 3.0079.

18. Samreen Investment Ltd. possesses Rs.90,000 cash and has the opportunity to invest in 3 projects, the occurrence of which depend on two states of economic circumstances (that is, states of nature). Each outcome will last one year and the cash flows for each alternative year estimated to be are as follows:

States of nature	I	II
Probability of states of nature	0.5	0.5
Cash inflows less cash outflows (Rs.)		
Project A	-40,000	+60,000
Project B	+50,000	-50,000
Project C	+9,000	+8,000

The cashflows are arrived at after deducting initial outlays of Rs.40,000 for Project A, Rs.50,000 for Project B and Rs.90,000 for Project C. The following alternatives are available for an investment of Rs.90,000:

- Accept any one of the Projects, A,B or C and reject the other two projects.
- Accept both Projects A and B. What is your recommendation?

19. A theatre, with some surplus accommodation, proposes to extend its catering facilities to provide light meals to its patrons. The management is prepared to make the initial funds available to cover the capital costs. It requires that these be repaid over a period of five years at a rate of interest of 14% per annum.

The capital costs are estimated at Rs.60,000 for equipment that will have life of 5 years and no residual value. Running costs of staff etc. will be Rs.20,000 in the first year, increasing by Rs.2,000 in each subsequent year. The management proposes to charge Rs.5,000 per annum for electricity and other expenses and wants a nominal Rs.2,500 per annum to cover any unforeseen contingencies. Apart from this, the management is not looking for any profit as such from the extension of these facilities because it believes that these will enable more tickets to be sold for the cinema shows at the theatre. It is proposed that costs should be recovered by setting prices for the food at double the direct cost.

It is not expected that the full sales level will be reached until year 3. The proportion of that level reached in year 1 and 2 are 35% and 65% respectively.

You are required to calculate the sales that need to be achieved in each of the five years to meet the management's targets. Ignore inflation and taxation. The present value factors for Re.1 at 14% are:

Year	P.V. factor
0	1.00
1	0.88
2	0.77
3	0.67
4	0.59
5	0.52

20. The total available budget for a company is Rs.20 crores and the total cost of the project is Rs.25 crores. The projects listed below have been ranked in order of profitability. There is a possibility of submitting X project where cost is assumed to be Rs.13 crores and it has the profitability index of 140.

Project	Cost (Rs. in crores)	Profitability index = $\left[\frac{\text{PV of cash inflows}}{\text{PV of cash outflow}} \times 100 \right]$
A	6	150
B	5	125
C	7	120
D	2	115
E	<u>5</u>	110
	25	

Which projects, including X, should be acquired by the company?

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21. A firm is considering an investment of Rs.75,000 on a machine with a life of 4 years and nil residual value. This machine will produce a product to sell at Rs.60 for a quantity of 1,000 units. The estimated cost of each unit manufactured would be:

	(Rs.)
Materials	10
Labour (10 hours. @ Rs.2 per hrs.)	20
Variable overheads (10 hrs. @ 0.50 per hrs)	<u>5</u>
	35

Due to inflationary conditions, material costs, overheads and selling prices are expected to increase at the rate of 15% per annum and labour costs are expected to increase at the rate of 20% per annum.

The discount rate to be used is 20%

Year	Discount factor
1	0.83
2	0.69
3	0.59
4	0.48

Is the purchase of new machine worth while in terms of its net present value?

22. A company uses a machine whose present book value is Rs.5,00,000. The company is producing a single product and product cost data is as under:

	Rs./Unit
Direct Materials	25
Direct Labour	45
Overheads - Variable	15
Fixed Rs.1,30,000 per annum excluding non-cash items for production upto 20,000units. It will increase byRs.20,000 p.a. from 20,000 to 24,000 units.	

The company estimates its future production at 22,000 units per annum for the next five years. The sale price of the machine at the end of 5th year is Rs.10,000. If the machine is sold today, the sale price will be Rs.3,50,000 net.

A proposal for replacement of the said machine by a more sophisticated machine is under consideration. The data relating to the new machine are:

Purchase Price	Rs.13,00,000
Operating Costs:	
Direct Material and Direct Labour	Rs.58 per unit
Variable Overheads	Rs.12 per unit

Fixed overheads consisting of only cash items Rs.2,10,000 per annum upto 25,000 units value at the end of 5th year of life is Rs.3,00,000.

Rate of Depreciation 10% p.a.

Rate of Income Tax 50%

You are required to:

- (i) Determine the cost per unit on absorption cost basis for the first year of manufacturing the product on the old and new machines by taking depreciation on straight line method.
- (ii) Prepare a cash flow statement for five years by taking the cost of capital at 12% and determine the excess present value of total cash flows. Use reducing balance method of depreciation.
- (iii) State with reasons whether the replacement proposal should be implemented or not.

23. A company is considering which of two mutually exclusive projects it should undertake. The Finance Director thinks that the project with the higher NPV should be chosen whereas the Managing Director thinks that the one with the higher IRR should be undertaken especially as both projects have the same initial outlay and length of life. The company anticipates a cost of capital of 10% and the net after tax cash flows of the projects are as follows:

Year (Cash Flows Figs 000)	0	1	2	3	4	5
Project X	(200)	35	80	90	75	20
Project Y	(200)	218	10	10	4	3

Required:

- (a) Calculate the NPV and IRR of each project.
- (b) State, with reasons, which project you would recommend.
- (c) Explain the inconsistency in the ranking of the two projects.

The discount factors are as follows:

Year Discount Factors	0	1	2	3	4	5
(10%)	1	0.91	0.83	0.75	0.68	0.62
(20%)	1	0.83	0.69	0.58	0.48	0.41

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24. Nuksan Ltd., which makes only one product, sells 10,000 units of its product making a loss of Rs.10,000. The variable cost per unit of the product is Rs.8 and the fixed cost is Rs.30,000.

The company has estimated its sale demand as under:

Sales Units	Probability
10,000	0.10
12,000	0.15
14,000	0.20
16,000	0.30
18,000	0.25

What is the probability that the company will continue to make losses?

What is the probability that the company will make a profit of at least Rs.6,000?

25. Goodluck Ltd. makes a product, which has the standard marginal cost, as below:

	Rs.
Direct materials	50.00
Direct wages	37.50
Variable production overhead	6.25
	93.75

The annual budget, further, . Indicates, output in units	80,000
Fixed Overhead:	(Rs.)
Production	50,00,000
Administration	30,00,000
Marketing	25,00,000
Contribution	1,25,00,000

The company's management desires much better results than projected and wants the following proposals for improved performance to be considered:

- Reduce the selling price by 10 percent, with the prospect of production and sale increasing by 25 percent. The fixed production overhead will increase by Rs.2,50,000 and fixed marketing overhead by Rs.1,25,000.
- Increase the selling price by 10 percent, and increase advertising expenditure from the present outlay of Rs.5,00,000 to Rs.25,00,000. Sales will go up to 90,000 units. Fixed production overhead will be up by Rs.1,25,000 and marketing overhead by Rs.1,00,000.

- (c) A profit of Rs.30,00,000 is desired. A 10 percent increase in sales can be achieved by increasing advertisement expenditure by Rs.18,00,000. The fixed production overhead will go up by Rs.1,25,000 and marketing overhead by Rs.85,000. What is the selling price required for achieving the desired profit?
- (d) A departmental stores is willing to take 20,000 units per annum at a special discount. Existing sales will not be affected. Fixed production overhead will increase by Rs.2,50,000 per annum. What is the special discount to be offered if by accepting the contract, the company's profit is to go upto Rs.33,75,000 per annum.

Compile the forecast profit and loss statement pertaining to the above proposals and comment on the outcome of each proposal.

26. Once each year, C Ltd., buys a quantity of perishable commodity. It processes and packages the commodity immediately and holds the cartons for sale a year later. Purchases have to be made in units of 100 kgs, the current buying price is Rs.60 per 100 kgs. Each 100 kgs, yields sufficient output for a batch of 100 cartons and the processing and packaging of each batch costs Rs.140. Storage costs, excluding interest, amount to Rs.50 per 100 cartons per annum, payable at the end of the year. C Ltd. incurs fixed operating costs – namely costs which arise independently of the output level, of Rs.1,40,000 each year; payable at the end of the year. Interest cost on capital invested in inventories is 25% p.a.

Market conditions are such that C Ltd. takes its selling price as fixed by competitive considerations. Sales are made in cases of 100 cartons. The selling price, next year, for current output is estimated at Rs.400 per 100 cartons. The probability of different volumes of sales has been estimated as under:

<i>Cases of 100 cartons</i>	<i>Probability</i>
2,000	.2
2,500	.5
3,000	.3
	1.0

The Directors are considering what quantity of the commodity should now be purchased and processed for sale next year. You are to assume that the quantity to be purchased will be 2,00,000 kgs., 2,50,000 kgs. or 3,00,000 kgs. Any output that is not sold next year will have to be scrapped and will have no scrap value.

You are required to:

- (a) Calculate the quantity which should be purchased in order to maximize the expected value of cash flows from the year's operations; and
- (b) Comment on the limitations of the criterion that the expected value of cash flows from operations should be maximized.

Ignore Taxation.

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27. The management of ABC company is considering the question of marketing a new product. The fixed cost required in the project is Rs.4,000. Three factors are uncertain viz., the selling price, variable cost and the annual sales volume. The product has a life of only one year. The management has the data on these three factors as under:

<i>Selling Price Rs.</i>	<i>Probability</i>	<i>Variable Cost Rs.</i>	<i>Probability</i>	<i>Sales Volume (units)</i>	<i>Probability</i>
3	0.2	1	0.3	2,000	0.3
4	0.5	2	0.6	3,000	0.3
5	0.3	3	0.1	5,000	0.4

Consider the following sequence of thirty random numbers:

81, 32, 60, 04, 46, 31, 67, 25, 24, 10, 40, 02, 39, 68, 08, 59, 66, 90, 12, 64, 79, 31, 86, 68, 82, 89, 25, 11, 98, 16.

Using the sequence (First 3 random numbers for the first trial etc.) simulate the average profit for the above project on the basis of 10 trials.

28. A Company is evaluating three investment situations:

- (1) produce a new line of aluminum skillets, (2) expand its existing cooker line to include several new sizes, and (3) develop a new higher-quality line of cookers. If only the project in question is undertaken, the expected present values and the amounts of investment are as follows:

<i>Project</i>	<i>Investment Required</i>	<i>Present value of Future cash flows</i>
1	Rs.200,000	Rs.290,000
2	115,000	185,000
3	270,000	400,000

If projects 1 and 2 are jointly undertaken, there will be no economies; the investments required and present values will simply be the sum of the parts. With projects 1 and 3, economies are possible in investment because one of the machines acquired can be used in both production processes. The total investment required for projects 1 and 3 combined is Rs.440,000. If projects 2 and 3 are undertaken, there are economies to be achieved in marketing and producing the projects but not in investment. The expected present value of future cash flows for projects 2 and 3 is Rs.620,000. If all three projects are undertaken simultaneously, the economies noted will still hold. However, a Rs.125,000 extension on the plant will be necessary, as space is not available for all three projects. Which project or projects should be chosen?

- 29.** Two mutually exclusive investment proposals are being considered.

The following information is available:

	<i>Project A</i>	<i>Project B</i>
	<i>Rs.</i>	<i>Rs.</i>
Cost	20,000	20,000
Life	2 years	2 years
Cash flow each year	12,000	12,000
Salvage value	0	0

Upon further analysis it was found that probability of cash inflow each year for the projects are as:

<i>Possible inflow</i>	<i>A probability</i>	<i>Possible inflow</i>	<i>B Probability</i>
10,000	.2	11,000	.2
12,000	.6	12,000	.6
14,000	.2	13,000	.2

Advice for selecting the proposal, assuming cost of capital 10%.

- 30.** From the following information compute the net present value (NPVs) of the two projects for each of the possible cash flows, using sensitivity analysis:

	<i>Project X</i>	<i>Project Y</i>
	<i>(000' Rs.)</i>	<i>(000' Rs.)</i>
Initial Cash outflows (t = 0)	30	30
Cash inflows estimates (t = 1 – 10)		
Worst	5	8
Most likely	8	10
Best	15	20
Required Rate of Return	14%	14%
Economic life (years)	10	10

- 31.** Sanathana Ltd. is evaluating a project costing Rs.20 lacs. The project generates savings of Rs.2.95 Lacs per annum, perpetuity. The business risk of the project warrants a rate of return of 15%.

- Calculate Base case NPV of the project assuming no tax.
- Assuming tax rate of 30% with 12% cost of debt constituting 30% of the cost of the project, determine Adjusted present value.

Find out minimum acceptable Base case NPV as well as minimum IRR.

2.66 Strategic Financial Management

32. The financial feasibility analysis of a project is in progress and the following figures have been compiled:

	(Rs. in lakhs)
Initial capital investment	500
Annual Sales	600
Operating costs per annum	400
Annual cash in flow	200

Project life is 5 years and the acceptance rate is 10%.

You are required:

- (i) To measure the sensitivity of the project to changes in each of the factors, viz., initial capital investment, annual sales and operating costs; and
- (ii) To indicate to which factor the project is most sensitive.

Present Value factors at 10% for years 1 to 5, respectively, are .909, .826, .751, .683 and .621.

33. FM Co. are in the business of surgical furniture. They are considering a proposal to re-design a dentist chair which is likely to cost them Rs. 12 lakhs by way of design and tooling work. The revised design is expected to be valid for 3 years and the Company's target return on investment is 12% post-tax.

The additional material and other variable costs per unit are estimated to be Rs. 5,000. The Company's marginal tax rate is 40%.

The marketing manager has 2 alternate proposals for pricing – either Rs. 12,000 additional per unit or Rs. 15,000 additional per unit.

If the additional price is Rs. 12,000 per unit, he expects the following sales:

Year 1		Year 2		Year 3	
Sales Units	Probability	Sales Units	Probability	Sales Units	Probability
200	0.30	400	0.40	600	0.50
300	0.50	500	0.40	700	0.30
400	0.20	600	0.20	800	0.20

If the additional price is Rs. 15,000 per unit, the sales would be:

Sales Units	Probability	Sales Units	Probability	Sales Units	Probability
100	0.30	200	0.30	200	0.30
200	0.50	300	0.40	300	0.40
300	0.20	400	0.30	400	0.30

Present value factors at 12% for years 1 to 3 are respectively 0.893, 0.797 and 0.712.

You are required to:

- (i) Evaluate the pricing alternatives and indicate which is better, and
- (ii) Calculate the Net Present Value of the proposal.

34. Data regarding two mutually exclusive projects have been compiled and given below:

	<i>Project S</i>	<i>Project T</i>	
Initial Investment (Rs. in lakhs)	30	50	
Net Present Value Estimate (Rs. in lakhs)			
<i>Project S</i>		<i>Project T</i>	
<i>NPV Estimate</i>	<i>Probability</i>	<i>NPV Estimate</i>	<i>Probability</i>
3	0.1	5	0.2
6	0.4	9	0.3
12	0.4	18	0.3
15	0.1	25	0.2

You are required:

- (i) To compute the expected NPV and the Profitability Index of each project;
- (ii) To compute the risk attached to each project by calculating the coefficient of variation; and
- (iii) To give your comments on project to be selected.

35. Priya Corporation is considering replacement of its existing machine. The following are the relevant data:

Existing Machine:

Purchased - 2 years ago
 Remaining life - 6 years
 Salvage value - Rs. 500
 Current book value - Rs. 2,600
 and its Realisable Market value - Rs. 3,000
 Annual depreciation - Rs. 350

New Machine:

Capital cost of Rs. 8,000
 Estimated useful life - 6 years
 Estimated salvage value - Rs. 800

2.68 Strategic Financial Management

The replaced machine would permit an output expansion. As a result, sales is expected to rise by Rs. 1000 per year, operating expenses would decline by Rs. 1,500 per year. It would require an additional inventory of Rs. 2,000 and would cause an increase in accounts payable by Rs. 500.

Assume a corporate tax rate of 40% and cost of capital of 15%, advise the company whether it should replace the machine or not.

36. A Company is considering two mutually exclusive Projects X and Y. Project X costs Rs. 30,000 and Project Y costs Rs. 36,000. The NPV probability distribution for each project is given below:

<i>Project X</i>		<i>Project Y</i>	
<i>NPV Estimate</i>	<i>Probability</i>	<i>NPV Estimate</i>	<i>Probability</i>
Rs. 3,000	0.1	Rs. 3,000	0.2
6,000	0.4	6,000	0.3
12,000	0.4	12,000	0.3
15,000	0.1	15,000	0.2

- (i) Compute the expected Net Present Value of Projects X and Y.
 - (ii) Compute the risk attached to each project i.e. Standard Deviation of each probability distribution.
 - (iii) Which project is more risky and why?
 - (iv) Compute the Probability Index of each project.
37. Skylark Inc. USA currently exports 500 calculators per month to UAE @ \$60 per piece. The variable cost per calculator is \$40. In December 2000, the company was approached by the Government of UAE to establish a manufacturing plant in UAE. After a careful analysis, the company decided to make an equity investment of \$1 million, half of which would represent working capital and the other half the fixed assets. The company would sell the plant to a local entrepreneur for a sum of \$1 million at the end of 5 years and the Central bank of UAE would repay the company \$ 5,00,000 for working capital. In return for an increase in tariffs against other companies, Skylark Inc. will sell its calculators at \$50 per unit in the UAE. In addition, the company undertakes to buy certain raw materials from local suppliers and also to employ local managers. The total cost of local managers and materials would be \$15 per calculator. Other materials would be purchased from the parent company at \$10 and the parent company would receive a direct contribution to overhead variable costs @ \$5 per unit sold.

Under this arrangement, the company expects to sell 1000 calculators per month. The fixed assets are to be depreciated on a straight-line basis over a five-year period. The company will have to pay income-tax at 50 percent on profits earned in Bahrain. The United States also has 50 percent tax rate with direct credit for UAE taxes. The current

exchange rate is ten UAE dinars per dollar and is expected to stay the same for the next five years. There is no restriction on cash flow repatriation.

- (i) Determine the adjusted present value of the project at 10 per cent.
- (ii) M/s Skylark Inc. has been informed that if it decides to reject the project, it would lose its entire export sales to the UAE. How does this affect decision of Skylark Inc. ?

38. ABC Company is considering replacement of its existing machine by a new machine which is expected to cost Rs.160,000. The new machine will have a life of 5years and will yield annual cash revenues of Rs.350,000 and incur annual cash expenses of Rs.180,000. The estimated salvage value of the new machine is Rs.8000. The existing machine has a book value of Rs.40,000 and can be sold for Rs.20,000 today. It is good for next 5years and is estimated to generate annual cash revenues of Rs.250,000 and to involve annual cash expenses of Rs.190,000. If sold after 5 years, the salvage value of the existing machine can be expected to be Rs.2000. Tax rate is 30% and can write off depreciation @25% on diminishing balance method as per Indian Income tax Act. Cost of capital 20%. Evaluate the project.
39. XYZ Company purchased a machine three years ago at a cost of Rs.10,000. The machine has a life of 8years at the time of purchase. It is being depreciated at 15% on W.D.V. basis. The company is thinking of replacing it with a new machine costing Rs.20,000 with an expected 5year life. The profit before depreciation is estimated to increase by Rs.5580 a year. Assume that the old and new machine will now be depreciated at 25% on W.D.V basis. The salvage value of the new machine is anticipated as Rs.500. The market value of old machine today is Rs.11,500. It is estimated to have a zero salvage value after 5years. The tax rate is 50% and cost of capital 12%. Should the new machine be bought?

LEASING DECISIONS

1.0 LEASING

1.1 WHAT IS LEASE ?

Lease can be defined as a right to use an equipment or capital goods on payment of periodical amount. This may broadly be equated to an instalment credit being extended to the person using the asset by the owner of capital goods with small variation.

1.2 PARTIES TO A LEASE AGREEMENT

There are two principal parties to any lease transaction as under:

Lessor : Who is actual owner of equipment permitting use to the other party on payment of periodical amount.

Lessee : Who acquires the right to use the equipment on payment of periodical amount.

1.3 LEASE VIS-À-VIS HIRE PURCHASE

Hire-purchase transaction is also almost similar to a lease transaction with the basic difference that the person using the asset on hire-purchase basis is the owner of the asset and full title is transferred to him after he has paid the agreed instalments. The asset will be shown in his balance sheet and he can claim depreciation and other allowances on the asset for computation of tax during the currency of hire-purchase agreement and thereafter.

In a lease transaction, however, the ownership of the equipment always vests with the lessor and lessee only gets the right to use the asset. Depreciation and other allowances on the asset will be claimed by the lessor and the asset will also be shown in the balance sheet of the lessor. The lease money paid by the lessee can be charged to his Profit and Loss Account. However, the asset as such will not appear in the balance sheet of the lessee. Such asset for the lessee is, therefore, called off the balance sheet asset.

2.0 TYPES OF LEASING

A lease transaction has many variants relating to the type and nature of leased equipment, amortisation period, residual value of equipment, period of leasing, option for termination of

3.2 Strategic Financial Management

lease etc. Various types of leasing transactions are, therefore, operating in the market on the basis of these variants. The different leasing options may however, be grouped in two broad categories as under:

(a) Operating Lease : In this type of lease transaction, the primary lease period is short and the lessor would not be able to realize the full cost of the equipment and other incidental charges thereon during the initial lease period. Besides the cost of machinery, the lessor also bears insurance, maintenance and repair costs etc. The lessee acquires the right to use the asset for a short duration. Agreements of operating lease generally provide for an option to the lessee/lessor to terminate the lease after due notice. These agreements may generally be preferred by the lessee in the following circumstances:

- I When the long-term suitability of asset is uncertain.
- I When the asset is subject to rapid obsolescence.
- I When the asset is required for immediate use to tide over a temporary problem.

Computers and other office equipments are the very common assets which form subject matter of many operating lease agreements.

(b) Financial Lease : As against the temporary nature of an operating lease agreement, financial lease agreement is a long-term arrangement, which is irrevocable during the primary lease period which is generally the full economic life of the leased asset. Under this arrangement lessor is assured to realize the cost of purchasing the leased asset, cost of financing it and other administrative expenses as well as his profit by way of lease rent during the initial (primary) period of leasing itself. Financial lease involves transferring almost all the risks incidental to ownership and benefits arising therefrom except the legal title to the lessee against his irrevocable undertaking to make unconditional payments to the lessor as per agreed schedule. This is a closed end arrangement with no option to lessee to terminate the lease agreement subsequently. In such lease, the lessee has to bear insurance, maintenance and other related costs. The choice of asset and its supplier is generally left to the lessee in such transactions. The variants under financial lease are as under:

- I Lease with purchase option-where the lessee has the right to purchase the leased assets after the expiry of initial lease period at an agreed price.
- I Lease with lessee having residual benefits-where the lessee has the right to share the sale proceeds of the asset after expiry of initial lease period and/or to renew the lease agreement at a lower rental.

In a few cases of financial lease, the lessor may not be a single individual but a group of equity participants and the group borrows a large amount from financial institutions to purchase the leased asset. Such transaction is called 'Leveraged lease'.

Sales and Lease Back Leasing : Under this arrangement an asset which already exists and is in use by the lessee is first sold to the lessor for consideration in cash. The same asset is then acquired for use under financial lease agreement from the lessor. This is a method of raising funds immediately required by lessee for working capital or other purposes. The lessee continues to make economic use of assets against payment of lease rentals while ownership vests with the lessor.

Sales-Aid-Lease : When the leasing company (lessor) enters into an arrangement with the seller, usually manufacturer of equipment, to market the latter's product through its own leasing operations, it is called a 'sales-aid-lease'. The leasing company usually gets a commission on such sales from the manufacturer and doubles its profit.

Apart from term loan and other facilities available from financial institutions including banks to a promoter to acquire equipment and other capital goods, the promoter now has an alternative option to acquire economic use of capital assets through leasing. The ultimate decision to either approach a financial institution or a leasing company will, however, depend on the nature of each such transaction.

3.0 ADVANTAGES

- The first and foremost advantage of a lease agreement is its flexibility. The leasing company in most of the cases would be prepared to modify the arrangement to suit the specific requirements of the lessee. The ownership of the leased equipment gives them added confidence to enable them to be more accommodative than the banks and other financial institutions.
- The leasing company may finance 100% cost of the equipment without insisting for any initial disbursement by the lessee, whereas 100% finance is generally never allowed by banks/financial institutions.
- Banks/financial institutions may involve lengthy appraisal and impose stringent terms and conditions to the sanctioned loan. The process is time consuming. In contrast leasing companies may arrange for immediate purchase of equipment on mutually agreeable terms.
- Lengthy and time consuming documentation procedure is involved for term loans by banks/institutions. The lease agreement is very simple in comparison.
- In short-term lease (operating lease) the lessee is safeguarded against the risk of obsolescence. It is also an ideal method to acquire use of an asset required for a temporary period.
- The use of leased assets does not affect the borrowing capacity of the lessee as lease payment may not require normal lines of credit and are payable from income during the operating period. This neither affects the debt equity ratio or the current ratio of the lessee.

3.4 Strategic Financial Management

- Leased equipment is an 'off the balance sheet' asset being economically used by the lessee and does not affect the debt position of lessee.
- By employing 'sale and lease back' arrangement, the lessee may overcome a financial crisis by immediately arranging cash resources for some emergent application or for working capital.
- Piecemeal financing of small equipments is conveniently possible through lease arrangement only as debt financing for such items is impracticable.
- Tax benefits may also sometimes accrue to the lessee depending upon his tax status.

4.0 DISADVANTAGES

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

Despite all these disadvantages, the flexibility and simplicity offered by lease finance is bound to make it popular. Lease operations will find increasing use in the near future.

5.0 FINANCIAL EVALUATION

Steps in financial evaluation :

- (a) evaluation of client in terms of financial strength and credit worthiness.
- (b) evaluation of security / collateral security offered
- (c) financial evaluation of the proposal

The most important part in lease financing is its financial evaluation both from the point of view of lessor and lessee.

5.1 LESSEE PERSPECTIVE

A lease can be evaluated either as an investment decision or as a financing means. If an investment decision has already been made, a firm (lessee) has to evaluate whether it will

purchase the asset equipment or acquire it on lease basis. The lease rentals can be taken as interest on debt. Thus leasing in essence is alternating source of financing to borrowing. The lease evaluation thus is debt financing versus lease financing. The decision criterion used is Net Present Value of leasing NPV(L) / Net Advantage of Leasing (NAL). The discount rate used is the marginal cost of capital for all cashflows other than lease payments and the pretax cost of long term debt for lease payment. The value of the interest tax shield is included as forgone cash flow in the computation of NPV (L) / NAL.

Calculation of NPV (L) / NAL:

Cost of Asset

Less PV of Lease rentals (LR)

Add PV of tax shield on LR

Less PV of debt tax shield.

Less PV of interest tax shield on displaced debt

Less PV of salvage value.

If NAL / NPV(L) is +, the leasing alternative to be used, otherwise borrowing alternative would be preferable.

Method I (Normal method)

Discount lease rentals at pre tax rates and discount rest of cash flows at post tax rates.

Method II (Alternatively)

Discount all cash flows at post tax rates ignoring the cash flow on account of interest tax shield on displaced debt.

Illustration

XYZ co is planning to install a machine which becomes scrap in 3 years. It requires an investment of Rs.180 lakhs and scrap realizes Rs.18 lakhs. The company has following options:

- (1) to take a loan @ 18% and buy that machine, or
- (2) take it on lease @ 444/000 payable annually for 3 years.

Depreciation is 40% (WDV). Tax rate is 35%. Determine which option is better.

Answer

Pre tax rate is 18%.

Post tax rate is $18(1-0.35) = 11.7\%$.

3.6 Strategic Financial Management

(a) P.V. of lease rentals

Lease rental for 180 lakhs \times 444/1000 = 79.92 lakhs p.a.

$$\begin{aligned} \text{P.V. of LR} &= \text{PVIFA (18,3)} \times 79.92 \text{ lakhs} \\ &= 2.174 \times 79.92 \\ &= 173.75 \text{ lakhs} \end{aligned}$$

(b) P.V. of tax shield

Taxes to be paid are tax rate \times amount

$$\begin{aligned} &= .35 \times 79.92 \\ &= 27.97 \text{ lakhs per year} \end{aligned}$$

Present value of tax shield is PVIFA (12,3) \times 27.97 i.e., 2.402 \times 27.97

$$= 67.18 \text{ lakhs}$$

(c) P.V. of Depreciation

Depreciation for 1st year is 40% of 180 lakhs = 72 lakhs.

Depreciation for 2nd year is 40% of 108 lakhs = 43.20 lakhs

Depreciation for 3rd year is 40% of 64.80 lakhs = 25.92 lakhs

$$\begin{aligned} \text{Depreciation tax shield} &= 72.0 \times .35 = 25.20 \\ &= 43.2 \times .35 = 15.12 \\ &= 25.9 \times .35 = 9.07 \end{aligned}$$

$$\begin{aligned} \text{P.V. of Depreciation tax shield} &= 25.2 \text{ PVIF (12,1)} + 15.12 \text{ PVIF} \\ &\quad (12,2) + 9.07 \text{ PVIF (12,3)} \\ &= 41.01 \text{ lakhs} \end{aligned}$$

(d) P.V. of interest tax shield in displaced debt:

Assuming purchaser has taken a loan instead of a lease and loan investment as lease investment than.

Loan O/S	Investment @ 18%	Instalment	Capital (balancing figure)
173.75 lakhs	31.27	79.92	48.65
125.11 lakhs	22.52	79.92	57.40
67.698 lakhs	12.18	79.92	67.73
			173.78

The above bold figures should match each other.

Interest tax shield

$$\begin{array}{rcl}
 \text{Interest} \times \text{tax rate} & = & \text{Interest tax shield} \\
 31.27 \times .35 & = & 10.95 \\
 22.52 \times .35 & = & 7.88 \\
 12.18 \times .35 & = & 4.26
 \end{array}$$

P.V. of tax shield

$$\begin{aligned}
 & 10.95 \times \text{PVIF}(12,1) + 7.88 \times \text{NPV}(12,2) \\
 & + 4.26 \text{ PV}(\text{PVIF}(12,3)) \\
 & = 19.09 \text{ lakhs}
 \end{aligned}$$

(e) P.V. of Salvage:

Salvage value is 18 lakhs after 3 years. So P.V. of salvage in 3rd year is
 $18 \times \text{PVIF}(12,3) = 12.81 \text{ lakhs}$

Analysis :

$$\begin{aligned}
 \text{NPV (L) / NAL} &= 180 - 173.75 + 67.18 - 19.09 - 41.01 - 12.81 \\
 &= + 0.52
 \end{aligned}$$

Since NPV of leasing is positive so we prefer buying.

5.2 STRUCTURE OF LEASE RENTALS (L.R.)

Lease Rentals are tailor made to enable the lessee to pay from the funds generated from its operations. Example: If profits from the leased plant start from the third year and go on increasing, then lessee will structure the instalments of the plant in such a way that he will pay more amount in 4th year and onwards i.e. ballooned lease rentals.

Lease Rentals can be of three types:

1. Deferred Lease Rentals
2. Stepped up Lease Rentals.
3. Ballooned Lease Rentals.

Illustration

Assuming lease amortised in 5 years, calculate alternate rental structure from the following :

Investment Outlay	Rs.100 Lakh
Pre Tax Rate	20%

3.8 Strategic Financial Management

Scrap Value

Nil

Schemes (a) Equal Annual Plan

(b) Stepped Up Plan (15% increase per annum)

(c) Balloon Plan (he pays Rs. 100,000 in the fourth year)

(d) Deffered plan (deferment of 2 years)

Calculate Lease Rentals.

Answer :

(Rs. in lakhs)

$$\text{Scheme (a)} \quad 100 = \text{LR} \times \text{PVIF} (20,1) + \text{LR} \times \text{PVIF} (20,2) + \text{LR} \times \text{PVIF} (20,3) + \text{LR} \times \text{PVIF} (20,4) + \text{LR} \times \text{PVIF} (20,5)$$

$$100 = \text{LR} \times \text{PVIFA} (20,5)$$

$$100 = \text{LR} \times 2.991$$

$$\text{LR} = 33.434 \text{ lakhs per year.}$$

$$\begin{aligned} \text{Scheme (b)} \quad 100 &= \text{LR} \times \text{PVIF} (20,1) + (1.15) \text{LR} \times \text{PVIF} (20,2) + (1.15)^2 \text{LR} \times \text{PVIF} (20,3) \\ &+ (1.15)^3 \text{LR} \times \text{PVIF} (20,4) + (1.15)^4 \text{LR} \times \text{PVIF} (20,5) \end{aligned}$$

$$\text{LR} = 26.09 \text{ lakhs per year.}$$

$$\begin{aligned} \text{Scheme (c)} \quad 100 &= \text{LR} \times \text{PVIF} (20,4) + \text{LR} \times \text{PVIF} (20,5) \\ &4 \times 0.482 + \text{LR} \times 0.402 \\ &1.928 + \text{LR} \times 0.402 \end{aligned}$$

$$98.072 = 0.402 \times \text{LR}$$

$$\text{LR} = 243.96 \text{ lakhs per year.}$$

$$\begin{aligned} \text{Scheme (d)} \quad 100 &= \text{LR} \times \text{PVIF} (20,3) + \text{LR} \times (20,4) + \text{LR} \times \text{PVIF} (20,5) \\ &= \text{LR} (0.579 + 0.482 + 0.402) \\ &= \text{LR} \times 1.463 \end{aligned}$$

$$\text{LR} = 68.35 \text{ lakhs per year.}$$

Illustration

A leasing company expects a minimum yield of 10 % on its investment in the leasing business. It proposes to lease a machine costing Rs. 5,00,000 for ten years. Lease payments will be received in advance.

The lease rental can be determined from the following equation:

$$\text{Rs. } 5,00,000 = x + \frac{x}{(1+0.1)} + \frac{x}{(1+0.1)^2} = \frac{x}{(1+0.1)^9}$$

where x = lease rental per annum

$$\text{Rs. } 5,00,000 = x + 5.759x$$

$$x = \frac{\text{Rs. } 5,00,000}{6.759} = \text{Rs. } 73,976$$

The above solution gives us the present value of one lease rental payment at time 0, plus the present value of nine lease rental payments at the end of each of the next nine years. We can find the present value discount factor for an even stream of cash flows for nine years to the capital recovery factor in D.C.F. analysis, where we recover principal and interest in equal instalment during the specified period.

5.3 EVALUATION OF LEASE METHODS

There are three methods of evaluating a leasing proposal viz. Present Value analysis, Internal Rate of Return analysis, and the Bower Herringer Williamson method. These are explained below. The principal assumptions made are (a) the borrowing rate is 16% (b) the income tax rate 50% (c) the operating costs are the same under lease and 'buy' alternatives (d) depreciation is allowable on straight line basis (e) residual value is 'nil'.

(a) Present Value Analysis : In this method, the present value of the annual lease payments (tax adjusted) is compared with that of the annual loan repayments adjusted for tax shield on depreciation and interest, and the alternative which has the lesser cash outflow will be chosen. The discounting rate is the after tax cost of borrowing i.e. 8% in our example.

Table 1 : Schedule of cash outflows : Leasing alternative

<i>End of year</i>	<i>Lease payment</i>	<i>Tax shield</i>	<i>After tax cash outflows</i>	<i>Present value of cash outflows at 8%</i>
	Rs.	Rs.	Rs.	Rs.
0	73,976	—	73,976	73,976
1-9	73,976	36,988	36,988	2,31,027
10	—	36,988	(36,988)	(17,125)
				<u>2,87,878</u>

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Table 2 : Schedule of debt repayments

<i>End of year</i>	<i>Interest plus principal payment</i>	<i>Principal amount owing at the end of year</i>	<i>Annual Interest @16%</i>	<i>Principal component</i>
	Rs.	Rs.	Rs.	Rs.
0	89,127	4,10,873	—	89,127
1	89,127	3,87,486	65,740	23,387
2	89,127	3,60,357	61,998	27,129
3	89,127	3,28,887	57,657	31,470
4	89,127	2,92,382	52,622	36,505
5	89,127	2,50,036	46,781	42,346
6	89,127	2,00,915	40,006	49,121
7	89,127	1,43,934	32,146	56,981
8	89,127	77,836	23,029	66,098
9	90,290*	—	12,454	77,836
	8,92,433		3,92,433	5,00,000

*Difference in the last instalment is due to rounding off of annuity factor to two decimal points.

Note : In case of buying the asset, the firm will have to borrow Rs. 5,00,000 at 16 per cent p.a. interest. It is assumed that this loan will be repaid with interest in the same period as the term of the lease. This assumption places the loan on an equivalent basis with the lease.

Table 3 : Schedule of cash outflows in debt financing

<i>End of year</i>	<i>Annual loan repayment at 8%</i>	<i>Interest @16%</i>	<i>Depreciation</i>	<i>Tax shield</i>	<i>Net cash outflows</i>	<i>Present value of cash flows</i>
	(1)	(2)	(3)	(4) [(2) + (3) × t]	(5) (1) – (4)	(6)
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
0	89,127	—	—	—	89,127	89,127
1	89,127	65,740	50,000	57,870	31,257	29,069
2	89,127	61,998	50,000	55,999	33,128	28,490
3	89,127	57,657	50,000	53,829	35,298	27,885
4	89,127	52,622	50,000	51,311	37,816	27,984
5	89,127	46,781	50,000	48,391	40,736	27,700
6	89,127	40,006	50,000	45,003	44,124	27,798
7	89,127	32,146	50,000	41,073	48,054	27,871
8	89,127	23,029	50,000	36,515	52,612	28,410
9	90,290	12,454	50,000	31,227	57,900	28,950
10	—	—	50,000	25,000	(25,000)	(11,500)
(t = tax rate)						3,31,784

The present value of cash outflows under lease financing is Rs. 2,87,878 while that of debt financing (i.e., owning this asset) is Rs. 3,31,784. Thus leasing has an advantage over ownership in this case. It has been assumed that the lessor does not pass on tax benefits like additional depreciation to the lessee. Similarly the impact of additional depreciation in the case of buying has been ignored.

(b) Internal rate of return analysis : Under this method there is no need to assume any rate of discount. To this extent, this is different from the former method where the after-tax cost of borrowed capital was used as the rate of discount. The result of this analysis is the after tax cost of capital explicit in the lease which can be compared with that of the other available sources of finance such as a fresh issue of equity capital, retained earnings or debt. Simply stated, this method seeks to establish the rate at which the lease rentals, net of tax shield on depreciation are equal to the cost of leasing. For the above example, the calculation of this rate i.e. cost of leasing is shown below:

Table 4 : Computaion of cash flows for internal rate of return

<i>End of year</i>	<i>Cost of asset</i>	<i>Lease rental</i>	<i>Depre- ciation</i>	<i>Additional tax shield on lease rental</i>	<i>Net cash outflow</i>
(1)	(2)	(3)	(4)	(5) = [(6)-(4)]	(6) *
	Rs.	Rs.	Rs.	Rs.	Rs.
0	5,00,000	73,976	–	–	4,26,024
1	–	73,976	50,000	11,988	(61,988)
2	–	73,976	50,000	11,988	(61,988)
3	–	73,976	50,000	11,988	(61,988)
4	–	73,976	50,000	11,988	(61,988)
5	–	73,976	50,000	11,988	(61,988)
6	–	73,976	50,000	11,988	(61,988)
7	–	73,976	50,000	11,988	(61,988)
8	–	73,976	50,000	11,988	(61,988)
9	–	73,976	50,000	11,988	(61,988)
10	–		50,000	11,988	11,988

t = tax rate at 50%

*[(3) + (4)] × t

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In the above table, the last column shows the cash flow stream. When we compute the rate of discount that equates the negative cash flows with the positive cash flows, we get, 5.4%. This should be compared with the after tax cost of debt finance i.e. 8%. Since the cost of lease is lower than after tax cost of debt finance, the former should be preferred.

It will be noticed that there is no need to assume any cost of capital for discounting purposes in the IRR method unlike the Present value method. The management understands the IRR better than it does the Present Value. It is, therefore, considered that the IRR method may be preferred to the other methods.

(c) Bower-Herringer-Williamson Method: This method segregates the financial and tax aspects of lease financing. If the operating advantage of a lease is more than its financial disadvantage or vice-versa lease will be preferred.

The procedure of evaluation is briefly as follows :

1. Compare the present value of debt with the discounted value of lease payments (gross), the rate of discount being the gross cost of debt capital. The net present value is the financial advantage (or disadvantage).
2. Work out the comparative tax benefit during the period and discount it at an appropriate cost of capital. The present value is the operating advantage (or disadvantage) of leasing.
3. If the net result is an advantage, select leasing.

For the given example:

	Rs.
Present value of loan payments	5,00,000
Present value of lease payments discounted at 16%	4,15,005
i.e. Rs. 73,976 × 5.61	
Financial advantage	<hr/> 84,995 <hr/>

The present value of comparative tax-benefits i.e., the operating advantage (disadvantage) is calculated below:

Table 5 : Operating advantage (disadvantage) of lease

<i>End of year</i>	<i>Tax shield, on leasing</i>	<i>Tax shield on borrowings</i>	<i>Incremental saving in tax due to leasing</i>	<i>Present value factor at 15%</i>	<i>Present value at 15%</i>
(1)	(2)	(3)	(4) = (2)–(3)	(5)	(6)
	Rs.	Rs.	Rs.		Rs.
1.	36,988	57,870	(20,882)	.87	(18,167)
2.	36,988	55,999	(19,011)	.76	(14,448)
3.	36,988	53,829	(16,841)	.66	(11,115)
4.	36,988	51,311	(14,323)	.57	(8,164)
5.	36,988	48,391	(11,403)	.50	(5,702)
6.	36,988	45,003	(8,015)	.43	(3,446)
7.	36,988	41,073	(4,085)	.38	(1,552)
8.	36,988	36,515	473	.33	156
9.	36,988	31,227	5,761	.28	1,613
10.	36,988	25,000	11,988	.25	2,997
				operating disadvantage	<u>(57,828)</u>

Note : The rate of 15% is considered to be the appropriate cost of capital.

Since the financial advantage exceeds the operating disadvantage in lease, it is advantageous to go for leasing.

Illustration

Evergreen Pvt. Ltd. is considering the possibility of purchasing a multipurpose machine which cost Rs. 10.00 lakhs. The machine has an expected life of 5 years. The machine generates Rs. 6.00 lakhs per year before Depreciation and Tax, and the Management wishes to dispose the machine at the end of 5 years which will fetch Rs. 1.00 lakh. The Depreciation allowable for the machine is 25% on written down value and the Company's Tax rate is 50%. The company approached a NBFC for a five year Lease for financing the asset which quoted a rate of Rs. 28 per thousand per month. The Company wants you to evaluate the proposal with purchase option. The cost of capital is 12% and for lease option it wants you to consider a discount rate of 16%.

	0	1	2	3	4	5
PV @ 12%	1.000	0.893	0.797	0.712	0.636	0.567
PV @ 16%	1.000	0.862	0.743	0.641	0.552	0.476

3.14 Strategic Financial Management

Evaluation of Purchase Option

(Rs. Lakhs)

Particulars	0	1	2	3	4	5
Initial outlay	(10)					
Operating profit		6.00	6.00	6.00	6.00	6.00
Less : Depreciation		2.50	1.88	1.40	1.06	0.79
Profit before tax		3.50	4.12	4.60	4.94	5.21
Less : Tax @ 50%		1.75	2.06	2.30	2.47	2.60
Profit after tax		1.75	2.06	2.30	2.47	2.61
Add : Depreciation		2.50	1.88	1.40	1.06	0.79
Salvage value of machine		---	---	---	---	1.00
Net cash inflow		4.25	3.94	3.70	3.53	4.40
Present value factor @ 12%	1.00	.893	.797	.712	.636	.567
Present Values	(10)	3.80	3.14	2.63	2.25	2.49

Net present value of the purchase option is Rs. 4,31,000

Evaluation of Lease Option

(Rs. Lakhs)

Particulars	1	2	3	4	5
Operating Profit	6.00	6.00	6.00	6.00	6.00
Less : Lease Rent	3.36	3.36	3.36	3.36	3.36
Profit before tax	2.64	2.64	2.64	2.64	2.64
Tax @ 50%	1.32	1.32	1.32	1.32	1.32
Profit after tax	1.32	1.32	1.32	1.32	1.32
Discount factor @ 16%	.862	.743	.641	.552	.476
Present values	1.14	.98	.85	.73	.63

The net present value of lease option is Rs. 4,33,000.

Decision : From the above analysis we observe that NPV of lease option is more than that of purchase option. Hence, lease of machine is recommended.

Illustration

Bright Limited is considering to acquire an additional sophisticated computer to augment its time-share computer services to its clients. Its has two options:

Either,

(a) to purchase the computer at a cost of Rs. 44,00,000

Or,

(b) to take the computer on lease for 3 years from a leasing company at an annual lease rental of Rs. 10 lacs plus 10% of the gross time-share service revenue. The agreement also requires an additional payment of Rs. 12 lacs at the end of the third year. Lease rentals are payable at the year end and the computer reverts back to lessor after period of contract.

The company estimates that the computer will be worth Rs. 20 lacs at the end of the third year.

The Gross revenue to be earned are as follows :-

Year	Rs. in lacs
1	45
2	50
3	55

Annual operating cost (excluding depreciation/lease rental) are estimated at Rs. 18 lacs with an additional cost of Rs. 2 lacs for start up and training at the beginning of the first year. These costs are to be borne by the lessee in case of lease arrangement also. The company proposes to borrow @ 16% interest to finance the purchase of the computer and the repayments are to be made as per the following schedule :-

Year end	Repayment of principal Rs.	Interest of year 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

For the purpose of this computation assume that the company uses the straight line method of depreciation on assets and pays 50% tax on its income.

You are required to analyse and recommend to the company which of the two options is better. [PV factor @ 8% for year 1 (0.926), year 2 (0.857), year 3 (0.794) and @ 16% for year 1 (0.862), year 2 (0.743) and year 3 (0.641)]

Working notes :

Depreciation p.a. = (Rs. 44 Lakhs – Rs. 20 Lakhs)/3 years = Rs. 8 Lakhs p.a.

Tax advantage on depreciation p.a. = Rs. 8 Lakhs × 0.50 = Rs. 4 Lakhs p.a.

Tax advantage on interest paid = 16% (1 – 0.50) = 8%

3.16 Strategic Financial Management

Present Value of cash outflow under Leasing Alternative

Year	Lease Rent Rs.	10% of gross Revenue	Total payment Rs.	Tax shield @ 50%	Net cash outflow (Rs.)	PV factor @ 8%	Total PV 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	27,50,000	13,75,000	13,75,000	0.794	10,91,750
	Lump sum payment	12,00,000					
Total Present value							24,05,850

Present value of Cash outflow if Computer is bought

Year	Initial payment Rs.	Interest @ 16% Rs.	Total Rs.	Tax advantage on interest paid	Tax advantage on Deprecia- tion	Net cash Outflow Rs.	PV factor @ 8%	Total PV 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
						(20,00,000) Salvage	0.794	(15,88,000)
Total present value								17,80,940

Decision : The present value cash-out flow is less by Rs. 6,24,910 (i.e., 24,05,850 – 17,80,940) if the computer is bought. Therefore, purchase of computer is suggested.

Illustration

Outlook Ltd., a small manufacturing firm, is considering the acquisition and the use of a machine. After evaluating equipments offered by seven different manufacturers, it has come to the conclusion that “Z” was the most suitable machine for its needs. Consequently, it has asked the manufacturer’s sales personnel to provide information on alternative financing plans available through their financing subsidiary. The subsidiary presented the two alternatives.

Alternative I was to lease the “Z” equipment for 7 years, which was the machine’s expected useful life. The annual lease payments would be Rs. 14,700 and would include service and

maintenance. Lease payments would be due at the beginning of the year. Lease payments would be fully tax-deductible.

Alternative II would be to purchase the “Z” equipment through 100 per cent loan from the financing subsidiary. The cost of the machine is Rs. 50,000. It would make seven annual payments of Rs. 9,935 each to repay the loan of Rs. 50,000. Payments would be, at the end of each year.

The company's marginal tax rate is 44%. It has estimated that the equipment has an expected salvage value of Rs. 1,000. The company plans to depreciate the equipment by using straight-line method. The service and maintenance would cost Rs. 3,700 annually.

You are required to advise the company on the desirability of the alternative plans, assuming that the rate of interest is 9 per cent p.a.

Note : The relevant PV factors are:

Year	0	1	2	3	4	5	6	7
PVF	1.00	.952	.907	.864	.823	.784	.746	.711

PVF for salvage value : 0.452.

Alternative I : Leasing decision

Year	Lease Rent	After tax lease rent	P.V. Factor @ 9%	Present values Rs.
0	14,700	8,232	1.000	8,232
1	14,700	8,232	0.952	7,837
2	14,700	8,232	0.907	7,466
3	14,700	8,232	0.864	7,112
4	14,700	8,232	0.823	6,775
5	14,700	8,232	0.784	6,454
6	14,700	8,232	0.746	6,141
7	---	---	---	---
Present value of cash outflow				50,017

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Alternative II : Buying decision

Year (1)	Loan Payment (2) Rs.	Interest (3) Rs.	Balance (4) Rs.	Repay- ment (5)=(2)- (3) Rs.	Maintena nce (6) Rs.	Depreciat ion (7) (7)x0.44 Rs.	Tax shield (8) (6)+(3)+(7)x0.4 4 Rs.	Outflow (9)=(2)+(6)-(8) Rs.	P.V. Factor @ 9%	Present values Rs.
1	9,935	4,500	50,000	5,435	3,700	7,000	6,688	6,947	0.952	6,614
2	9,935	4,011	44,565	5,924	3,700	7,000	6,473	7,162	0.907	6,496
3	9,935	3,478	38,641	6,457	3,700	7,000	6,238	7,397	0.864	6,391
4	9,935	2,897	32,184	7,038	3,700	7,000	5,983	7,652	0.823	6,298
5	9,935	2,263	25,146	7,672	3,700	7,000	5,704	7,931	0.784	6,218
6	9,935	1,573	17,474	8,362	3,700	7,000	5,400	8,235	0.746	6,143
7	9,935	823	9,112	9,112	3,700	7,000	5,070	8,565	0.711	6,090
7	Salvage	---	---	---	---	---	---	(1,000)	0.711	(711)
Present value of cash out flows										43,539

Decision : Since the present value of cashflow is lowest for Alternative II, it is suggested to purchase the machine.

6.0 CROSS-BORDER LEASING

Cross-border leasing can be considered as an alternative to equipment loans in some emerging foreign market, where finance leases are treated as conditional sales agreements. The only difference between international leasing and loans will be the documentation, with down payments, payment streams, and lease-end options the same as offered under **Equipment Loans to Foreign Buyers**. The various kinds of leasing arrangements available in the U.S. market are not yet feasible in most cases for cross-border leasing transactions. There are however, attempts to develop more flexible international leasing structures for export financing. Operating leases may be feasible for exports of large equipment with a long economic life relative to the lease term.

Cross-border leasing is a leasing arrangement where lessor and lessee are situated in different countries. This raises significant additional issues relating to tax avoidance and tax shelters.

Cross-border leasing has been widely used in some European countries, to arbitrage the difference in the tax laws of different countries. Typically, this rests on the premise that, for tax purposes, some assign ownership and the attendant depreciation allowances to the entity that has legal title to an asset, while others assign it to the entity that has the most of the use

(legal title being only one of several factors taken into account). In these cases, with sufficiently long leases (often 99 years), an asset can end up with two effective owners, one each in different countries, this is often referred to as a double-dip lease.

Often the original owner of an asset is not subject to taxation in any country and therefore not able to claim depreciation. The transaction often involves an entity selling an asset (such as sewerage system or power plant) to an investor (who can claim depreciation), and long-term leasing it right back (often referred to as a sale leaseback).

Leasing techniques had been used for financing purposes for several decades throughout the world. The practice was developed as a method of financing aircraft. Several airlines entities in the early 1970s were unprofitable and very capital intensive. These airlines had no need for the depreciation deductions generated by their aircraft and were significantly more interested in reducing their operating expenses. A very prominent bank purchased aircraft and leased them to the airlines and because the bank was able to claim depreciation deductions for those aircraft, the bank was able to offer lease rates that were significantly lower than the interest payments that airlines would have to pay on an aircraft purchase loan (and most commercial aircraft flying today are operated under a lease). In the United States, this spread into leasing the assets of U.S. entities and governmental entities and eventually evolved into cross-border leasing.

One significant evolution of the leasing industry involved the collateralization of lease obligations in sale leaseback transactions. For example, an entity would sell an asset to a bank, the bank would require lease payment and give an entity an option to repurchase the asset, the lease obligations were low enough (due to the depreciation deductions the banks were now claiming) so that the entity could pay for the lease obligations and fund the repurchase of the asset by depositing most but not all of the sale proceeds in an interest bearing account. This resulted in the entity having pre-funded all of its lease obligations as well as its option to repurchase the asset from the bank for less than the amount received in the initial sale of the asset so the entity would be left with additional cash after having pre-funded all of its lease obligations.

This gave the appearance of entities entering into leasing transactions with banks for a fee. By the late 1990s many of the such leasing transactions were with entities in Europe. However, in 1999 cross border leasing in the United States was “stopped” by the effective shutdown of LILOs (lease-in/lease outs). (LILOs were significantly more complicated than the typical lease where an owner (for example) would lease an asset to a bank and then lease it back from the bank for a shorter period of time.

Cross-border leasing have been in practice as a means of financing infrastructure development in emerging nations. Cross-border leasing may have significant applications in financing infrastructure development in emerging nations – such as rail and air transport equipment, telephone and telecommunications, equipment, and assets incorporated into

3.20 Strategic Financial Management

power generation and distribution systems and other projects that have predictable revenue streams.

A major objective of cross-border leases is to reduce the overall cost of financing through utilization by the lessor of tax depreciation allowances to reduce its taxable income. The tax savings are passed through to the lessee as a lower cost of finance. The basic prerequisites are relatively high tax rates in the lessor's country, liberal depreciation rules and either very flexible or very formalistic rules governing tax ownership.

Other important objectives of cross border leasing include the following:

- The lessor is often able to utilize nonrecourse debt to finance a substantial portion of the equipment cost. The debt is secured by among other things, a mortgage on the equipment and by an assignment of the right to receive payments under the lease.
- Also, depending on the structure, in some countries the lessor can utilize very favourable "leveraged lease" financial accounting treatment for the overall transaction.
- In some countries, it is easier for a lessor to repossess the leased equipment following a lessee default because the lessor is an owner and not a mere secured lender.
- Leasing provides the lessee with 100% financing.

While details may differ from one transaction to another, most leasing structures are essentially similar and follow the "sale-leaseback" pattern. The principal players are (i) one or more equity investors; (ii) a special purpose vehicle formed to acquire and own the equipment and act as the lessor; (iii) one or more lenders, and (iv) the lessee. The lease itself is a "trip-net lease" under which the lessee is responsible for all costs of operation, maintenance and insurance.

In many transactions, the lessee's fixed payment obligations are prefunded or "defeased" through an up-front payment (in an amount equal to the present value of the fixed payment obligations) to a financial entity that assumes such obligations. The benefits of defeasance include (i) the lessee can lock in its financial savings by making the defeasance payment; (ii) by routing the lease payments through the defeasance entity's jurisdiction, withholding taxes applicable to lease payments in the lessee's jurisdiction may possibly be avoided; (iii) defeasance serves to some extent as a credit enhancement technique for the lessor, and (iv) defeasance may eliminate or reduce currency risk exposure.

In order for the lessor to obtain the tax benefits associated with equipment leasing, most countries require that the lease be treated as a "true lease" for tax purposes, as opposed to a conditional sale or other secured financing arrangement. This objective generally can be satisfied if the lessor has "tax ownership" of the leased equipment.

Each country applies differing rules for determining whether the party acting as lessor under a cross-border lease is the "owner" of the leased asset for tax purposes and is thereby entitled

to claim tax allowances. In the United States and some other countries, the principal focus is on whether the lessor possesses substantially all attributes of economic ownership of the leased asset. Other countries such as the United Kingdom and Germany apply more formalistic property law concepts and focus primarily on the location of legal title, although these countries usually also require that the lessor have some attributes of economic ownership or, at least, that the lessee have only a minimal economic interest in the equipment. In Japan, ownership of legal title is essential, but the lessor is only required under current law to obtain nominal incidents of economic ownership (all that is required is that the lease will provide a return of the equity investment plus a pre-tax profit of 1% of equipment cost). While Japan does have detailed tax lease guidelines, these guidelines are designed primarily to circumscribe the tax benefits available to the lessor in a cross-border lease to prevent undue tax deferral; they do not require the lessor to have a significant economic interest in the leased equipment.

The non-tax issues associated with cross-border leasing can best be described by reference to the various structural risks that may arise in a given transaction and must be addressed in the documentation.

Self- examination Questions

1. Define the concept of leasing? How it is beneficial to Business organizations.
2. Define the following:
 - (i) Sales-Aid-Lease.
 - (ii) Sale and Lease Back
 - (iii) Operating Leasing.
 - (iv) Financial Leasing.
 - (v) Leveraged Leasing.
3. Define the following:
 - (i) Deferred lease rental.
 - (ii) Stepped up lease rental.
 - (iii) Ballooned lease rental
4. Write a note on Bower-Herringer – Williamson Method of lease evaluation?
5. ABC Company has decided to acquire a Rs.5,00,000 pulp control device that has a useful life of ten years. A subsidy of Rs.50,000 is available at the time the device is acquired and placed into service. The device would be depreciated on straight-line basis and no salvage value is expected. The company is in the 50% tax bracket. If the acquisition is financed with a lease, lease payments of Rs.55,000 would be required at the beginning of each year. The company can also borrow at 10% repayable in equal instalments. Debt payments would be due at the beginning of each year:

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- (i) What is the present value of cash outflow for each of these financing alternatives, using the after-tax cost of debt?
 - (ii) Which of the two alternatives is preferable?
6. Engineers 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 bought 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.

Detailed working notes should be given.

7. The Number One finance company has given an offer of an equipment loan to a customer as per details below:

Cost of the equipment	:	Rs. 10 lakhs
Loan offered	:	Rs. 9 lakhs
Interest	:	10% p.a. on reducing balance
Repayment	:	1/3 of the loan at the end of the each year

The customer, now, wants the equipment on a financial lease instead of availing a loan and buying it.

Assuming straight line depreciation, target return of 6% and an Income tax rate of 40%, calculate the annual lease rent that should be charged by the finance company so that its net yield is the same as per the earlier offer.

Present value factors at 6% for years 1 to 3, respectively, are: 0.943, 0.890, 0.840.

8. An industrial unit desires to acquire a diesel generating set costing Rs. 20 lacs which has an economic life of ten years at the end of which the asset is not expected to have any residual value. The unit is considering the alternative choices of:
- (a) taking the machinery on lease, or
 - (b) purchasing the asset outright by raising a loan.

Lease payments are to be made in advance and the lessor requires the asset to be completely amortised over its useful period and that the asset will yield him a return of 10%.

The cost of debt is worked at 16% per annum. Average rate of income tax is 50%. It is expected that the operative costs would remain the same under either method.

The following factors may also be taken into account:

- (i) The present value of discount factors even stream of cash flows over the number of years are:

Rate of Interest

Year	8%	10%	16%
1	0.93	0.91	0.86
2	1.78	1.75	1.60
3	2.58	2.49	2.25
4	3.31	3.17	2.80
5	3.99	3.79	3.27
6	4.62	4.35	3.68
7	5.20	4.87	4.04
8	5.75	5.33	4.34
9	6.25	5.76	4.61
10	6.71	6.14	4.83

- (ii) Straight line method of depreciation may be adopted.

As a financial consultant, indicate what your advice will be.

Workings are to form part of your answer.

9. Welsh Limited is faced with a decision to purchase or acquire on lease a mini car. The cost of the mini car is Rs. 1,26,965. It has a life of 5 years. The mini car can be obtained on lease by paying equal lease rentals annually. The leasing company desires a return of 10% on the gross value of the asset. Welsh Limited can also obtain 100% finance from its regular banking channel. The rate of interest will be 15% p.a. and the loan will be paid in five annual equal instalments, inclusive of interest. The effective tax rate of the company is 40%. For the purpose of taxation it is to be assumed that the asset will be written off over a period of 5 years on a straight line basis.

- (a) Advise Welsh Limited about the method of acquiring the car.

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- (b) What should the annual lease rental to be charged by the leasing company to match the loan option?

For your exercise use the following discount factors:

Discount rate	Years				
	1	2	3	4	5
10%	0.91	0.83	0.75	0.68	0.62
15%	0.87	0.76	0.66	0.57	0.49
9%	0.92	0.84	0.77	0.71	0.65

10. Your company 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 lakhs.
 - (ii) To lease the computer for three years from a leasing company for Rs. 5 lakhs as annual lease rent plus 10% of gross time-share service revenue. The agreement also requires an additional payment of Rs. 6 lakhs at the end of the third year. Lease rents 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 will be worth Rs. 10 lakhs at the end of third year.

Forecast Revenues are:

Year	1	2	3
Amount (Rs. in lakhs)	22.5	25	27.5

Annual operating costs excluding depreciation/lease rent of computer are estimated at Rs. 9 lakhs with an additional Rs. 1 lakh for start up and training costs at the beginning of the first year. These costs are to be borne by the lessee. Your company will borrow at 16% interest to finance the acquisition of the computer. Repayments are to be made according to the following schedule:

Year end	1	2	3
Principal (Rs.'000)	500	850	850
Interest (Rs.'000)	352	272	136

The company uses straight line method (SLM) to depreciate its assets and pays 50% tax on its income. The management approaches you to advice. Which alternative would be recommended and why?

Note: The PV factor at 8% and 16% rates of discount are:

Year	1	2	3
8%	0.926	0.857	0.794
16%	0.862	0.743	0.641

11. ABC Ltd. is considering a proposal to acquire a machine costing Rs. 1,10,000 payable Rs. 10,000 down and balance payable in 10 annual equal instalments at the end of each year inclusive of interest chargeable at 15%. Another option before it is to acquire the asset on a lease rental of Rs. 15,000 per annum payable at the end of each year for 10 years. The following information is also available.
- (i) Terminal Scrap value of Rs. 20,000 is realizable, if the asset is purchased.
 - (ii) The company provides 10% depreciation on straight line method on the original cost.
 - (iii) Income tax rate is 50%.

You are required to compute and analyse cash flows to advise as to which option is better.

DIVIDEND DECISIONS

1. INTRODUCTION

Dividend decisions are an important aspect of corporate financial policy since they can have an effect on the availability as well as the cost of capital. It is a decision made by the Board of Directors of a company. It relates to the amount and timing of any cash payments made to the company's stockholders. The decision is an important one for the firm as it may influence its capital structure and stock price. In addition, the decision may determine the amount of taxation that shareholders pay.

The term dividend refers to that portion of profit (after tax) which is distributed among the owners/shareholders of the firm and the profit which is not distributed is known as retained earning. The dividend policy of the company should aim at achieving the objective of the company to maximise shareholders wealth.

2. DIVIDEND POLICY

Firm's dividend policy divides net earnings into retained earnings and dividends. Retained earnings provide necessary funds to finance long term growth while dividends are paid in cash generally. Dividend policy of the firm is governed by:

(i) Long Term Financing Decision: When dividend decision is treated as a financing decision, net earnings are viewed as a source of long term financing. When the firm does not have profitable investment opportunities, dividend will be paid. The firm grows at a faster rate when it accepts highly profitable opportunities. External equity is raised to finance investments. But retained earnings are preferable because they do not involve floatation costs. Payment of cash dividend reduces the amount of funds necessary to finance profitable investment opportunities thereby restricting it to find other avenues of finance. Thus earnings may be retained as part of long term financing decision while dividends paid are distribution of earnings that cannot be profitably re-invested.

(ii) Wealth Maximisation Decision: Because of market imperfections and uncertainty, shareholders give higher value to near dividends than future dividends and capital gains. Payment of dividends influences the market price of the share. Higher dividends increase value of shares and low dividends decrease it. A proper balance has to be struck between the

4.2 Strategic Financial Management

two approaches. When the firm increases retained earnings, shareholders' dividends decrease and consequently market price is affected. Use of retained earnings to finance profitable investments increase future earnings per share. On the other hand, increase in dividends may cause the firm to forego investment opportunities for lack of funds and thereby decrease the future earnings per share. Thus, management should develop a dividend policy which divides net earnings into dividends and retained earnings in an optimum way so as to achieve the objective of wealth maximisation of shareholders. Such policy will be influenced by investment opportunities available to the firm and value of dividends as against capital gains to shareholders.

3. PRACTICAL CONSIDERATIONS IN DIVIDEND POLICY

A discussion on internal financing ultimately turns to practical considerations which determine the dividend policy of a company. The formulation of dividend policy depends upon answers to the questions whether there should be a stable pattern of dividends over the years or whether the company should treat each dividend decision completely independent. The practical considerations in dividend policy of a company are briefly discussed below:

(a) Financial Needs Of The Company: Retained earnings can be a source of finance for creating profitable investment opportunities. When internal rate of return of a company is greater than return required by shareholders, it would be advantageous for the shareholders to re-invest their earnings. Risk and financial obligations increase if a company raises debt through issue of new share capital where floatation costs are involved. Mature companies having few investment opportunities will show high payout ratios; share prices of such companies are sensitive to dividend charges. So a small portion of the earnings are kept to meet emergent and occasional financial needs. Growth companies, on the other hand, have low payout ratios. They are in need of funds to finance fast growing fixed assets. Distribution of earnings reduces the funds of the company. They retain all the earnings and declare bonus shares to meet the dividend requirements of the shareholders. These companies increase the amount of dividends gradually as the profitable investment opportunities start falling.

(b) Constraints on Paying Dividends

(i) *Legal:* Under Section 205(1) of the Companies Act 1956, dividend is to be paid out of current profits or past profit for depreciation. Central Government can allow a company to pay dividend for any financial year out of profits of the company without providing for depreciation if it is in public interest. Dividend is to be paid in cash but a company is allowed to capitalise profits or reserves (retained earnings) for issuing fully paid bonus shares. Capital profit may also be distributed as dividends if articles permit. Net surplus is generated.

(ii) *Liquidity:* Payment of dividends means outflow of cash. Ability to pay dividends depends on cash and liquidity position of the firm. A mature company does not have much

investment opportunities, nor are funds tied up in permanent working capital and, therefore has a sound cash position. For a growth oriented company inspite of good profits, it will need funds for expanding activities and permanent working capital. So it is not in a position to declare dividends.

(iii) *Access to the Capital Market*: By paying large dividends, cash position is affected. If new shares have to be issued to raise funds for financing investment programmes and if the existing shareholder cannot buy additional shares, control is diluted. Payment of dividends may be withheld and earning utilised for financing firm's investment opportunities.

(iv) *Investment Opportunities*: If investment opportunities are inadequate, it is better to pay dividends and raise external funds whenever necessary for such opportunities.

(c) Desire of Shareholders : As capital gains rate is lower than dividend Income-tax rate, wealthy shareholders in high Income-tax bracket are interested in capital gains as against current dividends for they pursue a policy of increasing wealth by paying less taxes. Such shareholders prefer dividend policy of retained earnings and distributing bonus shares (by capitalisation of reserves). They also influence composition of Board of Directors by their majority voting rights and hold dominant position in the company's equity market.

Small shareholders are concerned with regular dividend income or make capital gains on sale of shares. They do not form a dominant group. Retired and old people investing their savings, pension to purchase shares may prefer regular income and hence select shares of companies paying regular and liberal dividend.

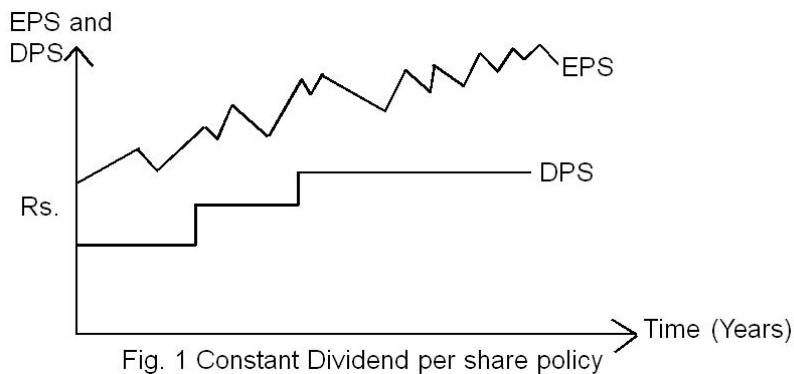
Institutional members LIC, UTI purchasing large chunk of shares hold them for longer periods. They are interested in profitable investment as they are not concerned with personal taxes.

The dividend policy, thus pursued should satisfy substantial portion of the shareholders. Also the dividend policy once established should be continued as long as possible without interfering with the needs of the company to create clientele effect.

(d) Stability of Dividends: Regular payment of dividend annually even if the amount of dividend may fluctuate year to year may not be, related with earnings.

(i) *Constant Dividend per Share*: Irrespective of the fluctuation in earnings, companies may follow the policy of paying a fixed amount per share as dividend every year. If the company reaches new level of earnings and expects to maintain it, the annual dividend per share may be increased.

4.4 Strategic Financial Management



With wide fluctuation in the pattern of earnings, it is necessary to build up surplus in years of higher than average earnings to maintain dividends in years of below average income. This gives rise to the creation of Dividend Equalisation Reserve Fund earmarked by marketable securities for easy conversion to cash at the time of paying dividends in bad years. This policy treats common shareholders at par with preference shareholders without giving them any preferred opportunities within the firm. It is preferred by persons and institutions that depend on dividend income to meet living and operating expenses.

(ii) *Constant Percentage of Net Earnings* : The ratio of dividend to earnings is known as pay out ratio. Some companies follow a policy of constant pay out ratio i.e. paying fixed percentage on net earnings every year. Such a policy envisages that the amount of dividend fluctuates in direct proportion to earnings. If a company adopts 40% payout ratio, then 40% of every rupee of net earnings will be paid out. If a company earns Rs.2/- per share, dividend per share will be 80 paise and if it earns Re. 1.50 per share, dividend per share will be 60 paise.

Such a policy is related to company's ability to pay dividends. For losses incurred, no dividend shall be paid. Internal financing with retained earnings is automatic. At any given payout ratio, amount of dividends and any additions to retained earnings increase with increased earnings and decrease with decreased earnings. This policy has a conservative approach and provides a guarantee against over/underpayment. Management is not allowed to pay dividend if profits are not earned in current year and at the same time, dividend is not allowed to forego if profits are earned.

(iii) *Small Constant Dividend per Share plus Extra Dividend*: The amount of dividend is set at high level and the policy is adopted for companies with stable earnings. For companies with fluctuating earnings, the policy is to pay a minimum dividend per share with a step up feature. The small amount of dividend is fixed to reduce the possibility of missing dividend payment. By paying extra dividend in period of prosperity, it enables the company to pay constant amount of dividend regularly without default and allows flexibility for supplementing shareholders' income when company's earnings are higher than usual,

without committing to make larger payments as part of further fixed dividend. This policy allows some shareholders to plan on set amounts of cash and at the same time be pleased when extra dividends are announced.

A firm following policy of stable dividend in Figure 1 will command higher market price for shares than firm which varies dividend with cyclical fluctuation in earnings as in Figure 2.

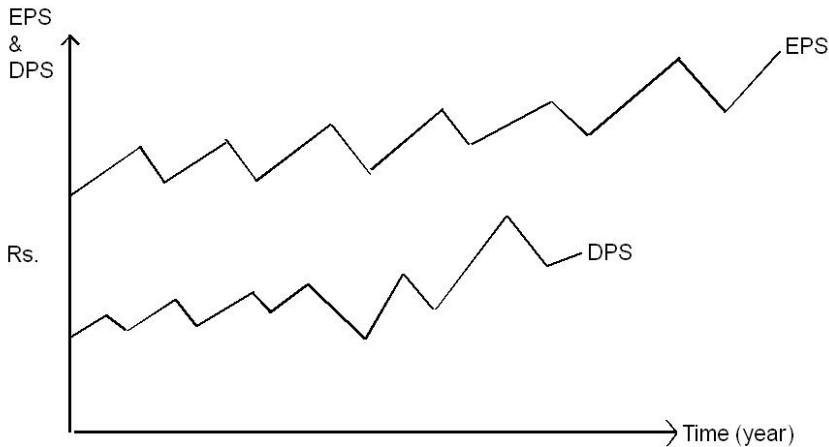


Fig. 2 Dividend policy at Constant Payout ratio

There is, however, a danger of a company with a pattern of stable dividends missing dividend payment in a year as this break will have severe effect on investors than failure to pay dividend by a company with unstable dividend policy. It is prudent for companies to maintain stability of dividends during lean periods. The dividend rate is to be fixed at a conservative figure so that it can be maintained even in such periods. To give benefit of company's prosperity extra dividend can be declared. When the company fails to pay extra dividend, it does not have as depressing an effect on investors as the failures to pay regular dividends.

(d) Form of Dividend: Dividends can be divided into following forms:

(i) *Cash dividend:* The Company should have sufficient cash in bank account when cash dividends are declared. If it does not have enough bank balance, it should borrow funds. For stable dividend policy a cash budget may be prepared for coming period to indicate necessary funds to meet regular dividend payments.

The cash account and reserve account of the company will be reduced when cash dividend is paid. Both total assets and net worth of the company are reduced when cash dividend is distributed. According to Hastings, market price of share drops by the amount of cash dividend distributed.

(ii) *Stock Dividend (Bonus shares):* It is distribution of shares in lieu of cash dividend to existing shareholders. Such shares are distributed proportionately thereby retaining proportionate ownership of the company. If a shareholder owns 100 shares at a time,

4.6 Strategic Financial Management

when 10% dividend is declared he will have 10 additional shares thereby increasing the equity share capital and reducing reserves and surplus (retained earnings). The total net worth is not affected by bonus issue.

Advantages: There are many advantages both to the shareholders and to the company. Some of the important ones are listed as under:

(1) *To Share Holders:* (a) Tax benefit - Income tax rate on cash dividend is more than capital gains tax rate in case of sale of bonus shares.

(b) Policy of paying fixed dividend per share and its continuation even after declaration of stock dividend will increase total cash dividend of the share holders in future.

(2) *To Company:* (a) Conservation of cash for meeting profitable investment opportunities.

(b) Cash deficiency and restrictions imposed by lenders to pay cash dividend.

Limitations: Some of the limitations are:

(1) *To Shareholders:* Stock dividend does not affect the wealth of shareholders and therefore it has no value for them. This is because the declaration of stock dividend is a method of capitalising the past earnings of the shareholders and is a formal way of recognising earnings which the shareholders already own. It merely divides the company's ownership into a large number of share certificates. James Porterfield regards stock dividends as a division of corporate pie into a larger number of pieces. Stock dividend does not give any extra or special benefit to the shareholder. His proportionate ownership in the company does not change at all. Stock dividend creates a favourable psychological impact on the shareholders and is greeted by them on the ground that it gives an indication of the company's growth.

(2) *To Company:* Stock dividends are more costly to administer than cash dividend. It is disadvantageous if periodic small stock dividends are declared by the company as earnings. This results in the measured growth in earnings per share being less than the growth based on per share for small issues of stock dividends are not adjusted at all and only significant stock dividends are adjusted.

4. THEORIES ON DIVIDEND POLICIES

The important theories on dividend policies are discussed as follows:

4.1 TRADITIONAL POSITION

According to the traditional position expounded by Graham and Dodd, the stock market places considerably more weight on dividends than on retained earnings. For them, the stock market is overwhelmingly in favour of liberal dividends as against niggardly dividends. Their view is expressed quantitatively in the following valuation model:

$$P = m (D + E/3)$$

Where,

P = Market Price per share

D = Dividend per share

E = Earnings per share

m = a Multiplier.

As per this model, in the valuation of shares the weight attached to dividends is equal to four times the weight attached to retained earnings. In the model prescribed, E is replaced by (D+R) so that

$$\begin{aligned} P &= m \{D + (D+R)/3\} \\ &= m (4D/3) + m (R/3) \end{aligned}$$

The weights provided by Graham and Dodd are based on their subjective judgments and not derived from objective empirical analysis. Notwithstanding the subjectivity of these weights, the major contention of the traditional position is that a liberal payout policy has a favourable impact on stock prices.

4.2 WALTER APPROACH

The formula given by Prof. James E. Walter shows how dividend can be used to maximise the wealth position of equity holders. He argues that in the long run, share prices reflect only the present value of expected dividends. Retentions influence stock prices only through their effect on further dividends. The formula is simple to understand and easy to compute. It can envisage different possible market prices in different situations and considers internal rate of return, market capitalisation rate and dividend payout ratio in the determination of market value of shares. However, the formula does not consider all the factors affecting dividend policy and share prices. Moreover, determination of market capitalisation rate is difficult. Further, the formula ignores such factors as taxation, various legal and contractual obligations, management policy and attitude towards dividend policy and so on.

The relationship between dividend and share price on the basis of Walter's formula is shown below:

$$V_c = \frac{D + \frac{R_a}{R_c} (E - D)}{R_c}$$

4.8 Strategic Financial Management

Where,

- V_c = Market value of the ordinary shares of the company
- R_a = Return on internal retention, i.e., the rate company earns on retained profits
- R_c = Cost of Capital
- E = Earnings per share
- D = Dividend per share.

A close study of the formula indicates that Professor Walter emphasises two factors which influence the market price of a share. The first is the dividend per share and the second is the relationship between internal return on retained earnings and the market expectation from that company as reflected in the capitalisation rate. In other words, if the internal return of retained earnings is higher than market capitalisation rate, the value of ordinary shares would be high even if dividends are low. However, if the internal return within the business is lower than what the market expects, the value of the share would be low. In such a case, shareholders would prefer a higher dividend so that they can utilise the funds so obtained elsewhere in more profitable opportunities.

The formula given by Prof. Walter explains why market prices of shares of growth companies are high even though the dividend paid out is low. It also explains why the market price of shares of certain companies which pay higher dividends and retain very low profits is also high.

As explained above, market price is dependent upon two factors; firstly, the quantum of dividend and secondly, profitable opportunities available to the company in investing the earnings retained. It is obvious that when a company retains a part of its profits, it has to think in terms of the cost of such retention. Retention of profits depends upon whether it is cheaper and more profitable for shareholders of the company to have corporate earnings retained in the business or get the same in the form of cash dividend. This involves a comparison between the cost of retained earnings and the cost of distributing them. The cost of retained earnings, therefore, involves an opportunity cost, i.e., the benefits which shareholders forego in terms of leaving the funds in the business.

Illustration 1: XYZ Company which earns Rs. 10 per share is capitalized at 10 percent and has a return on investment of 12 percent. Determine the optimum dividend payout ratio and the price of the share at the payout using Walter's dividend policy model.

Solution

According to Walter's approach, the optimum dividend payout ratio would be zero as $R_a > R_c$ because the value of the share of the firm would be maximum.

$$V_c = \frac{D + \frac{R_a}{R_c} (E - D)}{R_c}$$

$$= \frac{(0.12/0.10)(Rs.10)}{0.10} = Rs.120$$

4.3 GORDON GROWTH MODEL

Another theory which contends that dividends are relevant is the Gordons' model. This model explicitly relates the market value of the firm to dividend policy. It is based on the following assumptions:

- The firm is an all equity firm, and it has no debt.
- No external financing is used and investment programmes are financed exclusively by retained earnings.
- The internal rate of return, r , of the firm is constant.
- The appropriate discount rate, k_e , for the firm remains constant.
- The firm has perpetual life.
- The retention ratio, b , once decided upon, is constant. Thus, the growth rate, $g = br$, is also constant.
- The discount rate is greater than the growth rate, $k_e > br$.

Myron Gordon argues that what is available at present is preferable to what may be available in the future. As investors are rational, they want to avoid risk and uncertainty. They would prefer to pay a higher price for shares on which current dividends are paid. Conversely, they would discount the value of shares of a firm which postpones dividends. The discount rate would vary with the retention rate.

The relationship between dividend and share price on the basis of Gordon's formula is shown as:

$$V_E = \left[\frac{d_o (1+g)}{k_e - g} \right]$$

Where,

V_E = Market price per share (ex-dividend)

d_o = Current year dividend

g = Constant annual growth rate of dividends

K_e = Cost of equity capital (expected rate of return).

4.10 Strategic Financial Management

The formula given by Gordon shows that when the rate of return is greater than the discount rate, the price per share increases as the dividend ratio decreases and if the return is less than discount rate it is vice-versa. The price per share remains unchanged where the rate of return and discount rate are equal.

Illustration 2: Starlite Limited is a company having its shares quoted in major stock exchanges. Its share current market price after dividend distributed at the rate of 20% per annum having a paid-up shares capital of Rs. 10 lakhs of Rs. 10 each. Annual growth rate in dividend expected is 2%. The expected rate of return on its equity capital is 15%.

Calculate the value of Starlite Limited's share based on Gordons' model.

Solution

$$\begin{aligned}\text{Dividend distributed during the year} &= 10,00,000 \times \frac{20}{100} \\ &= \text{Rs. } 2,00,000\end{aligned}$$

$$\begin{aligned}V_E &= \left[\frac{d_o (1+g)}{k_e - g} \right] \\ &= \frac{\text{Rs. } 2,00,000 (1+0.02)}{0.15 - 0.02} \\ &= \frac{\text{Rs. } 2,00,000 (1.02)}{0.13} \\ &= \text{Rs. } 15,69,230.77\end{aligned}$$

$$\begin{aligned}\text{Value per share} &= \left[\frac{\text{Rs. } 15,69,230.77}{1,00,000} \right] \\ &= \text{Rs. } 15.69\end{aligned}$$

4.4 MODIGLIANI AND MILLER (MM) HYPOTHESIS

Modigliani and Miller Hypothesis is in support of the irrelevance of dividends. Modigliani and Miller argue that firm's dividend policy has no effect on its value of assets and is, therefore of no consequence i.e. dividends are irrelevant to shareholders wealth. According to them, *'Under conditions of perfect capital markets, rational investors, absence of tax discrimination between dividend income and capital appreciation, given the firm's investment policy, its dividend policy may have no influence on the market price of shares'*.

The hypothesis is based on the following assumptions:

- The firm operates in perfect capital markets in which all investors are rational and information is freely available to all.

- There are no taxes. Alternatively, there are no differences in the tax rates applicable to capital gains and dividends.
- The firm has a fixed investment policy.
- There are no floatation or transaction costs.
- Risk of uncertainty does not exist. Investors are able to forecast future prices and dividends with certainty, and one discount rate is appropriate for all securities and all time periods. Thus, $r = k = k_t$ for all t .

MM Hypothesis is primarily based on the arbitrage argument. Through the arbitrage process, the MM Hypothesis discusses how the value of the firm remains same whether the firm pays dividend or not. It argues that the value depends on the earnings of the firm and is unaffected by the pattern of income distribution. Suppose, a firm which pays dividends will have to raise funds externally to finance its investment plans, MM's argument, that dividend policy does not affect the wealth of the shareholders, implies that when the firm pays dividends, its advantage is offset by external financing. This means that the terminal value of the share declines when dividends are paid. Thus, the wealth of the shareholders - dividends plus terminal price - remains unchanged. As a result, the present value per share after dividends and external financing is equal to the present value per share before the payments of dividends. Thus, the shareholders are indifferent between payment of dividends and retention of earnings.

Market price of a share after dividend declared on the basis of MM model is shown below:

$$P_0 = \frac{P_1 + D_1}{1 + K_e}$$

Where,

P_0 = The prevailing market price of a share

K_e = The cost of equity capital

D_1 = Dividend to be received at the end of period one

P_1 = Market price of a share at the end of period one.

If the firm were to finance all investment proposals, the total amount raised through new shares will be ascertained with the help of the following formula:

$$\Delta N = \frac{I - (E - nD_1)}{P_1}$$

4.12 Strategic Financial Management

Where,

ΔN = Change in the number of shares outstanding during the period

n = Number of shares outstanding at the beginning of the period

I = Total investment amount required for capital budget

E = Earnings of net income of the firm during the period.

Illustration 3: P.L. Engineering Ltd. belongs to a risk class for which the capitalisation rate is 10 per cent. It currently has outstanding 10,000 shares selling at Rs. 100 each. The firm is contemplating the declaration of a dividend of Rs. 5 per share at the end of the current financial year. It expects to have a net income of Rs. 1,00,000 and has a proposal for making new investments of Rs. 2,00,000. Show how under M - M Hypothesis, the payment of dividend does not affect the value of the firm.

Solution

(a) Value of the firm when dividends are not paid:

(i) Price per share at the end of the year 1.

$$\text{Rs. } 100 = \frac{P_1}{1.10}$$

$$\therefore P_1 = 110$$

(ii) Amount required to be raised from the issue of new shares.

$$\Delta n P_1 = (\text{Rs. } 2,00,000 - \text{Rs. } 1,00,000)$$

$$= \text{Rs. } 1,00,000$$

(iii) Number of additional shares to be issued.

$$\frac{\text{Rs. } 1,00,000}{\text{Rs. } 110} = \frac{10,000}{11} \text{ shares}$$

(iv) Value of the firm

$$= \frac{\left[\frac{10,000}{1} + \frac{10,000}{11} \right] 110 - 2,00,000 + 1,00,000}{1.10}$$

$$= \frac{10,99,999}{1.10} = 9,99,999$$

$$= \text{Rs. } 10,00,000$$

(b) Value of the firm, when dividends are paid:

(i) Price per share at the end of year 1

$$P_0 = \frac{1}{(1+K_e)} (D_1 + P_1)$$

$$\text{Rs. } 100 = \frac{1}{1.10} (\text{Rs. } 5 + P_1)$$

$$110 = 5 + P_1$$

$$P_1 = 105$$

(ii) Amount required to be raised from the issue of new shares.

$$\Delta n P_1 = I - (E - n D_1)$$

$$= \text{Rs. } 2,00,000 - (\text{Rs. } 1,00,000 - 10,000 \times 5)$$

$$= \text{Rs. } 1,50,000$$

(iii) Number of additional shares to be issued.

$$\Delta n = \frac{\text{Rs. } 1,50,000}{\text{Rs. } 105} = \frac{10,000}{7} \text{ shares}$$

(iv) Value of the firm

$$\begin{aligned} nP_0 &= \frac{(n + \Delta n)P_1 - I + E}{(1 + K_e)} \\ &= \frac{\left[\frac{10,000}{1} + \frac{10,000}{7} \right] 105 - 2,00,000 + 1,00,000}{1.10} \\ &= \frac{10,99,999}{1.10} = 9,99,999 \\ &= \text{Rs. } 10,00,000 \end{aligned}$$

Thus, it can be seen that the value of the firm remains the same whether dividends are paid or not. Further, the illustration clearly demonstrates that the shareholders are indifferent between the retention of profits and the payment of dividend.

Illustration 4: ABC Ltd. has a capital of Rs. 10 lakhs in equity shares of Rs. 100 each. The shares currently quoted at par. The company proposes declaration of a dividend of Rs. 10 per share at the end of the current financial year. The capitalisation rate for the risk class to which the company belongs is 12%.

4.14 Strategic Financial Management

What will be the market price of the share at the end of the year, if

- (i) A dividend is not declared?
- (ii) A dividend is declared?
- (iii) Assuming that the company pays the dividend and has net profits of Rs. 5,00,000 and makes new investments of Rs. 10 lakhs during the period, how many new shares must be issued? Use the M.M. model.

Solution

Under M.M. Model, the following formula is used to ascertain the market price of Equity Shares:

$$P_0 = \frac{1}{1+K_e} \times (D_1 + P_1)$$

P_0 = Prevailing market price of a share i.e., Rs. 100 in this case. (quoted at Par)

P_1 = Market Price of a share at the end of period one.

D_1 = Dividend to be received at the end of period one.

K_e = Cost of Equity Capital.

(i) If the dividend is not declared

$$100 = \frac{1}{1+0.12} \times P_1$$

$$P_1 = 100 \times 1.12 = \text{Rs. } 112$$

The market price of the Equity share at the end of the year would be Rs. 112.

(ii) If the dividend is declared

$$100 = \frac{1}{1 + 0.12} \times (10 + P_1)$$

$$100 = \frac{10 + P_1}{1.12}$$

$$112 = 10 + P_1$$

$$P_1 = 112 - 10 = \text{Rs. } 102$$

The market price of the equity share at the end of the year would be Rs. 102.

- (iii) Price of the Equity share would be Rs. 102, if the dividend is paid.

Hence Number of shares to be issued:

$$np_1 = I - (NP - nD_1)$$

Where n = No. of New shares to be issued

NP = Net Profit

$nD1$ = Total dividend paid (see note 1)

I = Investment

$$n_{102} = 10,00,000 - (5,00,000 - 1,00,000)$$

$$n_{102} = 6,00,000$$

$$n = \frac{6,00,000}{102} = 5,883 \text{ shares to be issued}$$

$$\text{Note: No. of Equity shares existing} = \frac{10,00,000}{100} = 10,000 \text{ shares}$$

$$\text{Dividend paid } 10,000 \times 10 \text{ per share} = \text{Rs. } 1,00,000$$

Illustration 5: The following is the data regarding two Companies 'X', and 'Y' belonging to the same equivalent risk class:

	<i>Company X</i>	<i>Company Y</i>
Number of ordinary shares	90,000	1,50,000
Market price per share	Rs. 1.20	Re. 1.00
6% Debentures	60,000	—
Profit before interest	Rs. 18,000	Rs. 18,000

All profits after debenture interest are distributed as dividends.

You are required to:

- Explain how under Modigliani & Miller approach, an investor holding 10% of shares in Company 'X' will be better off in switching his holding to Company 'Y'.
- List the assumptions implicit in your answer to 'a' above.

Solution

Working Notes:

	<i>Company X</i>	<i>Company Y</i>
Profit before interest	18,000	18,000
Less: Interest	<u>3,600</u>	—
Net Profit	<u>14,400</u>	<u>18,000</u>

All profits after debenture interest are

4.16 Strategic Financial Management

Distributed as dividends.

Dividend per share	<u>14,400</u>	<u>18,000</u>
	90,000	1,50,000
	= Re. 0.16	= Re. 0.12

(a) Present income of the investor holding 10% of shares in company X:

10% of shares = 9,000 shares \times 0.16 = Rs. 1,440 dividends.

He will dispose of in the market and get Rs. 10,800 (i.e. $9,000 \times 1.20$).

The same amount of Rs. 10,800 will be invested in Company Y. 10,800 shares will be purchased at Re. 1.00 per share. Then he will get dividend of Rs. 1,296 ($10,800 \times 0.12$). Hence, he will not be better off in switching his holding to company Y.

(b) Assumptions of Modigliani & Miller approach:

- Existence of perfect capital market, where all investors are rational.
- No tax differential between dividend income and capital gain.
- Transaction and floatation costs do not exist.
- Risk of uncertainty does not exist.
- The firm has a fixed investment policy.
- Free and uniform access to relevant information of capital market.
- No investor can sway the market forces.
- The cost of equity is equal to shareholders' expectations.
- Securities are infinitely divisible.
- Organisation has a fixed investment policy.

Alternative to (a) above:

M & M approach by applying arbitrage process:

Particulars	= Market value of Firms	
	X	Y
(i) Market value of Equity shares	1,08,000	1,50,000
	($90,000 \times 1.20$)	($1,50,000 \times 1.00$)
(ii) Market value of Debentures	60,000	—
Value of Firm	<u>1,68,000</u>	<u>1,50,000</u>

According to MM's approach, the marginal investor would switch from overvalued to undervalued firm by selling his holdings in the firm X (levered one and overvalued one)

and would buy the same percentage of shares of the firm Y. The arbitrage process will work out as follows:-

Investor will dispose 10% of shares in Company X and realise

9,000 shares at Rs. 1.20 each = 10,800

Add: He will borrow 10% of

60,000 debt at 6% interest 6,000

Total amount 16,800

With this amount, the investor will buy 16,800 shares in Company Y at Re. 1.00 each. Then compare the resultant income as follows:

Present income in X (as worked out above) = 1,440

Proposed income in Y:

1,50,000 shares PBT 18,000

16,800 shares ?

$$\frac{16,800}{1,50,000} \times 18,000 = \text{Rs. } 2016$$

Less: Interest on

debt $6,000 \times 6\%$ = Rs. 360

Net Income Rs. 1656

This shows that the investor will be better off in switching his holdings to Company Y.

Notes:

- (i) When the investor sells equity in Company X and buys equity in company Y with personal leverage, the market value of equity of Company X tends to decline and the market value of equity of company Y tends to rise. This process will continue till the market values of both the companies are in equilibrium.
- (ii) The borrowings of Rs. 6,000 has to be taken on the same terms and conditions as corporate borrowing. Hence, 6% interest rate has been adopted.
- (iii) Companies should belong to the same equivalent risk class.
- (iv) Taxes do not exist and hence tax has not been taken into account.

Illustration 6: With the help of following figures calculate the market price of a share of a company by using:

- (i) Walter's formula
- (ii) Dividend growth model (Gordon's formula)

Earning per share (EPS)

Rs. 10

4.18 Strategic Financial Management

Dividend per share (DPS)	Rs. 6
Cost of capital (k)	20%
Internal rate of return on investment	25%
Retention Ratio	60%

Solution

Market price per share by

(i) Walter's formula:

$$V_c = \frac{D + \frac{R_a}{R_c} (E - D)}{R_c}$$

$$P = \frac{6 + \frac{.25}{.20} (10 - 6)}{.20}$$

$$P = \text{Rs. } 55$$

(ii) Gordon's formula (Dividend Growth model):

When the growth is incorporated in earnings and dividend, the present value of market price per share (P_o) is determined as follows

Gordon's theory:

$$P_o = \frac{E(1-b)}{k-br}$$

Where,

P_o = Present market price per share.

E = Earning per share

b = Retention ratio (i.e. % of earnings retained)

r = Internal rate of return (IRR)

Hint:

Growth rate (g) = br

$$P_o = \frac{10(1-.60)}{.20 - (.60 \times .25)}$$

$$= \text{Rs. } \frac{4}{.05} = \text{Rs. } 80$$

Illustration 7: Following are the details regarding three companies X Ltd., Y Ltd. and Z Ltd.

	X Ltd.	Y Ltd.	Z Ltd.
Internal Rate of return (%)	5	20	15
Cost of equity capital (%)	15	15	15
Earning per share	Rs. 10	Rs. 10	Rs. 10

Calculate the value of an equity share of each of those companies applying Walter's formula when dividend payment ratio (DIP) ratio is (a) 75% (b) 50% (c) 80%.

Solution

Value of an equity share according to Walter's formula is:

$$V_c = \frac{D + \frac{R_a}{R_c} (E - D)}{R_c}$$

Where,

V_c = Market value of the ordinary share of the company.

R_a = Return on internal retention i.e. the rate company earns in retained profits.

R_c = Capitalisation rate i.e. the rate expected by investors by way of return from particular category of shares.

E = Earnings per share

D = Dividend per share

(i) Market Price per share when D/P ratio is 75%.

X Ltd.	Y Ltd.	Z Ltd.
$\frac{7.5 + \frac{.05}{.15} (10 - 7.5)}{.15}$	$\frac{7.5 + \frac{.20}{.15} (10 - 7.5)}{.15}$	$\frac{7.5 + \frac{.15}{.15} (10 - 7.5)}{.15}$
= Rs. 56	= Rs. 72	= Rs. 67
(ii) When D/P ratio is 50%		
$\frac{5 + \frac{.05}{.15} (10 - 5)}{.15}$	$\frac{5 + \frac{.20}{.15} (10 - 5)}{.15}$	$\frac{5 + \frac{.15}{.15} (10 - 5)}{.15}$
= Rs. 44	= Rs. 78	= Rs. 67

4.20 Strategic Financial Management

(iii) When D/P ratio is 80%

$$\frac{8 + \frac{.05}{.15} (10 - 8)}{.15}$$

= Rs. 58

$$\frac{8 + \frac{.20}{.15} (10 - 8)}{.15}$$

= Rs. 71

$$\frac{8 + \frac{.15}{.15} (10 - 8)}{.15}$$

= Rs. 67

Conclusions:

X Ltd.: This company may be considered as declining firm because IRR is lower than the cost of capital. It will therefore, be appropriate for this company to distribute the earnings among its shareholders.

Y Ltd.: This company may be considered as going firm because IRR is higher than the cost of capital. It will therefore, be appropriate for this company to retain the earnings.

Z Ltd.: This company may be considered as normal firm because IRR is equal to the cost of capital. D/P has no impact on value per share.

Illustration 8: A Company's share is quoted in market at Rs. 60 currently. A company pays a dividend of Rs. 5 per share and investors expect a growth rate of 12% per year. Compute:

- (a) The company's cost of equity capital.
- (b) If anticipated growth rate is 13% p.a. calculate the indicated market price per share.
- (c) If the company's cost of capital is 18% and anticipated growth rate is 15% p.a., calculate the market price per share, if dividend of Rs. 5 per share is to be maintained.

Solution

The relationship among cost of capital, dividend, price and expected growth rate is given by formula:

$$\text{Cost of Equity Capital} = \frac{\text{Dividend}}{\text{Price}} \times 100 + \text{Growth rate \%}$$

$$\begin{aligned} \text{(a) Company's cost of equity capital} &= \frac{\text{Rs. 5}}{\text{Rs. 60}} \times 100 + 12\% \\ &= 8.33\% + 12\% \\ &= 20.33\% \end{aligned}$$

$$\begin{aligned} \text{(b) Market Price} &= \frac{\text{Dividend}}{\text{Cost of Equity capital} - \text{Growth rate \%}} \\ &= \frac{\text{Rs. 5}}{20.33\% - 13\%} \end{aligned}$$

$$= \frac{\text{Rs. 5}}{7.33\%}$$

$$= \text{Rs. 68.21 or Rs. 68 approximately}$$

$$(c) \text{ Market Price} = \frac{\text{Rs. 5}}{18\% - 15\%}$$

$$= \text{Rs. 167 approximately}$$

Self-examination Questions

1. What are the different factors affecting the dividend policy of the company?
2. Explain the Walter's approach of dividend policy.
3. What is the theory of Dividend Irrelevancy advocated by Modigliani and Miller? What are its basic assumptions?
4. Contrast between the Gordon and Miller and Modigliani theories of dividend.
5. Zeta Company currently pays a dividend of Re. 1.00 per share and has a share price of Rs. 20.00.
 - (a) If this dividend were expected to grow at a rate of 12% per annum forever, what is the firm's expected or required return on equity using a dividend-discount model approach?
 - (b) Suppose that the dividends were expected to grow at a rate of 20% per annum for 5 years and 10% per year thereafter. Now what is the firm's expected or required return on equity?
6. Theta Ltd. has 8 lakhs equity shares outstanding at the beginning of the year 2005. The current market price per share is Rs. 120. The Board of Directors of the company is contemplating Rs. 6.4 per share as dividend. The rate of capitalisation, appropriate to the risk-class to which the company belongs, is 9.6%:
 - (a) Based on M-M Approach, calculate the market price of the share of the company, when the dividend is (i) declared; and (ii) not declared.
 - (b) 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?
7. Mr. A is contemplating purchase of 1,000 equity shares of a Company. His expectation of return is 10% before tax by way of dividend with an annual growth of 5%. The Company's last dividend was Rs. 2 per share. Even as he is contemplating, Mr. A suddenly finds, due to a budget announcement dividends have been exempted from tax in the hands of the recipients. But the imposition of dividend distribution tax on the Company is likely to lead to a fall in dividend of 20 paise per share. A's marginal tax rate is 30%.

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You are required to calculate Mr. A's estimates of the price per share before and after the Budget announcement?

8. Alpha Limited earns Rs. 6 per share having capitalisation rate of 10 per cent and has a return on investment at the rate of 20 per cent. According to Walter's model, what should be the price per share at 30 per cent dividend payout ratio? Is this the optimum payout ratio as per Walter?
9. Piyush Loonker and Associates presently pay a dividend of Re. 1.00 per share and has a share price of Rs. 20.00.
 - (i) If this dividend were expected to grow at a rate of 12% per annum forever, what is the firm's expected or required return on equity using a dividend-discount model approach?
 - (ii) Instead of this situation in part (i), suppose that the dividends were expected to grow at a rate of 20% per annum for 5 years and 10% per year thereafter. Now what is the firm's expected, or required, return on equity?

INDIAN CAPITAL MARKET

PART A

INDIAN CAPITAL MARKET

1. OVERVIEW OF INDIAN FINANCIAL SYSTEM

Efficient financial systems are indispensable for speedy economic development. The more vibrant and efficient the financial system in a country, the greater is its efficiency of capital formation. The more diversified and broad based the institutional structure of the financial system, the more active and vibrant is the financial system.

The nature and scope of financial intermediaries, their investment policies and operations affect the process of capital formation in the country. They facilitate the flow of savings into investments by overcoming the geographical and technical limitations.

Broadly Indian Financial Market consists of Capital Market, Money Market and the Debt Market. The organized part of the Indian financial system can be classified from the point of view of regulatory authority as:

- Reserve Bank of India (RBI) regulating Commercial Banks, Foreign Exchange Markets, Financial Institutions and Primary Dealers. Commercial banks include Public Sector Banks, Private Banks and Foreign Banks. Financial Institutions may be of all India level like IDBI, IFCI, ICICI, NABARD or sectoral financial institutions like EXIM, TFCIL etc. Primary Dealers are registered participants of the wholesale debt market and bid at auctions for Government Debt, treasury bills.
- Securities and Exchange Board of India (SEBI) regulating Primary Market, Secondary Market, Derivatives Market and market intermediaries like Mutual Funds, Brokers, Merchant Banks, depositories.

5.2 Strategic Financial Management

2. CAPITAL MARKETS/SECURITIES MARKET

The capital markets are relatively for long term (greater than one year maturity) financial instruments (e.g. bonds and stocks). Their role can be summarized as follows:

- a) The Capital Market is the indicator of the inherent strength of the economy.
- b) It is the largest source of funds with long and indefinite maturity for companies and thereby enhances the capital formation in the country.
- c) It offers a number of investment avenues to investors.
- d) It helps in channeling the savings pool in the economy towards optimal allocation of capital in the country.

The securities / capital market is divided into two parts, namely, primary and secondary stock market. The relationship between these parts of the markets provides an insight into its organization.

2.1 PRIMARY MARKET

A market where new securities are bought and sold for the first time is called the New Issues market or the IPO market. In other words the first public offering of equity shares or convertible securities by a company, which is followed by the listing of a company's shares on a stock exchange, is known as an initial public offering (IPO). The Primary market also includes issue of further capital by companies whose shares are already listed on the stock exchange.

There are different types of intermediaries operating in the capital market. They play a crucial role in the development of capital market by providing a variety of services. These intermediaries viz., merchant bankers, brokers, bankers to issues, debenture trustees, portfolio managers, registrars to issues and share transfer agents, etc., are regulated by SEBI.

2.2 SECONDARY MARKET

A market in which an investor purchases a security from another investor rather than the issuer, subsequent to the original issuance in the primary market. So, it can be stated that secondary markets are the stock exchanges and the over-the-counter market. Securities are first issued as a primary offering to the public. When the securities are traded from that first holder to another, the issues trade in these secondary markets.

2.3 DIFFERENCES BETWEEN PRIMARY AND SECONDARY MARKETS

(a) Nature of Securities: The primary markets deals with new securities, that is, securities, which were not previously available and are, therefore, offered to the investing public for the first time. The market, therefore, derives its name from the fact that it makes available a new block of securities for public subscription. The stock market, on the other hand, is a market for old securities, which may be defined as securities, which

have been issued already and granted stock exchange quotation. The stock exchanges, therefore, provide a regular and continuous market for buying and selling of securities.

(b) Nature of Financing: Another aspect related to the separate functions of these two parts of the securities market is the nature of their contribution to industrial financing. Since the primary market is concerned with new securities, it provides additional funds to the issuing companies either for starting a new enterprise or for the expansion or diversification of the existing one and, therefore, its contribution to company financing is direct. In contrast, the secondary markets can in no circumstance supply additional funds since the company is not involved in the transaction. This, however, does not mean that the stock markets do not have relevance in the process of transfer of resources from savers to investors. Their role regarding the supply of capital is indirect. The usual course in the development of industrial enterprise seems to be that those who bear the initial burden of financing a new enterprise pass it on to others when the enterprise becomes well established. The existence of secondary markets which provide institutional facilities for the continuous purchase and sale of securities and, to that extent, lend liquidity and marketability, play an important part in the process.

(c) Organisational Differences: The stock exchanges have physical existence and are located in a particular geographical area. The primary market is not rooted in any particular spot and has no geographical existence. The primary market has neither any tangible form any administrative organizational setup like that of stock exchanges, nor is it subjected to any centralized control and administration for the consummation of its business. It is recognized only by the services that it renders to the lenders and borrowers of capital funds at the time of any particular operation.

2.4 SIMILARITIES BETWEEN PRIMARY AND SECONDARY MARKETS

Nevertheless, in spite of organizational and functional differences, the primary market and the stock exchanges are inseparably connected. Some of the similarities between them are follows:

(a) Listing: One aspect of this inseparable connection between them is that the securities issued in the primary market are invariably listed on a recognized stock exchange for dealings in them. The practice of listing of new issues on the stock market is of immense utility to the potential investors who can be sure that should they receive an allotment of new issues, they will subsequently be able to dispose them off any time.

(b) Control: The stock exchanges exercise considerable control over the organization of new issues. In terms of regulatory framework related to dealings in securities, the new issues of securities which seek stock quotation/listing have to comply with statutory rules as well as regulations framed by the stock exchanges with the object of ensuring fair dealings in them. If the new issues do not conform to the prescribed stipulations, the stock exchanges would refuse listing facilities to them. This requirement obviously

5.4 Strategic Financial Management

enables the stock exchange to exercise considerable control over the new issues market and is indicative of close relationship between the two.

The markets for new and old securities are, economically, an integral part of a single market – the capital market. Their mutual interdependence from the economic point of view has two dimensions. One, the behavior of the stock exchanges has a significant bearing on the level of activity in the primary market and, therefore, its responses to capital issues: Activity in the new issues market and the movement in the prices of stock exchange securities are broadly related: new issues increase when share values are rising and vice versa.

The second dimension of the mutual interdependence of the two parts of the market is that the prices of new issues are influenced by the price movements on the stock market. The securities market represents an important case where the stock-demand-and-supply curves, as distinguished from flow-demand-and-supply curves, exert a dominant influence on price determination. The quantitative predominance of old securities in the market usually ensures that it is these, which set the tone of the market as a whole and govern the prices and acceptability of the new issues. Thus, the flow of new savings into new securities is profoundly influenced by the conditions prevailing in the old securities market – the stock exchange.

3. STOCK MARKET AND ITS OPERATIONS

Secondary markets are also referred to as Stock Exchange. They are a part of capital market. The stock exchange is one of the most important institutions in the Capital Market, which includes term lending institutions, banks, investors, companies, and just about anybody and everybody who are engaged in providing long-term capital, whether share capital or debt capital, to the industrial sector.

To state simply it is a place where the securities issued by the Government, public bodies and Joint Stock Companies are traded.

As per the Securities Contracts Regulations Act, 1956 a stock exchange is defined as "an association, organisation or body of individuals whether incorporated or not, established for the purpose of assisting, regulating and controlling business in buying, selling and dealing in securities".

3.1 GROWTH OF STOCK EXCHANGES

The history of Stock Exchanges in India goes back to the eighteenth century, when securities of the East India Company were transacted. Corporate shares made their entry in the 1830s and assumed significance with the enactment of the Companies Act in the 1850s. The Bombay Stock Exchange, the oldest stock exchange in India was established in 1875. There are twenty-four Stock Exchanges in the country at present (See the table below), out of which only eight have been given permanent recognition; others need to apply every year for recognition.

<i>Name</i>	<i>City</i>
The Bombay Stock Exchange	Mumbai
The Ahmedabad Stock Exchange Association Ltd.	Ahmedabad
Bangalore Stock Exchange Ltd.	Bangalore
Bhubaneswar Stock Exchange Assn., Ltd.	Bhubaneswar
The Culcutta Stock Exchange Association Ltd.	Calcutta
Cochin Stock Exchange Ltd.,	Cochi
The Delhi Stock Exchange Assn. Ltd.	New Delhi
The Gauhati Stock Exchange Ltd.	Guwahati
The Hyderabad Stock Exchange Ltd.	Hyderabad
Jaipur Stock Exchange Ltd.	Jaipur
Kanara Stock Exchange Ltd.	Mangalore
The Ludhiana Stock Exchange Assn. Ltd.	Ludhiana
Madras Stock Exchnage Ltd.	Chennai
Madhya Pradesh Stock Exchange Ltd.	Indore
The Magadh Stock Exchange Ltd.	Patna
Pune Stock Exchange Ltd.	Pune
Saurashtra Kutch Stock Exchange Ltd.,	Rajkot
The Uttar Pradesh Stock Exchange Assn. Ltd.	Kanpur
Vadodara Stock Exchange Ltd.	Vadodara
Coimbatore Stock Exchange	Coimbatore
Meerut Stock Exchange Ltd.	Meerut Cantonment
OTC Exchange of India.	Mumbai
The National Stock Exchange Of India Ltd.	Mumbai
The Inter-Connected Stock Exchange Of India (ISE)	

The stock exchanges are tightly regulated as self-regulatory organizations (SROs) under the Act. In addition to ordinary regulatory powers over the stock exchanges, the Central Government and/or SEBI may nominate up to three members to the board of each stock exchange [Section 4(2) (iii) of the SC (R) Act, 1956 and Section 10 of SC(R) Rules, 1957]. The government and/or the agency have the authority to make, approve and amend the

5.6 Strategic Financial Management

byelaws of the stock exchanges [Section 4(1)(a) & 8 of the SC(R) Act, 1956]. In return, the stock exchanges have been granted a strong disciplinary authority (as well as obligations) over their member stockbrokers.

3.1.1 Leading Stock Exchanges in India: The two leading stock exchanges in India are Bombay Stock Exchange (BSE) and National Stock Exchange (NSE). A brief about them is as under:

(a) Bombay Stock Exchange Limited: It is the oldest stock exchange in Asia with a rich heritage. Popularly known as "BSE", it was established as "The Native Share & Stock Brokers Association" in 1875. It is the first stock exchange in the country to obtain permanent recognition in 1956 from the Government of India under the Securities Contracts (Regulation) Act, 1956. The Exchange's pivotal and pre-eminent role in the development of the Indian capital market is widely recognized and its index, *SENSEX*, is tracked worldwide. Earlier an Association of Persons (AOP), the Exchange is now a demutualised and corporatised entity incorporated under the provisions of the Companies Act, 1956, pursuant to the BSE(Corporatisation and Demutualisation) Scheme, 2005 notified by the Securities and Exchange Board of India (SEBI).

The Exchange has a nation-wide reach with a presence in 417 cities and towns of India. The systems and processes of the Exchange are designed to safeguard market integrity and enhance transparency in operations. During the year 2004-2005, the trading volumes on the Exchange showed robust growth.

The Exchange provides an efficient and transparent market for trading in equity, debt instruments and derivatives. The BSE's On Line Trading System (BOLT) is a proprietary system of the Exchange and is BS 7799-2-2002 certified. The surveillance and clearing & settlement functions of the Exchange are ISO 9001:2000 certified.

(b) National Stock Exchange: Report of the High Powered Study Group on Establishment of New Stock Exchanges, recommended promotion of a National Stock Exchange by financial institutions (FIs) to provide access to investors from all across the country on an equal footing. Based on the recommendations, NSE was promoted by leading Financial Institutions at the behest of the Government of India and was incorporated in November 1992 as a tax-paying company unlike other stock exchanges in the country.

On its recognition as a stock exchange under the Securities Contracts (Regulation) Act, 1956 in April 1993, NSE commenced operations in the Wholesale Debt Market (WDM) segment in June 1994. The Capital Market (Equities) segment commenced operations in November 1994 and operations in Derivatives segment commenced in June 2000.

It uses satellite communication technology to energise participation from around 320 cities spread all over the country. NSE can handle up to 6 million trades per day in Capital Market segment.

NSE is one of the largest interactive VSAT based stock exchanges in the world. Today it supports more than 3000 VSATs. The NSE- network is the largest private wide area network in the country and the first extended C- Band VSAT network in the world. Currently more than 9000 users are trading on the real time-online NSE application. There are over 15 large computer systems which include non-stop fault-tolerant computers and high end UNIX servers, operational under one roof to support the NSE applications. This coupled with the nation wide VSAT network makes NSE the country's largest Information Technology user.

The trading intensity of Indian stock exchanges is impressive by world standards. Among the biggest exchanges, measured by the number of trades per calendar year, the National Stock Exchange (NSE) retained rank 3 in all the four years. The Bombay Stock Exchange (BSE) climbed from rank 7 to rank 5 between 2002 and 2003, and has stayed at rank 5 ever since.

3.1.2 Stock Exchanges Abroad: With the increasing globalisation and liberalization, the prices of securities on Indian stock exchanges are influenced by stock exchanges abroad. Under this heading we have tried to give a brief introduction of the major stock exchanges abroad.

(a) New York Stock Exchange (NYSE): The New York Stock Exchange was established more than 200 years ago, at the signing of the Buttonwood Agreement by 24 New York City stockbrokers and merchants in 1792. Centuries of growth and innovation later, the NYSE remains the world's foremost securities marketplace. Over the years, its commitment to issuers and investors has been unwavering, and its persistent application of the latest technology has allowed it to maintain a level of market quality and service that is unparalleled.

The NYSE registered as a national securities exchange with the U.S. Securities and Exchange Commission on October 1, 1934. The Governing Committee was the primary governing body until 1938, at which time The Exchange hired its first paid President and created a thirty-three member Board of Governors. The Board included Exchange members, non-member partners from New York and out-of-town firms, as well as public representatives.

In 1971, the Exchange was incorporated as a not-for-profit corporation. In 1972 the members voted to replace the Board of Governors with a twenty-five member Board of Directors, comprised of a Chairman and CEO, twelve representatives of the public, and twelve representatives from the securities industry.

Subject to the approval of the Board, the Chairman may appoint a President, who would serve as a director. Additionally, at the Board's discretion, they may elect an Executive Vice Chairman, who would also serve as a director.

5.8 Strategic Financial Management

Each day on the NYSE trading floor an auction takes place. Open bid and offers are managed on The Trading Floor by Exchange members acting on behalf of institutions and individual investors. Buy and sell orders for each listed security meet directly on the trading floor in assigned locations. Prices are determined through supply and demand. Stock buy and sell orders funnel through a single location, ensuring that the investor, no matter how big or small, is exposed to a wide range of buyers and sellers.

(b) Nasdaq: Nasdaq is known for its growth, liquidity, depth of market and the world's most powerful, forward-looking technologies. All these make Nasdaq choice of the leading companies worldwide. Since its introduction as the world's first electronic stock market, Nasdaq has been at the forefront of innovation. Now Nasdaq is the fastest growing major stock market in the world — and home to over half of the companies traded on the primary U.S. markets.

Not all stock markets are the same, nor is one stock market appropriate for all types of companies. Markets vary by listing requirements (to begin trading) and maintenance standards (to continue trading), as well as by their rules and regulations governing trade execution, reporting and settlement. Stock markets also vary according to market structure and trading mechanisms. A company chooses a stock market by determining which market will most effectively enhance the attractiveness of their stock to investors.

As the market for Nasdaq's largest and most actively traded securities, the Nasdaq National Market lists more than 4,010 securities. To be listed on the National Market, a company must satisfy stringent financial, capitalization, and corporate governance standards. Nasdaq National Market companies include some of the largest, best known companies in the world.

Since its inception in 1971, Nasdaq has steadily outpaced the other major markets to become the fastest-growing stock market in the U.S. Nasdaq is a screen-based market, operating in an efficient, highly competitive electronic trading environment.

In contrast to traditional floor-based stock markets, Nasdaq has no single specialist through which transactions pass. Nasdaq's market structure allows multiple market participants to trade stock through a sophisticated computer network linking buyers and sellers from around the world. Together, these participants help ensure transparency and liquidity for a company's stock while maintaining an orderly market and functioning under tight regulatory controls.

(c) London Stock Exchange: Its history goes back to 1760 when 150 brokers kicked out of the Royal Exchange for rowdiness formed a club at Jonathan's Coffee House to buy and sell shares. In 1773, members voted to change the name to Stock Exchange and 2000 shareholders voted it to become a public limited company and thus London Stock Exchange plc was formed. Dealing in shares is conducted via an off-market trading facility operated by Cazenove and Co.

London Stock Exchange provides a range of services for companies and investors:

- (i) *Company Services* - It provides a number of markets which allow companies large and small to raise capital, and a range of services to increase the profile of the companies.
- (ii) *Trading Services* - It gives market users access to a well-developed trading environment with a proven record of stability and flexibility.
- (iii) *Information Services* - It provides high quality real-time price information to market users worldwide, as well as historical and reference data.

Supporting these activities, the exchange regulates the markets to give protection to investors and companies and to maintain its reputation for high standards and integrity. In addition, in partnership with others, it helps to track the performance of the markets through various indices. The exchange also undertakes various investors friendly programme. One of them is the Share Aware Programme.

Share Aware is a nation-wide campaign that aims to raise awareness about the opportunities and long term benefits of share investment. It gives useful information about buying and selling shares on the London Stock Exchange's markets.

The Yorkshire Share Fair is part of the London Stock Exchange's ongoing, successful Share Aware campaign to raise awareness amongst private investors regarding the benefits of investing in shares. The event offered investors access to stockbrokers, information vendors and quoted companies under one roof, together with a number of seminars on various aspects of share investment.

3.2 CHARACTERISTICS OF STOCK EXCHANGES IN INDIA

Traditionally, a stock exchange has been an association of individual members called member brokers (or simply members or brokers), formed for the express purpose of regulating and facilitating the buying and selling of securities by the public and institutions at large. A stock exchange in India operates with due recognition from the Government under the Securities & Contracts (Regulations) Act, 1956. The member brokers are essentially the middlemen, who transact in securities on behalf of the public for a commission or on their own behalf. Corporate membership of stock exchanges has also been introduced lately. As you know, there are at present 24 stock exchanges in India. The largest among them being the Bombay Stock Exchange (BSE), which alone accounts for over 80% of the total volume of transactions in shares in the country.

A stock exchange is typically governed by a board, consisting of directors. Some Members of the Board are nominated by the Government. Government nominees include representatives of the Ministry of Finance, as well as some public representatives, who are expected to safeguard the interest of investors in the functioning of the exchanges. The board is headed by a President, who is an elected member, usually nominated by the

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government, from among the elected members. The Executive Director, who is appointed by the stock exchange with government approval, is the operational chief of the stock exchange. His duty is to ensure that the day-to-day operations of the stock exchange are carried out in accordance with the rules and regulations governing its functioning. Securities and Exchanges Board of India (SEBI) has been set up in Mumbai by the Government to oversee the orderly development of stock exchanges in the country. All companies wishing to raise capital from the public are required to list their securities on at least one stock exchange. Thus, all ordinary shares, preference shares and debentures of publicly held companies are listed in one or more stock exchanges. Stock exchanges also facilitate trading in the securities of the public sector companies as well as government securities.

3.3 FUNCTIONS OF STOCK EXCHANGES

The Stock Exchange is a market place where investors buy and sell securities. Functions of the stock exchanges can be summarized as follows:

(a) Liquidity and Marketability of Securities: The basic function of the stock market is the creation of a continuous market for securities, enabling them to be liquidated, where investors can convert their securities into cash at any time at the prevailing market price. It also provides investors the opportunity to change their portfolio as and when they want to change, i.e. they can at any time sell one security and purchase another, thus giving them marketability.

(b) Fair Price Determination: This market is almost a perfectly competitive market as there are large number of buyers and sellers. Due to nearly perfect information, active bidding takes place from both sides. This ensures the fair price to be determined by demand and supply forces.

(c) Source for Long term Funds: Corporates, Government and public bodies raise funds from the equity market. These securities are negotiable and transferable. They are traded and change hands from one investor to the other without affecting the long-term availability of funds to the issuing companies.

(d) Helps in Capital Formation: they are the nexus between the savings and the investments of the community. The savings of the community are mobilized and channeled by stock exchanges for investment into those sectors and units which are favoured by the community at large, on the basis of such criteria as good return, appreciation of capital, and so on. It is the preference of investors for individual units as well as industry groups, which is reflected in the share price, that decides the mode of investment. Stock exchanges render this service by arranging for the preliminary distribution of new issues of capital, offered through prospectus, as also offers for sale of existing securities, in an orderly and systematic manner. They themselves administer the same, by ensuring that the various requisites of listing (such as offering at least the prescribed minimum percentage of capital to the public, keeping the subscription list open for a minimum period of days, making provision for receiving applications at least at the

prescribed centres, allotting the shares against applications on a fair and unconditional basis) are duly complied with. Members of stock exchanges also assist in the flotation of new issues by acting (i) as brokers, in which capacity they, *inter alia*, try to procure subscription from investors spread all over the country, and (ii) as underwriters. This quite often results in their being required to nurse new issues till a time when the new ventures start making profits and reward their shareholders by declaring reasonable dividends when their shares command premiums in the market. Stock exchanges also provide a forum for trading in rights shares of companies already listed, thereby enabling a new class of investors to take up a part of the rights in the place of existing shareholders who renounce their rights for monetary considerations.

(e) Reflects the General State of Economy: The performance of the stock markets reflects the boom and depression in the economy. It indicates the general state of the economy to all those concerned, who can take suitable steps in time. The Government takes suitable monetary and fiscal steps depending upon the state of the economy.

3.4 BASICS OF STOCK MARKET INDICES

3.4.1 What is a Stock Market Index?

It is an answer to the question “how is the market doing?” It is representative of the entire stock market. Movements of the index represent the average returns obtained by investors in the stock market.

3.4.2 What do the fluctuations of Index say?

Stocks are valued by discounting future earnings of a company; therefore, stock indices reflect expectation about future performance of the companies listed in the stock market or performance of the industrial sector. When the index goes up, the market thinks that the future returns will be higher than they are at present and vice versa.

3.4.3 What's the concept behind the Index?

Stock prices are sensitive to the following news:

- Company specific news
- Country specific news (which includes budget, elections, government policies, wars and so on)

On any one-day there is some good and some bad news related to specific companies, which offset each other. This news does not affect the index. However, the country specific news, which is common to all stocks, affects the index.

3.4.4 How is the index calculated?

Index calculation is based on the weighted aggregate method as follows:

Step1: First we calculate the weightage of each share present in a scrip as:

$$(M\text{-cap}_{it} / \text{total market cap}) * 100$$

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Where,

M-cap_{it} = market cap of scrip 'i' at time 't'.

Total market cap= Sum of the market cap of all scrips present in the index

Market cap= Price of share at time 't' * number of outstanding shares.

t=day of calculation of index

Step2: Value of index =

$$\sum_{i=1}^n \frac{\{M\text{-cap}_{it} * \text{weight}_{it}(\text{as calculated in step 1})\}}{W_b}$$

Where,

W_b =Sum of the market cap of all scrips in the index during the base year

4. SETTLEMENT AND SETTLEMENT CYCLES

Settlement refers to the process in which traders who have made purchases make payments while those who have sold shares, deliver them. The exchange ensures that buyers receive their shares either in the physical or the demat form. Similarly, sellers who have delivered shares to the exchange receive payment for the same. The process of settlement is managed by stock exchanges through Clearing House (CH) entities, formed specifically to ensure that the process of settlement takes place smoothly. SEBI introduced a new settlement cycle known as the rolling settlement cycle from Jan12,2000.

4.1 NSE SETTLEMENT CYCLE

The NSE settlement cycle is a weekly cycle. It begins on Wednesday (Day1) and ends on the following Tuesday (Day7). There are therefore 5 trading days in the weekly settlement cycle, as trading doesn't take place on Saturdays and Sundays. All the trades, which take place from and during the weekly-cycle (Day1-7), are settled on the following Monday, Tuesday and Wednesday (Day 13,14,15). All securities are delivered to the NSE Clearing House (CH) on Monday (Day 13) and all payments are made on Tuesday (Day14). The CH makes the payment and delivery of shares to brokers on Wednesday (Day15), who would then transfer it to their clients. This means that if you buy a share on any day from Day 1-7 (Wednesday to Tuesday), the payment will have to be made to the CH on Day 14. Shares will then be delivered to your broker on Day 15, and subsequently will be transferred to your demat account on Day 16.

4.2 BSE SETTLEMENT CYCLE

The BSE settlement cycle is similar to that of the NSE. However, the schedule of trading and settlement days is different. It starts on day 1 (Monday) and ends on day 5 (Friday).

The settlement takes place on day 11 (Thursday), day 12 (Friday), and day 13 (Saturday). The examples stated for NSE settlement cycles apply to BSE settlement cycles as well except that the days change.

4.3 ROLLING SETTLEMENT CYCLE

SEBI introduced a new settlement cycle known as the 'rolling settlement cycle.' This cycle starts and ends on the same day and the settlement takes place on the 'T+5' day, which is 5 business days from the date of the transaction. Hence, the transaction done on Monday will be settled on the following Monday and the transaction done on Tuesday will be settled on the following Tuesday and so on. Hence, unlike a BSE or NSE weekly settlement cycle, in a rolling settlement cycle, the decision has to be made at the conclusion of the trading session, on the same day. Rolling settlement cycles were introduced in both exchanges on January 12, 2000.

Internationally, most developed countries follow the rolling settlement system. For instance, both the US and the UK follow a rolling settlement (T+3) system, while the German stock exchanges follow a T+2 settlement cycle.

4.4 ADVANTAGES OF ROLLING SETTLEMENTS

In rolling settlements, payments are quicker than in weekly settlements. Thus, investors benefit from increased liquidity. From an investor's perspective, rolling settlement reduces delays. This also reduces the tendency for price trends to get exaggerated. Hence, investors not only get a better price but can also act at their leisure. Currently in India, in the weekly settlement cycle, sale proceeds of transactions done on the first trading day are available on the 12th day and on the eighth day, if the trade takes place on the last day of the trading cycle.

The National Stock Exchange was the first to introduce rolling settlements in the country. Rolling settlements require electronic transfer of funds and demat facilities, with respect to securities being traded. Suppose a trader wants to buy a stock on a Monday, the first day of a new BSE settlement, with the intention of selling it on the Thursday of the same week. In the current weekly settlement system, the trader needs to just pay up the margin. On Thursday, when the position is squared, the trader would take home the profit or pay up for the loss. However, in a rolling settlement, the trader will have to make the complete payment for the outstanding long position on Monday. On Thursday, the squaring up position is a separate transaction altogether where the trader would be delivered the shares he had purchased on Monday. Hence, in the current system, traders who hope to profit from a price rise or decline in the five-day period play a very active role in the market. Thereby making the current spot market more of a five-day futures market. On the other hand, under the rolling settlement, the role of traders who treat the spot market as a five-day futures market is marginalised as each of their transactions necessarily results in delivery of shares and a receipt of payments.

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5. CLEARING HOUSES

Clearing house is an exchange-associated body charged with the function of ensuring (guaranteeing) the financial integrity of each trade. Orders are cleared by means of the clearinghouse acting as the buyer to all sellers and the seller to all buyers. Clearing houses provide a range of services related to the guarantee of contracts, clearance and settlement of trades, and management of risk for their members and associated exchanges.

5.1 ROLE

- It ensures adherence to the system and procedures for smooth trading.
- It minimises credit risks by being a counter party to all trades.
- It involves daily accounting of all gains or losses.
- It ensures delivery of payment for assets on the maturity dates for all outstanding contracts.
- It monitors the maintenance of speculation margins.

5.2 WORKING

The clearinghouse acts as the medium of transaction between the buyer and the seller. Every contract between a buyer and a seller is substituted by two contracts so that clearing house becomes the buyer to every seller and the seller to every buyer. In a transaction where P sells futures to R, R is replaced by the clearinghouse and the risk taken by P becomes insignificant. Similarly, the credit risk of R is taken over by the clearing house; thus, the credit risk is now assumed by the clearing house rather than by individuals. The credit risk of the clearing house is then minimised by employing some deposits as collaterals by both, buyers and sellers. These deposits, known as margins, are levied on each transaction depending upon the volatility of the instrument and adjusted everyday for price movements. Margins, which normally are in form of cash or T-bills, can be categorised into the following types: -

- Initial Margins on Securities, paid by purchasers and short sellers, generally function as a security for loan, and is similar to a down payment required for the purchase of a security.
- Initial Margins on Derivatives, refer to funds paid as guarantee to ensure that the party to the transaction will perform its obligation under the contract. Initial margin on derivatives is designed to cover future changes that may occur in the value.
- Maintenance Margins, refer to the value over and above the initial margin, which must be maintained in a margin account at all times after the initial margin requirement, if any, is satisfied.
- Variation Margin refers to funds that are required to be deposited in, or paid out of, a margin account that reflects changes in the value of the relevant instrument.

5.3 TRADING PROCEDURES

Clients have to open an account with a member of the exchange. When they want to trade in futures, they instruct members to execute orders in their account. The trade details are reported to the clearing house. If a member of the exchange is also a member of clearing house, then he directly deposits the margins with the clearing house. If he is not a member then he should route all transactions through a clearing member for maintaining margins.

6. GREEN SHOE OPTION

A company making an initial public offer of equity shares through the book-building mechanism can avail of the green shoe option (GSO) for stabilising the post-listing price of its shares. The GSO means an option of allocating shares in excess of the shares included in the public issue and operating a post listing price stabilising mechanism through a stabilising agent (SA). The concerned issuing company should seek authorisation for the possibility of allotment of further issues to the SA at the end of the stabilising period together with the authorisation for the public issue in the general meeting of its shareholders. It should appoint one of the lead book runners as the SA who would be responsible for price stabilisation process. The SA should enter into an agreement with the issuer company prior to the filing of the offer document with SEBI, clearly stating all the terms and conditions relating to GSO including fees charged/expenses to be incurred by him for this purpose. He should also enter into an agreement with the promoter(s) who would lend their shares, specifying the maximum number of shares that may be borrowed from their promoters. But in no case exceeding 15% of the total issue size. The details of these two agreements should be disclosed in the draft red herring prospectus, red herring prospectus and final prospectus. They should also be included as material documents for public inspection in terms of the disclosures in the contents of the offer documents. The lead book runner in consultation with the SA would determine the amount of shares to be over allotted with the public issue within the ceiling specified above. Over allotment refers to an allocation of shares in excess of the size of the public issue made by the SA out of shares borrowed from the promoters in pursuance of a GSO exercised by the issuing company.

The SA should borrow shares from the promoters to the extent of the proposed over allotment. They should be in a dematerialised form only and their allocation should be pro-rata to all the applicants.

The stabilisation mechanism would be available for the period disclosed by the company in the prospectus up to a maximum of 30 days from the date when the trading permission was granted by the stock exchanges.

The money received from the applicants against the over-allotment in the GSO should be kept in the GSO bank account to be used for the purpose of buying shares from the market during the stabilisation period. These shares to be credited to the GSO demat account. They should be returned to the promoters immediately within 2 working days after the close of the stabilisation period.

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To stabilise the post listing prices of the shares, the SA would determine the timing of buying them, the quantity to be bought, the prices at which to be bought and so on. In case the SA does not buy shares to the extent of their over allotment from the market, the issuer company should allot shares to the extent of the shortfall in dematerialised form to the GSO demat account within 5 days of the closure of the stabilisation period. Those would be returned to the promoters by the SA in lieu of those borrowed from them and the GSO demat account would be closed.

The SA would remit the issue price (i.e. further shares allotted by the issuer company to the GSO demat account) to the company from the GSO bank account. The remaining balance, net of deduction of expenses incurred by the SA, would be transferred to the Investor Protection Fund of the concerned stock exchange and the GSO bank account would be closed.

7. 100% BOOK BUILDING PROCESS

In an issue of securities to the public through a prospectus, the option for 100% book building is available to any issuer company. The issue of capital should be Rs. 25 crore and above. Reservation for firm allotment to the extent of the percentage specified in the relevant SEBI guidelines can be made only to promoters, 'permanent employees of the issuer company and in the case of new company to the permanent employees of the promoting company'. It can also be made to shareholders of the promoting companies, in the case of new company and shareholders of group companies in the case of existing company either on a competitive basis or on a firm allotment basis. The issuer company should appoint eligible merchant bankers as book runner(s) and their names should be mentioned in the draft prospectus. The lead merchant banker should act as the lead book runner and the other eligible merchant bankers are termed as co-book runner. The issuer company should compulsorily offer an additional 10% of the issue size offered to the public through the prospectus.

8. IPO THROUGH STOCK EXCHANGE ON-LINE SYSTEM (E-IPO)

In addition to other requirements for public issue as given in SEBI guidelines wherever applicable, a company proposing to issue capital to public through the on-line system of the stock exchange for offer of securities has to comply with the additional requirements in this regard. They are applicable to the fixed price issue as well as for the fixed price portion of the book-built issues. The issuing company would have the option to issue securities to public either through the on-line system of the stock exchange or through the existing banking channel. For E-IPO the company should enter into agreement with the stock-exchange(s) and the stock exchange would appoint SEBI registered stockbrokers of the stock exchange to accept applications. The brokers and other intermediaries are required to maintain records of (a) orders received, (b) applications received, (c) details of allocation and allotment, (d) details of margin collected and refunded and (e) details of refund of application money.

PART B

CAPITAL MARKET INSTRUMENTS

9. INTRODUCTION

The role of Finance in the success of a business enterprise cannot be undermined. As we progress in the new century, we see rapid transformation in the way business is done and funded. It was the Industrial Revaluation that initiated the first change. From an agrarian economy to the industrial economy the transformation was rapid. The joint stock companies resulted from the need to establish large corporations. As the financial requirements transgressed the capability of individual entrepreneur, it paved a way for pooling of resources. The simultaneous spread of banking facilitated the process of savings and channelling them into investments. Bankers were always looking for good customers to lend, so as to earn interest and be able to make a modest profit after meeting interest cost on the deposits and administration costs.

The capital structure consisted of equity and debt. Return on equity came from profit after tax in the form of dividends while return on debt in the form of interest was a charge on profits. Debt was risk capital from the perspective of the borrower, but relatively safer from the perspective of the lender. A borrower would ideally like to raise equity capital and the investor, lend money rather than place it in equity, more so if returns are similar. To compensate for the higher risk in equity investment, it was necessary to provide the investor with a higher return. Taxation added complexity to the structure. A borrower had the additional burden of not only providing a higher potential return on equity but to ensure that the return was after payment of taxes on the corporate profits. To add to his woes, the investor often paid tax on the dividends received and hence would look at his net return after tax. Borrowing on the other hand provided a convenient way of payment of interest, which was a charge against profits and hence provided a cushion against tax burden. Taxation therefore changed the perspective of the borrower, who tended to prefer borrowing to equity for leveraging despite its higher risk. Given a chance he would even run his entire business on borrowed capital. This approach is curtailed by the lender's apprehension. Higher the borrowing in the overall capital structure, higher the risk of default in a depressed economic condition. The lender therefore restricts the lending to certain percentage of the total capital. Consequently, as the requirements of funds increases, the equity capital has to be increased to ensure that the gearing is kept within acceptable limits.

The capital structure remained staid with equity and debt for a considerable period of time. Debt was covered with security more often than not. Concepts of floating and fixed charge emerged. Variations in the form of preference shares were introduced. It provided a hybrid between a debt and equity. Features of standardized return were built in but were paid out of profits after tax. The feature of cumulative preference shares provided for payment of arrears before any dividend could be paid on equity shares. Redeemable preference shares provided the facility of repayment after a specific period.

With the progress of commerce these simple financing structures were proving to be inadequate to meet the challenges. There was a constant need to measure up to the risk

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appetite of the investor/lender and to reduce the cost of funds by reducing risk. These pressures gained momentum in the post second world war era. It accelerated in the seventies, with improvement in the understanding of financial structures and risks as also measuring risks. Option pricing theory assisted in the acceleration further. Today the financial field is greatly transformed and a plethora of instruments are available to the treasurer to choose from. Each instrument has a specific risk profile and certain advantages coupled with certain disadvantages. The gamut of these innovations and their structure came to be referred to as financial instruments.

The whole range of instruments came about to facilitate corporate finance to raise required resources at acceptable costs and matching the structure of the instrument to the risk reward relationship. For example, a company might want to raise cheaper funds, but the investor is looking to benefit from any increased performance. Only if his expectations are met will he invest. The hybrid instrument of convertible debt was a result. Such requirements could be part of an instrument publicly issued or structured into the agreement. When issued as an instrument it takes the form of financial instrument, otherwise it becomes structured finance.

We will examine the various instruments used for both long term and short-term finance and further classified into equity and debt including hybrid instruments. It must be emphasized that the instruments presented here are according to classification and not necessarily in the order in which in they were introduced.

10. CAPITAL MARKET INSTRUMENTS

In the following sections we will discuss some of the important capital market Instruments including futures and options.

The capital markets are relatively for long term (greater than one year maturity) financial instruments (e.g. bonds and stocks). It is the largest source of funds with long and indefinite maturity for companies and thereby enhances the capital formation in the country. It offers a number of investment avenues to investors. The capital market instruments are the vehicles between the companies and the investors. Stock market is the vehicle and SEBI is the driver. These instruments are of two types namely primary market and secondary market instruments. Apart from derivative instruments, the following are the major mediums of approaching capital markets:

- Equity Shares
- Preference Shares
- Debentures/ Bonds
- ADRs
- GDRs
- Derivatives

Here, we will briefly go through the equity and preference shares, debentures, ADRs and GDRs and largely confine ourselves to different types of derivatives.

10.1 STOCK

Stock is a type of security, which signifies ownership in a corporation and represents a claim on the part of the corporation's assets and earnings. Plain and simple, stock is a share in the ownership of a company. Stock represents a claim on the company's assets and earnings. As one acquires more stock, his or her ownership stake in the company becomes greater. Whether it is said as shares, equity, or stock, it all means the same thing.

There are two main types of stock: common (also known as "shares" or "equity") and preferred. Common stock usually entitles the owner to vote at shareholders' meetings and to receive dividends. Preferred stock generally does not have voting rights, but has a higher claim on assets and earnings than the common shares. For example, owners of preferred stock receive dividends before common shareholders and have priority in the event that a company goes bankrupt and is liquidated.

A holder of stock (a shareholder) has a claim to a part of the corporation's assets and earnings. In other words, a shareholder is an owner of a company. Ownership is determined by the number of shares a person owns relative to the number of outstanding shares. For example, if a company has 1,000 shares of stock outstanding and one person owns 100 shares, that person would own and have claim to 10% of the company's assets.

Holding a company's stock means that you are one of the many owners (shareholders) of a company and, as such, you have a claim (albeit usually very small) to everything the company owns. Yes, this means that technically you own a tiny sliver of every piece of furniture, every trademark, and every contract of the company. As an owner, you are entitled to your share of the company's earnings as well as any voting rights attached to the stock.

A stock is represented by a stock certificate. This is a fancy piece of paper that is proof of your ownership. In today's computer age, you won't actually get to see this document because your broker keeps these records electronically in a demat form. This is done to make the shares easier to trade. In the past, when a person wanted to sell his or her shares, that person physically took the certificates down to the broker. Now, trading with a click of the mouse or a phone call makes life easier for everybody.

Being a shareholder of a public company does not mean you have a say in the day-to-day running of the business. Instead, one vote per share to elect the board of directors at annual meetings is the extent to which you have a say in the company.

The management of the company is supposed to increase the value of the firm for shareholder. If this doesn't happen, the shareholders can vote to have the management removed, at least in theory. In reality, individual investors like you and I don't own enough shares to have a material influence on the company. It's really the big boys like large institutional investors and billionaire entrepreneurs who make the decisions. The importance of being a shareholder is that you are entitled to a portion of the company's

5.20 Strategic Financial Management

profits and have a claim on assets. Profits are sometimes paid out in the form of dividends. The more shares you own, the larger the portion of the profits you get.. In case of bankrupt & liquidation, you'll receive what's left after all the creditors have been paid. This last point is worth repeating: the importance of stock ownership is your claim on assets and earnings. Without this, the stock wouldn't be worth the paper it's printed on.

Another extremely important feature of stock is its limited liability, which means that, as an owner of a stock, you are not personally liable if the company is not able to pay its debts. Other companies such as partnerships are set up so that if the partnership goes bankrupt the creditors can come after the partners (shareholders) personally and sell off their house, car, furniture, etc. Owning stock means that, no matter what, the maximum value you can lose is the value of your investment. Even if a company of which you are a shareholder goes bankrupt, you can never lose your personal assets.

Why does a company issue stock? Why would the founders share the profits with thousands of people when they could keep profits to themselves? The reason is that at some point every company needs to raise money. To do this, companies can either borrow it from somebody or raise it by selling part of the company, which is known as issuing stock. A company can borrow by taking a loan from a bank or by issuing bonds. Both methods fit under the umbrella of debt financing. On the other hand, issuing stock is called equity financing. Issuing stock is advantageous for the company because it does not require the company to pay back the money or make interest payments along the way. All that the shareholders get in return for their money is the hope that the shares will someday be worth more than what they paid for them. The first sale of a stock, which is issued by the private company itself, is called the initial public offering (IPO).

It is important that you understand the distinction between a company financing through debt and financing through equity. When you buy a debt investment such as a bond, you are guaranteed the return of your money (the principal) along with promised interest payments. This isn't the case with an equity investment. By becoming an owner, you assume the risk of the company not being successful - just as a small business owner isn't guaranteed a return, neither is a shareholder. As an owner, your claim on assets is less than that of creditors. This means that if a company goes bankrupt and liquidates, you, as a shareholder, don't get any money until the banks and bondholders have been paid out. Shareholders earn a lot if a company is successful, but they also stand to lose their entire investment if the company isn't successful.

It must be emphasized that there are no guarantees when it comes to individual stocks. Some companies pay out dividends, but many others do not. And there is no obligation to pay out dividends even for those firms that have traditionally given them. Without dividends, an investor can make money on a stock only through its appreciation in the open market. On the downside, any stock may go bankrupt, in which case your investment is worth nothing.

10.1.1 Equity Shares: Stock is a type of security, which signifies ownership in a corporation and represents a claim on the part of the corporation's assets and earnings. Plain and simple, stock is a share in the ownership of a company. Stock represents a claim on the company's assets and earnings. As one acquires more stock, his or her ownership stake in the company becomes greater. Whether it is said as shares, equity, or stock, it all means the same thing.

There are two main types of stock: common (also known as "shares" or "equity") and preferred. Common stock usually entitles the owner to vote at shareholders' meetings and to receive dividends. Preferred stock generally does not have voting rights, but has a higher claim on assets and earnings than the common shares. For example, owners of preferred stock receive dividends before common shareholders and have priority in the event that a company goes bankrupt and is liquidated.

A holder of stock (a shareholder) has a claim to a part of the corporation's assets and earnings. In other words, a shareholder is an owner of a company. Ownership is determined by the number of shares a person owns relative to the number of outstanding shares. For example, if a company has 1,000 shares of stock outstanding and one person owns 100 shares, that person would own and have claim to 10% of the company's assets.

Holding a company's stock means that you are one of the many owners (shareholders) of a company and, as such, you have a claim (albeit usually very small) to everything the company owns. Yes, this means that technically you own a tiny sliver of every piece of furniture, every trademark, and every contract of the company. As an owner, you are entitled to your share of the company's earnings as well as any voting rights attached to the stock.

A stock is represented by a stock certificate. This is a fancy piece of paper that is proof of your ownership. In today's computer age, you won't actually get to see this document because your broker keeps these records electronically in a demat form. This is done to make the shares easier to trade. In the past, when a person wanted to sell his or her shares, that person physically took the certificates down to the broker. Now, trading with a click of the mouse or a phone call makes life easier for everybody.

Being a shareholder of a public company does not mean you have a say in the day-to-day running of the business. Instead, one vote per share to elect the board of directors at annual meetings is the extent to which you have a say in the company.

The management of the company is supposed to increase the value of the firm for shareholder. If this doesn't happen, the shareholders can vote to have the management removed, at least in theory. In reality, individual investors like you and I don't own enough shares to have a material influence on the company. It's really the big boys like large institutional investors and billionaire entrepreneurs who make the decisions. The importance of being a shareholder is that you are entitled to a portion of the company's profits and have a claim on assets. Profits are sometimes paid out in the form of

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dividends. The more shares you own, the larger the portion of the profits you get.. In case of bankrupt & liquidation, you'll receive what's left after all the creditors have been paid. This last point is worth repeating: the importance of stock ownership is your claim on assets and earnings. Without this, the stock wouldn't be worth the paper it's printed on.

Another extremely important feature of stock is its limited liability, which means that, as an owner of a stock, you are not personally liable if the company is not able to pay its debts. Other companies such as partnerships are set up so that if the partnership goes bankrupt the creditors can come after the partners (shareholders) personally and sell off their house, car, furniture, etc. Owning stock means that, no matter what, the maximum value you can lose is the value of your investment. Even if a company of which you are a shareholder goes bankrupt, you can never lose your personal assets.

They are also called as common stock. The common stock holders of a company are its real owners; they own the company and assume the ultimate risk associated with ownership. Their liability, however, is restricted to the amount of their investment. In the event of liquidation, these stockholders have a residual claim on the assets of the company after the claims of all creditors and preferred stockholders are settled in full. Common stock, like preferred stock, has no maturity date. However, shareholders can still liquidate their investments by selling their stocks in the secondary market.

10.1.1.1 Authorized, Issued, and Outstanding Shares: Authorized shares is the maximum number of shares that the Article of Association (AOA) of the company permits it to issue in the market. A company can however amend its AOA to increase the number. The number of shares that the company has actually issued out of these authorised shares are called as issued shares. A company usually likes to have a certain number of shares that are authorized but unissued. These unissued shares allow flexibility in granting stock options, pursuing merger targets, and splitting the stock. *Outstanding* shares refers to the number of shares issued and actually held by the public. The corporation can buy back part of its issued stock and hold it as treasury stock.

10.1.1.2 Par Value, Book Value and Liquidating Value: The par value of a share of stock is merely a recorded figure in the corporate charter and is of little economic significance. A company should not, however, issue common stock at a price less than par value, because any discount from par value (amount by which the issuing price is less than the par value) is considered a contingent liability of the owners to the creditors of the company. In the event of liquidation, the shareholders would be legally liable to the creditors of any discount from par value.

Illustration 1: Suppose that XYZ Inc. is ready to start business for the first time and sold 10,000 shares of Rs. 10 each. The shareholders' equity portion of the balance sheet would be what?

Solution

Common stock @10 each at par value;

10,000 shares issued and outstanding Rs. 100,000

Total shareholders equity Rs. 100,000

The book value per share of common stock is the shareholders equity - total assets minus liabilities and preferred stock as listed on the balance sheet - divided by the number of shares outstanding. Suppose that XYZ is now 1 year old and has generated Rs.50,000 after-tax profit, but pays no dividend. Thus, retained earnings are Rs. 50,000. The shareholders' equity is now Rs. 1,00,000 + Rs. 50,000 = 1,50,000, and the book value per share is Rs. 1,50,000/10,000 shares = Rs. 15.

Although one might expect the book value per share of stock to correspond to the liquidating value (per share) of the company, most frequently it does not. Often assets are sold for less than their book values, particularly when liquidating costs are involved.

10.1.1.3 Market Value: Market value per share is the current price at which the stock is traded. For actively traded stocks, market price quotations are readily available. For the many inactive stocks that have thin markets, prices are difficult to obtain. Even when obtainable, the information may reflect only the sale of a few shares of stock and not typify the market value of the firm as a whole. The market value of a share of common stock will usually differ from its book value and its liquidating value. Market value per share of common stock is a function of the current and expected future dividends of the company and the perceived risk of the stock on the part of investors.

10.1.1.4 Rights Of Common Shareholders

(i) Right to Income: If the company fails to pay contractual interest and principal payments to creditors, the creditors are able to take legal action to ensure that payment is made or the company is liquidated. Common shareholders, on the other hand, have no legal recourse to a company for not distributing profits. Only if management, the board of directors, or both are engaged in fraud may shareholders take their case to court and possibly force the company to pay dividends.

(ii) Voting Rights: The common shareholders of a company are its owners and they are entitled to elect a board of directors. In a large corporation, shareholders usually exercise only indirect control through the board of directors they elect. The board, in turn, selects the management, and management actually controls the operations of the company. In a sole proprietorship, partnership, or small corporation, the owners usually control the operation of the business directly.

(iii) Proxies and Proxy Contests: Common shareholders are entitled to one vote for each share of stock that they own. It is usually difficult, both physically and financially, for

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most shareholders to attend a corporation's annual meetings. Because of this, many shareholders vote by means of a proxy, a legal document by which shareholders assign their right to vote to another person.

(iv) Voting Procedures: Depending on the corporate charter, the board of directors is elected under either a majority-rule voting system or a cumulative voting system. Under the majority-rule system, stockholders have one vote for each share of stock that they own, and they must vote for each director position that is open. Under a cumulative voting system, a stockholder is able to accumulate votes and cast them for less than the total number of directors being elected. The total number of votes for each stockholder is equal to the number of shares the stockholder times the number of directors being elected.

10.1.1.5 Issue Mechanism: The success of an issue depends, partly, on the issue mechanism. The methods by which new issues are made of (i) Public issue through prospectus, (ii) Tender/Book building, (iii) Offer for sale (iv) Placements (v) Rights issue.

(i) Public Issue through Prospectus: Under this method, the issuing companies themselves offer directly to general public a fixed number of shares at a stated price, which in the case of new companies is invariably the face value of the securities, and in the case of existing companies, it may sometimes include a premium amount, if any. Another feature of public issue is that generally the issues are underwritten to ensure success arising out of unsatisfactory public response. Transparency and wide distribution of shares are its important advantages.

The foundation of the public issue method is a prospectus, the minimum contents of which are prescribed by the Companies Act, 1956. It also provides both civil and criminal liability for any misstatement in the prospectus. Additional disclosure requirements are also mandated by the SEBI. The contents of the prospectus, inter alia, include:

- Name and registered office of the issuing company;
- Existing and proposed activities;
- Board of directors;
- Location of the industry;
- Authorised, subscribed and proposed issue of capital to public;
- Dates of opening and closing of subscription list;
- Name of broker, underwriters, and others, from whom application forms along with copies of prospectus can be obtained;
- Minimum subscription;
- Names of underwriters, if any, along with a statement that in the opinion of the directors, the resources of the underwriters are sufficient to meet the, underwriting obligations; and

- A statement that the company will make an application to stock exchanges for the permission to deal in or for a quotation of its shares and so on.

A serious drawback of public issue, as a method to raise capital through the sale of securities, is that it is a highly expensive method. The cost of flotation involves underwriting expenses, brokerage, and other administrative expenses.

(ii) Tender / Book building: When a company plans for raising of funds from the market, the book building method is one such way to raise more funds. After accepting the free pricing mechanism by the SEBI, the Book building process has acquired too much significance and has opened a new lead in development of capital market.

A company can use the process of book building to fine tune its price of issue. When a company employs book building mechanism, it does not pre-determine the issue price (in case of equity shares) or interest rate (in case of debentures) and invite subscription to the issue. Instead it starts with an indicative price band (or interest band) which is determined through consultative process with its merchant banker and asks its merchant banker to invite bids from prospective investors at different prices (or different rates). Those who bid are required to pay the full amount. Based on the response received from investors the final price is selected. The merchant banker (called in this case Book Runner) has to manage the entire book building process. Investors who have bid a price equal to or more than the final price selected are given allotment at the final price selected. Those who have bid for a lower price will get their money refunded.

In India, there are two options for book building process. One, 25 per cent of the issue has to be sold at fixed price and 75 per cent is through book building. The other option is to split 25 per cent of offer to the public (small investors) into a fixed price portion of 10 per cent and a reservation in the book built portion amounting to 15 per cent of the issue size. The rest of the book-built portion is open to any investor.

The greatest advantage of the book building process is that this allows for price and demand discovery. Secondly, the cost of issue is much less than the other traditional methods of raising capital. In book building, the demand for shares is known before the issue closes. In fact, if there is not much demand the issue may be deferred and can be rescheduled after having realised the temper of the market.

(iii) Offer for Sale: Another method by which securities can be issued is by means of an offer for sale. Under this method, instead of the issuing company itself offering its shares, directly to the public, it offers through the intermediary of issue houses/merchant banks/investment banks or firms of stockbrokers. The modus operandi of the offer of sale is akin to the public issue method. Moreover, the issues are underwritten to avoid the possibility of the issue being left largely in the hands of the issuing houses. But the mechanism adopted is different. The sale of securities with an offer for sale method is done in two stages.

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In the first stage, the issuing company sells the securities enbloc to the issuing houses or stockbrokers at an agreed fixed price and the securities, thus acquired by the sponsoring institutions, are resold, in the second stage, by the issuing houses to the ultimate investors. The securities are offered to the public at a price higher than the price at which they were acquired from the company. The difference between the sale and the purchase price, technically called as turn, represents the remuneration of the issuing houses.

Apart from being expensive, like the public issue method, it suffers from another serious shortcoming. The securities are sold to the investing public usually at a premium. The margin between the amount received by the company and the price paid by the public does not become additional funds, but it is pocketed by the issuing houses or the existing shareholders.

(iv) Placement Method: Yet another method to float new issues of capital is the placing method defined by London Stock Exchange as “sale by an issue house or broker to their own clients of securities which have been previously purchased or subscribed”. Under this method, securities are acquired by the issue houses, as in offer for sale method, but instead of being subsequently offered to the public, they are placed with the clients of the issue houses, both individual and institutional investors. Each issue house has a list of large private and institutional investors who are always prepared to subscribe to any securities which are issued in this manner. Its procedure is the same with the only difference of ultimate investors.

In this method, no formal underwriting of the issue is required as the placement itself amounts to underwriting since the issue houses agree to place the issue with their clients.

The main advantage of placing, as a method issuing new securities, is its relative cheapness. There is a cost cutting on account of underwriting commission, expense relating to applications, allotment of shares and the stock exchange requirements relating to contents of the prospectus and its advertisement. This method is generally adopted by small companies with unsatisfactory financial performances.

Its weakness arises from the point of view of distribution of securities. As the securities are offered only to a select group of investors, it may lead to the concentration of shares into a few hands who may create artificial scarcity of scrips in times of hectic dealings in such shares in the market.

(v) Rights Issue: This method can be used only by the existing companies. In the case of companies whose shares are already listed and widely-held, shares can be offered to the existing shareholders. This is called rights issue. Under this method, the existing shareholders are offered the right to subscribe to new shares in proportion to the number of shares they already hold. This offer is made by circular to ‘existing shareholders’ only.

In India, Section 81 of the Companies Act, 1956 provides that where a company increases its subscribed capital by the issue of new shares, either after two years of its formation or

after one year of first issue of shares whichever is earlier, these have to be first offered to the existing shareholders with a right to renounce them in favour of a nominee. A company can, however, dispense with this requirement by passing a special resolution to the same effect. The chief merit of rights issue is that it is an inexpensive method.

10.1.2 Preference Shares: 'Preference share capital' means, with reference to any company limited by shares, whether formed before or after the commencement of this Act, that part of the share capital of the company which fulfils both the following requirements, namely:-

- (a) that as respects dividends, it carries or will carry a preferential right to be paid a fixed amount or an amount calculated at a fixed rate, which may be either free of or subject to income-tax, and
- (b) that as respect capital, it carries or will-carry, on a winding up or repayment of capital, a preferential right to be repaid the amount of the capital paid-up or deemed to have been paid-up, whether or not there is a preferential right to the payment of either or both of the following amounts, namely.-
 - (i) any money remaining unpaid, in respect of the amounts specified in clause (a), up to the date of the winding up or repayment of capital; and
 - (ii) any fixed premium or premium on any fixed scale, specified in the memorandum or articles of the company.

Its main attributes include prior claim on income/assets and redeemability, cumulative dividends and fixed dividends. A preference share may also sometimes be convertible partly/fully into equity shares/debentures at a certain ratio during a specified period.

10.2 DEBENTURES/ BONDS

A bond is a long-term debt security. It represents "debt" in that the bond buyer actually lends the face amount to the bond issuer. The certificate itself is evidence of a lender-creditor relationship. It is a "security" because unlike a car loan or home-improvement loan, the debt can be bought and sold in the open market. In fact a bond is a loan intended to be bought and sold. It is "long-term" by definition; in order to be called a bond. The term must be longer than five years. Debt securities with maturities under five years are called bills, notes or other terms. Since bonds are intended to be bought and sold, all the certificates of a bond issue contain a master loan agreement. This agreement between issuer and investor (or creditor and lender), called the 'bond indenture' or "deed of trust," contains all the information you would normally expect to see in any loan agreement, including the following:

- **Amount of the Loan:** The "face amount" "par value." or "principal" is the amount of the loan - the amount that the bond issuer has agreed to repay at the bond's maturity.

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- **Rate of Interest:** Bonds are issued with a specified “coupon” or “nominal” rate, which is determined largely by market conditions at the time of the bond’s primary offering. Once determined, it is set contractually for the life of the bond. The amount of the interest payment can be easily calculated by multiplying the rate of interest (or coupon) by the face value of the bond. For instance, a bond with a face amount of Rs. 1000 and a coupon of 8% pays the bondholder Rs. 80 a year.
- **Schedule or Form of Interest Payments:** Interest is paid on most bonds at six-month intervals, usually on either the first or the fifteenth of the month. The Rs.80 of annual interest on the bond in the previous example would probably be paid in two installments of Rs. 40 each.
- **Term:** A bond’s “maturity,” or the length of time until the principal is repaid varies greatly but is always more than five years. Debt that matures in less than a year is a “money market instrument” - such as commercial paper or bankers’ acceptances. A “short-term bond,” on the other hand, may have an initial maturity of five years. A “long- term bond” typically matures in 20 to 40 years. The maturity of any bond is predetermined and stated in the trust indenture.
- **Call Feature (if any):** A “call feature,” if specified in the trust indenture, allows the bond Issuer to “call in” the bonds and repay them at a predetermined price before maturity. Bond issuers use this feature to protect themselves from paying more interest than they have to for the money they are borrowing. Companies call in bonds when general interest rates are lower than the coupon rate on the bond, thereby retiring expensive debt and refinancing it at a lower rate.

Illustration 2: Suppose IDBI had issued 6 years Rs. 1000 bonds in 1998 @14% pa. But now the current interest rate is around 9% to 10%. If the issuer wants to take advantage of the call feature in the bond’s indenture it will call back the earlier issued bonds and reissue them @9% p.a. The sale proceeds of this new issue will be used to pay the old debt. In this way IDBI now enjoys a lower cost for its borrowed money.

Some bonds offer “call protection”; that is, they are guaranteed not to be called for five to ten years. Call features can affect bond values by serving as a ceiling for prices. Investors are generally unwilling to pay more for a bond than its call price, because they are aware that the bond could be called at a lower call price. If the bond issuer exercises the option to call bonds, the bond holder is usually paid a premium over par for the inconvenience.

- **Refunding:** If, when bonds mature, the issuer does not have the cash on hand to repay bondholders; it can issue new bonds and use the proceeds either to redeem the older bonds or to exercise a call option. This process is called refunding.

10.2.1 Yields: There are number of methods for calculating yields. But the most common method is the Yield to Maturity (YTM). This is another name of IRR. This is a complicated method but we are giving a simple formula to make the students understand the concept.

$$\text{YTM} = \frac{\text{Coupon Rate} + \text{Prorated Discount}}{(\text{Face Value} + \text{Purchase Price})/2}$$

10.2.2 Determinants of Bond Prices: While yield to maturity enables traders and investors to compare debt securities with different coupon rates and terms to maturity. It does not determine price. Bond prices depend on a number of factors such as the ability of the issuer to make interest and principal payments and how the bond is collateralized. An across-the-board factor that affects bond prices is the level of prevailing interest rates.

Illustration 3: Suppose a 8% Rs. 1000 bond had 5 years left to maturity when it was purchased for Rs. 800. The prevailing interest rate (on other investment vehicles) was about 8%. Further assume that current prevailing interest rates are about 9%. Why should investors buy a five-year old bond yielding 8% when they can buy a newly issued 9% bond?

Solution

The only way the holder of an 8% bond can find a buyer is to sell the bond at a discount, so that its yield to maturity is the same as the coupon rate on new issues. Let say interest rates increase from 8% to 10%. With 15 years to maturity, an 8% bond has to be priced so that the discount, when amortized over 15 years has a yield to maturity of 10%. That discount is a little under Rs.200:

$$\begin{aligned} \text{YTM} &= \frac{\text{Coupon Rate} + \text{Prorated Discount}}{(\text{Face Value} + \text{Purchase Price})/2} \\ &= \frac{\text{Rs.80} + (\text{Rs.200} / 15 \text{ years})}{(\text{Rs.1,000} + \text{Rs.800}) / 2} \\ &= \frac{\text{Rs.93.33}}{(\text{Rs.900})} \\ &= 10.4\%. \end{aligned}$$

The 8% bond with 15 years to maturity must sell at a little over Rs. 800 to compete with 10% bonds. The possibility that interest rates will cause outstanding bond issues to lose value is called "Interest rate risk." Yet there is an upside to this risk. If interest rates decline during the five years that the 8% bond is outstanding, the holder could sell it for enough of a premium to make its YTM rate equal to the lower yields of recent issues. For instance, should Interest rates decline to 7%, the price of the 8% bond with 15 years to maturity will increase by about Rs. 100.

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10.3 AMERICAN DEPOSITORY RECEIPT (ADRS)

An American Depositary Receipt (ADR) is a negotiable receipt which represents one or more depository shares held by a US custodian bank, which in turn represent underlying shares of non-issuer held by a custodian in the home country. ADR is an attractive investment to US investors willing to invest in securities of non US issuers for following reasons:

- ADRs provide a means to US investors to trade the non-US company's shares in US dollars. ADR is a negotiable receipt (which represents the non US share) issued in US capital market and is traded in dollars. The trading in ADR effectively means trading in underlying shares.
- ADRs facilitate share transfers. ADRs are negotiable and can be easily transferred among the investors like any other negotiable instrument. The transfer of ADRs automatically transfers the underlying share.
- The transfer of ADRs does not involve any stamp duty and hence the transfer of underlying share does not require any stamp duty.
- The dividends are paid to the holders of ADRs in U.S. dollars.

10.3.1 ADR Offerings: A public offering provides access to the broadest US investor base and the most liquid US securities market. The compliance requirements in public offerings are the strictest and comprises of:

- Registration of underlying security under the 1933 Act (Form F1)
- Registration of ADR under the 1933 Act (Form F6)
- Registration under the 1934 Act (if the company is not already reporting under the 1934 Act)

A non U.S. issuer has to work with its US investment bankers, US depository bank, US and non US legal counsel and independent accountant to prepare the registration documents and offering materials. All the financial statement to be submitted for the registration requirement has to be in compliance with US GAAP.

The listing of such an issue is done on the NYSE or AMEX to enable trading. Quotations on NASDAQ can also be used for trading purposes. Any requirement with respect to Blue Sky Law, if not exempted, has to be fulfilled.

Specified document and information must be provided to NASDAQ to enable it to review the terms of the offering and determine whether the underwriting arrangements are fair and reasonable. The filing documents with NASDAQ are the responsibility of managing underwriter.

A public offering of ADRs by a non US private issuer will require, in general, the following documents

- Form F1
- Form F6
- Listing Application
- Blue Sky Survey
- Deposit Agreement
- Custodian Agreement
- Underwriting Agreement

10.4 GLOBAL DEPOSITORY RECEIPTS (GDRS)

Global Depository Receipts are negotiable certificates with publicly traded equity of the issuer as underlying security. An issue of depository receipts would involve the issuer, issuing agent to a foreign depository. The depository, in turn, issues GDRs to investors evidencing their rights as shareholders. Depository receipts are denominated in foreign currency and are listed on an international exchange such as London or Luxembourg. GDRs enable investors to trade a dollar denominated instrument on an international stock exchange and yet have rights in foreign shares.

The principal purpose of the GDR is to provide international investors with local settlement. The issuer issuing the shares has to pay dividends to the depository in the domestic currency. The depository has to then convert the domestic currency into dollars for onward payment to receipt holders. GDRs bear no risk of capital repayment.

GDRs are also issued with warrants attached to them. Warrants give the investors an option to get it converted into equity at a later date. Warrants help the issuer to charge some premium on the GDRs sold and it also helps to increase the demand of the GDR issue. The other advantage to the issuer is that it will not have to pay dividends on the warrants till the conversion option is exercised. The disadvantage to the issuer lies in delayed receipt of full proceeds from the issue and in case the conversion option is not exercised the expected proceeds will not be realised.

10.5 DERIVATIVES

A *derivative* is a financial instrument which derives its value from some other financial price. This 'other financial price' is called *the underlying*.

A wheat farmer may wish to contract to sell his harvest at a future date to eliminate the risk of a change in prices by that date. The price for such a contract would obviously depend upon the current spot price of wheat. Such a transaction could take place on a wheat

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forward market. Here, the wheat forward is the 'derivative' and wheat on the spot market is 'the underlying'. The terms 'derivative contract', 'derivative product', or 'derivative' are used interchangeably. The most important derivatives are futures and options. Here we will discuss derivatives as financial derivatives and embedded derivatives.

Before discussing the different derivatives, you should understand the various risks associated with them. The different types of derivatives risks are:

(a) Credit risk: Credit risk is the risk of loss due to counterparty's failure to perform on an obligation to the institution. Credit risk in derivative products comes in two forms:

(i) Pre-settlement risk: It is the risk of loss due to a counterparty defaulting on a contract during the life of a transaction. The level of exposure varies throughout the life of the contract and the extent of losses will only be known at the time of default.

(ii) Settlement risk: It is the risk of loss due to the counterparty's failure to perform on its obligation after an institution has performed on its obligation under a contract on the settlement date. Settlement risk frequently arises in international transactions because of time zone differences. This risk is only present in transactions that do not involve delivery versus payment and generally exists for a very short time (less than 24 hours).

(b) Market risk: Market risk is the risk of loss due to adverse changes in the market value (the price) of an instrument or portfolio of instruments. Such exposure occurs with respect to derivative instruments when changes occur in market factors such as underlying interest rates, exchange rates, equity prices, and commodity prices or in the volatility of these factors.

(c) Liquidity risk: Liquidity risk is the risk of loss due to failure of an institution to meet its funding requirements or to execute a transaction at a reasonable price. Institutions involved in derivatives activity face two types of liquidity risk : market liquidity risk and funding liquidity risk.

(i) Market liquidity risk: It is the risk that an institution may not be able to exit or offset positions quickly, and in sufficient quantities, at a reasonable price. This inability may be due to inadequate market depth in certain products (e.g. exotic derivatives, long-dated options), market disruption, or inability of the bank to access the market (e.g. credit down-grading of the institution or of a major counterparty).

(ii) Funding liquidity risk: It is the potential inability of the institution to meet funding requirements, because of cash flow mismatches, at a reasonable cost. Such funding requirements may arise from cash flow mismatches in swap books, exercise of options, and the implementation of dynamic hedging strategies.

(d) Operational risk: Operational risk is the risk of loss occurring as a result of inadequate systems and control, deficiencies in information systems, human error, or management failure. Derivatives activities can pose challenging operational risk issues because of the complexity of certain products and their continual evolution.

(e) Legal risk: Legal risk is the risk of loss arising from contracts which are not legally enforceable (e.g. the counterparty does not have the power or authority to enter into a particular type of derivatives transaction) or documented correctly.

(f) Regulatory risk: Regulatory risk is the risk of loss arising from failure to comply with regulatory or legal requirements.

(g) Reputation risk: Reputation risk is the risk of loss arising from adverse public opinion and damage to reputation.

10.5.1 FINANCIAL DERIVATIVES

Under financial derivatives, the discussion would cover stock futures, stock options, index futures and index options along with their pricing techniques.

10.5.1.1 Future Contract: A futures contract is an agreement between two parties that commits one party to buy an underlying financial instrument (bond, stock or currency) or commodity (gold, soybean or natural gas) and one party to sell a financial instrument or commodity at a specific price at a future date. The agreement is completed at a specified expiration date by physical delivery or cash settlement or offset prior to the expiration date. In order to initiate a trade in futures contracts, the buyer and seller must put up "good faith money" in a margin account. Regulators, commodity exchanges and brokers doing business on commodity exchanges determine margin levels.

Illustration 4: A buyer "B" and a Seller "S" enter into a 5,000 kgs corn futures contract at Rs. 5 per kg. Assuming that on the second day of trading the settle price (settle price is generally the representative price at which the contracts trade during the closing minutes of the trading period and this price is designated by a stock exchange as the settle price. In case the price movement during the day is such that the price during the closing minutes is not the representative price, the stock exchange may select a price which it feels is close to being a representative price, e.g., average of the high and low prices which have occurred during a trading day) of March corn is Rs. 5.20 per kg. This price movement has led to a loss of Rs. 1,000 to S while B has gained the corresponding amount.

Thus, the initial margin account of S gets reduced by Rs. 1,000 and that of B is increased by the same amount. While the margin accounts, also called the equity of the buyer and the seller, get adjusted at the end of the day in keeping with the price movement, the futures contract gets replaced with a new one at a price which has been used to make adjustments to the buyer and seller's equity accounts. In the instant case, the settle price is Rs. 5.20, which is the new price at which next day's trading would start for this particular futures contract. Thus, each future contract is rolled over to the next day at a new price.

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10.5.1.2 Stock Futures Contract: A stock futures contract is an agreement to buy or sell shares or stock such as Microsoft, Intel, ITC, or Tata Steel at a point in the future. The buyer has an obligation to purchase shares or stock and the seller has an obligation to sell shares or stock at a specific price at a specific date in the future. That is a stock futures contract is a standardised contract to buy or sell a specific stock at a future date at an agreed price. A stock future is, as the name suggests, a future on a stock i.e. The underlying is a stock. Single-stock futures contracts are completed via offset or the delivery of actual shares at expiration. Margin on a single-stock futures contract is expected to be 20% of notional value.

Each Stock Future contract is standardized and includes the following basic specifications in International market like in US:

- Contract Size: 100 shares of the underlying stock
- Expiration Cycle: Four quarterly expiration months - March, June, September and December. Additionally, there are two serial months, which are the next two months that are not quarterly expirations.
- Tick Size: \$.01 X 100 shares = \$1.00
- Trading Hours: 8:15am to 3pm CST (on business days)
- Last Trading Day: Third Friday of the expiration month
- Margin Requirement: Generally 20% of the cash value of the stock.

The terms of the contract call for delivery of the stock by the seller at some time specified in the future. However, most contracts are not held to expiration. The contracts are standardized, making them highly liquid. To get out of an open long (buying) position, the investor simply takes an offsetting short position (sells). Conversely, if an investor has sold (short) a contract and wishes to close it out, he or she buys (goes long) the offsetting contract.

(a) Trading Basics: When an investor has a long margin account in stock, he or she is borrowing part of the money to buy stock, using the stock as collateral.

In a Stock Future contract, the margin deposit is more of a good faith deposit, which is held by the brokerage firm toward the settlement of the contract. The margin requirement in a stock future applies to both buyers and sellers.

The 20% requirement represents both the initial and maintenance requirement. In a stock future contract, the buyer (long) has not borrowed money and pays no interest. At the same time, the seller (short) has not borrowed stock. The margin requirement for both is the same. The 20% is a regulatory authority's mandated percentage, but the individual brokerage house can require additional funds.

Another major difference in the margin requirements for stock futures is that the margin requirement is continuous. Every business day, the broker will calculate the margin

requirement for each position. The investor will be required to post additional margin funds if the account does not meet the minimum margin requirement.

Example – SSF Margin Requirements

In a stock future contract on ITC stock at Rs.120, both the buyer and seller have a margin requirement of 20% or Rs.2400. If ITC stock goes up to Rs.122, the account of the long contract is credited with Rs.200 ($\text{Rs.122} - \text{Rs.120} = \text{Rs.2} \times 100 = \text{Rs.200}$) and the account of the seller (seller) is debited by the same Rs.200. This indicates that investors in stock futures must be very vigilant - they must keep close track of market movements. Furthermore, the exact margin and maintenance requirements of an investor's brokerage firm are key issues that must be considered in determining the suitability of stock futures investments.

(b) Speculation – Trading SSF Contracts: For simplicity we'll be using one contract and the basic 20%. Commissions and transaction fees are not taken into account.

Illustration 5: Going Long an SSF Contract

Suppose an investor is bullish on McDonald's (MCD) and goes long one September stock future contract on MCD at Rs.80. At some point in the near future, MCD is trading at Rs.96. At that point, the investor sells the contract at Rs.96 to offset the open long position and makes a Rs.1600 gross profit on the position.

This example seems simple, but let's examine the trades closely. The investor's initial margin requirement was only Rs.1600 ($\text{Rs.80} \times 100 = \text{Rs.8,000} \times 20\% = \text{Rs.1600}$). This investor had a 100% return on the margin deposit. This dramatically illustrates the leverage power of trading futures. Of course, had the market moved in the opposite direction, the investor easily could have experienced losses in excess of the margin deposit.

Illustration 6: Going Short on SSF Contract

An investor is bearish in Kochi Refinery (KR) stock for the near future and goes short an August stock future contract on KR at Rs.160. KR stock performs as the investor had guessed and drops to Rs.140 in July. The investor offsets the short position by buying an August stock future at Rs.140. This represents a gross profit of Rs.20 per share, or a total of Rs.2,000.

Again, let's examine the return the investor had on the initial deposit. The initial margin requirement was Rs.3,200 ($\text{Rs.160} \times 100 = \text{Rs.16,000} \times 20\% = \text{Rs.3,200}$) and the gross profit was Rs.2,000. The return on the investor's deposit was more than 60% - a terrific return on a short-term investment.

(c) Hedging - Protecting Stock Positions: An overview of stock futures would not be complete without mention of the use of these contracts to hedge a stock position.

To hedge, the investor takes a stock future position exactly opposite to the stock position. That way, any losses on the stock position will be offset by gains on the future position. However, this is only a temporary solution because the future will expire.

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Illustration 7: Using stock futures as a Hedge

Consider an investor who has bought 100 shares of Tata Steel (TS) at Rs.300. In July, the stock is trading at Rs.350. The investor is happy with the unrealized gain of Rs.50 per share but is concerned that in a stock as volatile as TS, the gain could be wiped out in one bad day. The investor wishes to keep the stock at least until September, however, because of an upcoming dividend payment.

To hedge, the investor sells a Rs.350 September stock future contract - whether the stock rises or declines, the investor has locked in the Rs.50-per-share gain. In August, the investor sells the stock at the market price and buys back the future contract.

Consider the following figure:

September Price	Value of 100 Shares	Gain or Loss on SF	Net Value
Rs.300	Rs.30000	+Rs.5000	Rs.35000
Rs.350	Rs.35000	0	Rs.35000
Rs.400	Rs.40000	-Rs.5000	Rs.35000

Until the expiration of the stock future in September, the investor will have a net value of the hedged position of Rs.35000. The negative side of this is that if the stock dramatically increases, the investor is still locked in at Rs.350 per share.

(d) The Major Advantages of Futures Trading Vs. Stock Trading: Compared to directly trading stocks, stock futures provide several major advantages:

- *Leverage:* Compared to buying stock on margin, investing in futures is less costly. An investor can use leverage to control more stock with a smaller cash outlay.
- *Ease of Shorting:* Taking a short position in futures is simpler, less costly and may be executed at any time - there is no requirement for an uptick
- *Flexibility:* Future investors can use the instruments to speculate, hedge, spread or for use in a large array of sophisticated strategies.

Stock Futures also have disadvantages. These include:

- *Risk:* An investor who is long in a stock can only lose what he or she has invested. In a stock future contract, there is the risk of losing significantly more than the initial investment (margin deposit).
- *No Stockholder Privileges:* The future owner has no voting rights and no rights to dividends.
- *Required Vigilance:* Stock Futures are investments that require investors to monitor their positions more closely than many would like to do. Because future accounts are marked to the market every business day, there is the possibility that the brokerage

firm might issue a margin call, requiring the investor to decide whether to quickly deposit additional funds or liquidate the position.

(e) Comparison with Equity Options: Investing in stock futures differs from investing in equity options contracts in several ways:

- In a long options position, the investor has the right but not the obligation to purchase or deliver stock. In a long future position, the investor is obligated to deliver the stock.
- Movement of the Market: Options traders use a mathematical factor, the delta that measures the relationship between the options premium and the price of the underlying stock. At times, an options contract's value may fluctuate independently of the stock price. By contrast, the future contract will much more closely follow the movement of the underlying stock.
- The Price of Investing: When an options investor takes a long position, he or she pays a premium for the contract. The premium is often called a wasting asset. At expiration, unless the options contract is in the money, the contract is worthless and the investor has lost the entire premium. Stock future contracts require an initial margin deposit and a specific maintenance level of cash.

10.5.1.3 Stock Options: A privilege, sold by one party to another, that gives the buyer the right, but not the obligation, to buy (call) or sell (put) a stock at an agreed-upon price within a certain period or on a specific date regardless of changes in its market price during that period. The various kinds of stock options include put and call options, which may be purchased in anticipation of changes in stock prices, as a means of speculation or hedging. A put gives its holder an option to sell, or put, shares to another party at a fixed price even if the market price declines. A call gives the holder an option to buy, or call for, shares at a fixed price even if the market price rises. The option may be purchased or sold or may be granted to an individual by the company as in an employee stock option. Stock options involve no commitments on the part of the individual to purchase the stock and the option is usually exercised only if the price of the stock has risen above the price specified at the time the option was given.

Stock options are a form of incentive compensation. They are usually given by a corporation in an attempt to motivate an employee or officer to continue with the corporation or to improve corporate productivity in a manner which will cause the price of the corporation's stock to rise and thereby increase the value of the option.

American options can be exercised anytime between the date of purchase and the expiration date. European options may only be redeemed at the expiration date. Most exchange-traded stock options are American.

One important difference between stocks and options is that stocks give you a small piece of ownership in the company, while options are just contracts that give you the right to buy or sell

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the stock at a specific price by a specific date. It is important to remember that there are always two sides for every option transaction: a buyer and a seller. So, for every call or put option purchased, there is always someone else selling/buying it. When individuals sell options, they effectively create a security that didn't exist before. This is known as writing an option and explains one of the main sources of options, since neither the associated company nor the options exchange issues options. When you write a call, you may be obligated to sell shares at the strike price any time before the expiration date. When you write a put, you may be obligated to buy shares at the strike price any time before expiration.

Trading stocks can be compared to gambling in a casino, where you are betting against the house, so if all the customers have an incredible string of luck, they could all win. But trading options is more like betting on horses at the racetrack. There they use pari-mutual betting, whereby each person bets against all the other people there. The track simply takes a small cut for providing the facilities. So, trading options, like the horse track, is a zero-sum game. The option buyer's gain is the option seller's loss and vice versa: any payoff diagram for an option purchase must be the mirror image of the seller's payoff diagram.

The price of an option is called its premium. The buyer of an option cannot lose more than the initial premium paid for the contract, no matter what happens to the underlying security. So, the risk to the buyer is never more than the amount paid for the option. The profit potential, on the other hand, is theoretically unlimited.

In return for the premium received from the buyer, the seller of an option assumes the risk of having to deliver (if a call option) or taking delivery (if a put option) of the shares of the stock. Unless that option is covered by another option or a position in the underlying stock, the seller's loss can be open-ended, meaning the seller can lose much more than the original premium received.

You should be aware that there are two basic styles of options: American and European. An American, or American-style, option can be exercised at any time between the date of purchase and the expiration date. Most exchange-traded options are American style and all stock options are American style. A European, or European-style, option can only be exercised on the expiration date.

Note that options are not available at just any price. In international market stock options are generally traded with strike prices in intervals of \$2.50 up to \$30 and in intervals of \$5 above that. Also, only strike prices within a reasonable range around the current stock price are generally traded. Far in or out-of-the-money options might not be available. All stock options expire on a certain date, called the expiration date.

A more complex type of security than the stocks with which they are associated, options can be used in a wide variety of strategies, from conservative to high risk. They can also be tailored to meet expectations that go beyond a simple 'the stock will go up' or 'the stock will go down'.

When most stock traders first begin using options, it is usually to purchase a call or a put for directional trading, which traders practice when they are confident that a stock price will move in a particular direction and they open an option position to take advantage of the expected movement. These traders may decide to try investing in options rather than the stock itself because of the limited risk, high potential reward and smaller amount of capital required to control the same number of shares of stock.

If your outlook is positive (bullish), buying a call option creates the opportunity to share in the upside potential of a stock without having to risk more than a fraction of its market value. If you are bearish (anticipate a downward price movement), buying a put lets you take advantage of a fall in the stock price without the large margin needed to short a stock. There are many different kinds of option strategies that can be constructed, but the success of any strategy depends on the trader's thorough understanding of the two types of options: the put and the call. Furthermore, taking full advantage of options requires changing how you think. Those option traders who still think solely in terms of market direction may appreciate the flexibility and leverage options offer, but these traders are missing some of the other opportunities that options provide. Besides moving up or down, stocks can move sideways or trend only modestly higher or lower for long periods of time. They can also make substantial moves up or down in price, then reverse direction and end up back where they started. These kinds of price movements cause headaches for stock traders but give option traders the unique and exclusive opportunity to make money even if the stock goes nowhere. Calendar spreads, straddles, strangles and butterflies are some of the strategies designed to profit from those types of situations.

Stock option traders have to learn to think differently because of the additional variables that affect an option's price and the resulting complexity of choosing the right strategy. With stocks you only have to worry about one thing: price. So, once a stock trader becomes good at predicting the future movement of a stock's price, he or she may figure it in an easy transition from stocks to options - not so. In the landscape of options you have three shifting parameters that affect an option's price: price of the stock, time and volatility. Changes in any one of these three variables will affect the value of your options.

10.5.1.3.1 Factors Affecting Value of an Option: There are a number of different mathematical formulas, or models, that are designed to compute the fair value of an option. You simply input all the variables (stock price, time, interest rates, dividends and future volatility), and you get an answer that tells you what an option should be worth. Here are the general effects the variables have on an option's price:

(a) Price of the Underlying: The value of calls and puts are affected by changes in the underlying stock price in a relatively straightforward manner. When the stock price goes up, calls should gain in value and puts should decrease. Put options should increase in value and calls should drop as the stock price falls.

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(b) Time: The effect of time is also relatively easy to conceptualize, although it also takes some experience before you truly understand its impact. The option's future expiry, at which time it may become worthless, is an important and key factor of every option strategy. Ultimately, time can determine whether your option trading decisions are profitable. To make money in options over the long term, you need to understand the impact of time on stock and option positions.

With stocks, time is a trader's ally as the stocks of quality companies tend to rise over long periods of time. But time is the enemy of the options buyer. If days pass without any significant change in the stock price, there is a decline in the value of the option. Also, the value of an option declines more rapidly as the option approaches the expiration day. That is good news for the option seller, who tries to benefit from time decay, especially during that final month when it occurs most rapidly.

(c) Volatility: The effect of volatility on an option's price is usually the hardest concept for beginners to understand. The beginning point of understanding volatility is a measure called statistical (sometimes called historical) volatility, or SV for short. SV is a statistical measure of the past price movements of the stock; it tells you how volatile the stock has actually been over a given period of time.

But to give you an accurate fair value for an option, option pricing models require you to put in what the future volatility of the stock will be during the life of the option. Naturally, option traders don't know what that will be, so they have to try to guess. To do this, they work the options pricing model "backwards" (to put it in simple terms). After all, you already know the price at which the option is trading; you can also find the other variables (stock price, interest rates, dividends, and the time left in the option) with just a bit of research. So the only missing number is future volatility, which you can calculate from the equation.

10.5.1.4 Stock Index Futures: Trading in stock index futures contracts was introduced by the Kansas City Board of Trade on February 24, 1982.

In April 1982, the Chicago Mercantile Exchange (CME) began trading in futures contract based on the Standard and Poor's Index of 500 common stocks. The introduction of both contracts was successful, especially the S&P 500 futures contract, adopted by most institutional investors.

A contract for stock index futures is based on the level of a particular stock index such as the S&P 500 or the Dow Jones Industrial Average or NIFTY or BSE sensex. The agreement calls for the contract to be bought or sold at a designated time in the future. Just as hedgers and speculators buy and sell futures contracts and options based on a future price of corn, foreign currency, etc, they may—for mostly the same reasons—buy and sell such contracts based on the level of a number of stock indexes.

Stock index futures may be used to either speculate on the equity market's general performance or to hedge a stock portfolio against a decline in value. It is not unheard of for

the expiration dates of these contracts to be as much as two or more years in the future, but like commodity futures contracts most expire within one year. Unlike commodity futures, however, stock index futures are not based on tangible goods, thus all settlements are in cash. Because settlements are in cash, investors usually have to meet liquidity or income requirements to show that they have money to cover their potential losses.

Stock index futures are traded in terms of number of contracts. Each contract is to buy or sell a fixed value of the index. The value of the index is defined as the value of the index multiplied by the specified monetary amount. In the S&P 500 futures contract traded at the Chicago Mercantile Exchange (CME), the contract specification states:

1 Contract = \$250 * Value of the S&P 500

If we assume that the S&P 500 is quoting at 1,000, the value of one contract will be equal to \$250,000 ($250 \times 1,000$). The monetary value - \$250 in this case - is fixed by the exchange where the contract is traded.

10.5.1.4.1 Mechanics of Futures Trading: Like most other financial instruments, futures contracts are traded on recognised exchanges. In India, both the NSE and the BSE have introduced index futures in the S&P CNX Nifty and the BSE Sensex. The operations are similar to that of the stock market, the exception being that, in index futures, the marking-to-market principle is followed, that is, the portfolios are adjusted to the market values on a daily basis.

Stock index futures have some special institutional features. First, settlement, even on the delivery date, is in cash. The seller simply delivers to the buyer the cash difference between the closing level of the underlying index and the futures price. This cash settlement feature is adopted because it is impractical to deliver all the stocks in the index in their correct proportions. Indeed, for some contracts, cash delivery is not just an alternative, but a necessity; for example, when the underlying variable is not an asset at all but just a number, such as the CPI or the Weather Index.

In stock index futures contracts, there are two parties directly involved. One party (the short position) must deliver to a second party (the long position) an amount of cash equaling the contract's dollar multiplier (Rs. multiplier in Indian market) multiplied by the difference between the spot price of a stock market index underlying the contract on the day of settlement (IP_{spot}) and the contract price on the date that the contract was entered (CP_0).

If an investor sells a six-month NYSE (New York Stock Exchange) Composite futures contract (with a multiplier of \$500 per index point) at 444 and, six, months later, the NYSE Composite Index closes at 445, the short party will receive \$500 in cash from the long party.

Similarly, if an investor shorts a one-year futures contract at 442 and the index is 447 on the settlement day one year later (assuming that the multiplier is at \$500), the short seller has to pay the long holder \$2,500.

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Thus, positive differences are paid by the seller and received by the buyer. Negative differences are paid by the buyer and received by the seller.

Second, determination of its futures price depends on an estimate of the remaining cash dividends on the underlying index through delivery. Estimating cash dividends is not difficult over a one-year horizon since cash dividends for individual stocks are largely predictable from a firm's past behavior, and because the law of large numbers tends to cause errors in individual predictions to wash out.

10.5.1.4.2 Buying and Selling Stock Index Futures: When an investor opens a futures position, he or she does not pay the entire amount of the equity underlying the futures contract. The investor is required to put up only a small percentage of the value of the contract as a margin. A margin is the amount of money required for investors to give to their brokers to maintain their futures contracts. Unlike margins paid for stock purchases, margins paid for stock index futures are not purchases or sales of actual securities. Instead, they represent agreements to pay or receive the difference in price between the index underlying the contract on the day of settlement (IP_{spot}) and the contract price on the date that the contract was entered (CP_0).

If the index moves against the sellers, they will be required to add to the margin amount. Known as a maintenance or variation margin, it is the minimum level to which investors' account equity can fall before they receive a margin call. When investors' equity in a stock index futures account falls below the maintenance level, they receive a margin call for enough money to bring the account up to the initial margin level. This margin requirement mandates that holders of futures positions settle their realized and unrealized profits and losses in cash on a daily basis. These profits and losses are derived by comparing the trade price against the daily settlement price of the futures contract. The settlement price is broadcast by the exchanges soon after the markets close; it represents the pricing of the last 30 seconds of the day's trading. Depending on the position of the portfolio, margins are forced upon investors.

10.5.1.4.3 Uses of Stock Index Futures: Investors can use stock index futures to perform myriad tasks. Some common uses are: to speculate on changes in specific markets; to change the weightings of portfolios; to separate market timing from market selection decisions; and to take part in index arbitrage, whereby the investors seek to gain profits whenever a futures contract is trading out of line with the fair price of the securities underlying it.

Investors commonly use stock index futures to change the weightings or risk exposures of their investment portfolios. A good example of this is investors who hold equities from two or more countries. Suppose these investors have portfolios invested in 60 percent U.S. equities and 40 percent Japanese equities and want to increase their systematic risk to the U.S. market and reduce these risks to the Japanese market. They can do this by buying U.S. stock index futures contracts in the indexes underlying their holdings and selling Japanese contracts (in the Nikkei Index).

Stock index futures also allow investors to separate market timing from market selection decisions. For instance, investors may want to take advantage of perceived immediate increases in an equity market but are not certain which securities to buy; they can do this by purchasing stock index futures. If the futures contracts are bought and the present value of the money used to buy them is invested in risk-free securities, investors will have a risk exposure equal to that of the market. Similarly, investors can adjust their portfolio holdings at a more leisurely pace. For example, assume the investors see that they have several undesirable stocks but do not know what holdings to buy to replace them. They can sell the unwanted stocks and, at the same time, buy stock index futures to keep their exposure to the market. They can later sell the futures contracts when they have decided which specific stocks they want to purchase.

Investors can also make money from stock index futures through index arbitrage, also referred to as program trading. Basically, arbitrage is the purchase of a security or commodity in one market and the simultaneous sale of an equal product in another market to profit from pricing differences. Investors taking part in stock index arbitrage seek to gain profits whenever a futures contract is trading out of line with the fair price of the securities underlying it. Thus, if a stock index futures contract is trading above its fair value, investors could buy a basket of about 100 stocks composing the index in the correct proportion—such as a mutual fund comprised of stocks represented in the index—and then sell the expensively priced futures contract. Once the contract expires, the equities could then be sold and a net profit would result. While the investors can keep their arbitrage position until the futures contract expires, they are not required to. If the futures contract seems to be returning to fair market value before the expiration date, it may be prudent for the investors to sell early.

10.5.1.4.4 Using Indexes to Hedge Portfolio Risk: Aside from the above uses of indexes, investors often use stock index futures to hedge the value of their portfolios. To implement a hedge, the instruments in the cash and futures markets should have similar price movements. Also, the amount of money invested in the cash and futures markets should be the same. To illustrate, while investors owning well-diversified investment portfolios are generally shielded from unsystematic risk (risk specific to particular firms), they are fully exposed to systematic risk (risk relating to overall market fluctuations). A cost-effective way for investors to reduce the exposure to systematic risk is to hedge with stock index futures, similar to the way that people hedge commodity holdings using commodity futures. Investors often use short hedges when they are in a long position in a stock portfolio and believe that there will be a temporary downturn in the overall stock market. Hedging transfers the price risk of owning the stock from a person unwilling to accept systematic risks to someone willing to take the risk.

To carry out a short hedge, the hedger sells a futures contract; thus, the short hedge is also called a "sell-hedge." For example, consider investors who own portfolios of

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securities valued at \$1.2 million with a dividend of 1 percent. The investors have been very successful with their stock picks. Therefore, while their portfolios' returns move up and down with the market, they consistently outperform the market by 6 percent. Thus, the portfolio would have a beta of 1.00 and an alpha of 6 percent. Say that the investors believe that the market is going to have a 15 percent decline, which would be offset by the 1 percent received from dividends. The net broad market return would be -14 percent but, since they consistently outperform the market by 6 percent, their estimated return would be -8 percent. In this instance, the investors would like to cut their beta in half without necessarily cutting their alpha in half. They can achieve this by selling stock index futures. In this scenario, the S&P 500 index is at 240. The contract multiplier is \$500, and therefore each contract represents a value of \$120,000. Since the investors want to simulate the sale of half of their \$1.2 million portfolios, they must sell five contracts ($5 \times \$120,000 = \$600,000$). Thus, their portfolios would be affected by only half of the market fluctuation. While the investors could protect their portfolios equally well by selling half of their shares of stock and buying them again at short time later, using a short hedge on stock index futures is much cheaper than paying the capital gains tax plus the broker commissions associated with buying and selling huge blocks of stock.

At the extreme, stock index futures can theoretically eliminate the effects of the broad market on a portfolio. Perfect hedges are very unusual because of the existence of basis risk. The basis is the difference between the existing price in the futures market and the cash price of the underlying securities. Basis risk occurs when changes in the economy and the financial situation have different impacts on the cash and futures markets.

10.5.1.4.5 How does Futures Trading Apply to Indian Stocks and Indices: Futures trading are a form of investment which involves speculating on the price of a security going up or down in the future.

A security could be a stock (RIL, TISCO, etc), stock index (NSE Nifty Index), commodity (Gold, Silver, etc), currency, etc.

Unlike other kinds of investments, such as stocks and bonds, when you trade futures, you do not actually buy anything or own anything. You are speculating on the future direction of the price in the security you are trading. This is like a bet on future price direction. The terms "buy" and "sell" merely indicate the direction you expect future prices will take.

If, for instance, you were speculating on the NSE Nifty Index, you would buy a futures contract if you thought the price would be going up in the future. You would sell a futures contract if you thought the price would go down. For every trade, there is always a buyer and a seller. Neither person has to own anything to participate. He must only deposit sufficient capital with a brokerage firm to insure that he will be able to pay the losses if his trades lose money.

10.5.1.4.6 Trading of NSE Nifty 50 and CNX Stock Index Futures: Because it is difficult for most investors to select and invest only in the top performing stocks, investing in products that track stock indices, which provide exposure to the whole market or a sector of the market rather than a few individual stocks has become increasingly popular.

The advantage of indexing is available in mutual funds and exchange-traded funds. But, you should consider stock index futures instead for two main reasons: flexibility and leverage.

Stock index futures have attracted many new traders, and for good reason. These innovative futures contracts can serve you in a number of ways, and be used with a variety of trading strategies and different financial objectives.

The reasons to trade stock index futures are numerous and compelling. You can use them to take action on your opinion of the market, manage risk and gain exposure to various market sectors efficiently and cheaply.

Main reasons to trade stock index futures are:

- Add flexibility to one's investment portfolio. Stock index futures add flexibility to his or her portfolio as a hedging and trading instrument.
- Create the possibility of speculative gains using leverage. Because a relatively small amount of margin money controls a large amount of capital represented in a stock index contract, a small change in the index level might produce a profitable return on one's investment if he or she is right about the market's direction.
- Provide hedging or insurance protection for a stock portfolio in a falling market.
- Although the stock market climbed steadily in 2003, it later became apparent that there is no guarantee that it will always do so. Even though one doesn't expect a fire in his or her house or an accident with his or her automobile, one buys insurance in case that should happen. One can also get "insurance" for his or her stock portfolio by using stock index futures to protect against the day a decline might come. And, unlike purchasing options as insurance, there is no time value erosion of the futures position.
- Maintain one's stock portfolio during stock market corrections. One may not need "insurance" for all the time, but there are certain times when one would like less exposure to stocks. Yet, one doesn't want to sell off part of a stock portfolio that has taken him or her a long time to put together and looks like a sound, long-term investment program.
- Sell as easily as one can buy. One of the major advantages of futures markets, in general, is that one can sell contracts as readily as he or she can buy them and the amount of margin required is the same. Mutual funds do not specialize in bear

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market approaches by short selling stocks but, and also it is not possible for individuals to short sell stocks in a falling market to make money.

- Transfer risk quickly and efficiently. Whether one is speculating, looking for insurance protection (hedging), or temporarily substituting futures for a later cash transaction, most stock index futures trades can be accomplished quickly and efficiently. Many mutual funds require investors to wait until the end of the day to see at what price they were able to purchase or sell shares. With today's volatility, once-a-day pricing may not give one the maneuverability to take positions at exactly the time he or she wants. Stock index futures give individual the opportunity to get into or out of a position whenever he or she wants.

10.5.1.4.7 The S&P CNX Nifty Index Futures: The NSE Nifty futures contract is a forward contract, which was traded on the National Stock Exchange (NSE) on June 12, 2000. The index futures contracts are based on the popular market benchmark S&P CNX Nifty index.

Contract Specifications-Security descriptor

The security descriptor for the S&P CNX Nifty futures contracts is:

Market type: N

Instrument Type: FUTIDX

Underlying: NIFTY

Expiry date: Date of contract expiry

Instrument type represents the instrument i.e. Futures on Index.

Underlying symbol denotes the underlying index which is S&P CNX Nifty

Expiry date identifies the date of expiry of the contract

Underlying Instrument: The underlying index is S&P CNX NIFTY.

(a) Trading cycle: S&P CNX Nifty futures contracts have a maximum of 3-month trading cycle - the near month (one), the next month (two) and the far month (three). A new contract is introduced on the trading day following the expiry of the near month contract. The new contract will be introduced for a three month duration. This way, at any point in time, there will be 3 contracts available for trading in the market i.e., one near month, one mid month and one far month duration respectively.

(b) Expiry day: S&P CNX Nifty futures contracts expire on the last Thursday of the expiry month. If the last Thursday is a trading holiday, the contracts expire on the previous trading day.

Trading Parameters/Contract size: The permitted lot size of S&P CNX Nifty futures contracts is 200 and multiples thereof.

Price steps: The price step in respect of S&P CNX Nifty futures contracts is Re.0.05.

Base Prices: Base price of S&P CNX Nifty futures contracts on the first day of trading would be theoretical futures price.. The base price of the contracts on subsequent trading days would be the daily settlement price of the futures contracts.

Price bands: There are no day minimum/maximum price ranges applicable for S&P CNX Nifty futures contracts. However, in order to prevent erroneous order entry by trading members, operating ranges are kept at + 10 %. In respect of orders which have come under price freeze, members would be required to confirm to the Exchange that there is no inadvertent error in the order entry and that the order is genuine. On such confirmation the Exchange may approve such order.

Quantity freeze: Quantity Freeze for S&P CNX Nifty futures contracts would be 20,000 units or greater. In respect of orders which have come under quantity freeze, members would be required to confirm to the Exchange that there is no inadvertent error in the order entry and that the order is genuine. On such confirmation, the Exchange may approve such order. However, in exceptional cases, the Exchange may, at its discretion, not allow the orders that have come under quantity freeze for execution for any reason whatsoever including non-availability of turnover / exposure limits.

Order type/Order book/Order attribute

- Regular lot order
- Stop loss order
- Immediate or cancel
- Good till day
- Good till cancelled*
- Good till date
- Spread order

*Good Till Cancelled (GTC) orders are cancelled at the end of the period of 7 calendar days from the date of entering an order.

10.5.1.4.8 S&P CNX NSE Nifty 50 Index: It is a well diversified 50 stock index accounting for 23 sectors of the economy. The total traded value of all Nifty stocks is approximately 70% of the traded value of all stocks on the NSE. Nifty stocks represent about 60% of the total market capitalisation.

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You can trade the 'entire stock market' instead of individual securities.

Index Futures are:

- Highly liquid
- Large intra-day price swings
- High leverage
- Low initial capital requirement
- Lower risk than buying and holding stocks
- Just as easy to trade the short side as the long side
- Only have to study one index instead of 100's of stocks

Index futures are settled in cash and therefore all problems related to bad delivery, forged, fake certificates, etc can be avoided.

Since the index consists of many securities (50 securities) it is very difficult to manipulate the index.

You are required to pay a small fraction of the value of the total contract as margins. This means that trading in Stock Index Futures is a leveraged activity since the investor is able to control the total value of the contract with a relatively small amount of margin.

10.5.1.5 Stock Index Option: A call or put option on a financial index. Investors trading index options are essentially betting on the overall movement of the stock market as represented by a basket of stocks. Options on the S&P 500 are some of the most actively traded options in the world.

Index options can be used by the portfolio managers to limit their downside risk. Suppose the value of the index is S . Consider a manager in charge of a well diversified portfolio which has a β of 1.0 so that its value mirrors the value of the index. If for each 100S rupees in the portfolio, the manager buys one put option contract with exercise price X , the value of the portfolio is protected against the possibility of the index falling below X . For instance, suppose that the manager's portfolio is worth Rs.10,00,000 and the value of the index is 10000. The portfolio is worth 100 times the index. The manager can obtain insurance against the value of the portfolio dropping below Rs.900,000 in the next two months by buying 1 put option contracts with a strike price of Rs.9000. To illustrate how this would work, consider the situation where the index drops to 8500. The portfolio will be worth Rs.850000 (100×8500). However, the payoff from the options will be $1 \times (\text{Rs.}9000 - \text{Rs.}8500) \times 100 = \text{Rs.}50000$, bringing the total value of the portfolio up to the insured value of Rs.900, 000.

10.5.2 OPTION VALUATION TECHNIQUES

The Black-Scholes model, the Binomial model and the Greeks are the primary pricing models used for valuing options. The Black-Scholes and the Binomial models are based on the same theoretical foundations and assumptions (such as the geometric Brownian motion theory of stock price behaviour and risk-neutral valuation). However, there are also some important differences between the two models and these are highlighted below.

(a) Black-Scholes Model: The Black-Scholes model is used to calculate a theoretical price (ignoring dividends paid during the life of the option) using the five key determinants of an option's price: stock price, strike price, volatility, time to expiration, and short-term (risk free) interest rate.

The original formula for calculating the theoretical option price (OP) is as follows:

$$OP = SN(d_1) - Xe^{-rt}N(d_2)$$

Where:

$$d_1 = \frac{\ln\left(\frac{S}{X}\right) + \left(r + \frac{v^2}{2}\right)t}{v\sqrt{t}}$$

$$d_2 = d_1 - v\sqrt{t}$$

The variables are:

S = stock price

X = strike price

t = time remaining until expiration, expressed as a percent of a year

r = current continuously compounded risk-free interest rate

v = annual volatility of stock price (the standard deviation of the short-term returns over one year).

ln = natural logarithm

N(x) = standard normal cumulative distribution function

e = the exponential function

The model is based on a normal distribution of underlying asset returns which is the same thing as saying that the underlying asset prices themselves are log-normally distributed. A lognormal distribution has a longer right tail compared with a normal, or bell-shaped, distribution. The lognormal distribution allows for a stock price distribution of between zero and infinity (ie no negative prices) and has an upward bias (representing the fact that a stock price can only drop 100% but can rise by more than 100%).

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In practice underlying asset price distributions often depart significantly from the lognormal. For example historical distributions of underlying asset returns often have fatter left and right tails than a normal distribution indicating that dramatic market moves occur with greater frequency than would be predicted by a normal distribution of returns-- i.e. more very high returns and more very low returns.

A corollary of this is the volatility smile -- the way in which at-the-money options often have a lower volatility than deeply out-of-the-money options or deeply in-the-money options.

Volatility is the most critical parameter for option pricing -- option prices are very sensitive to changes in volatility. Volatility however cannot be directly observed and must be estimated.

Whilst implied volatility -- the volatility of the option implied by current market prices -- is commonly used the argument that this is the "best" estimate is somewhat circular. Skilled options traders will not rely solely on implied volatility but will look behind the estimates to see whether or not they are higher or lower than you would expect from historical and current volatilities, and hence whether options are more expensive or cheaper than perhaps they should be.

It's a slight over simplification, but basically implied volatility will give you the price of an option; historical volatility will give you an indication of its value. It's important to understand both. For instance, if your forecast of volatility based on historical prices is greater than current implied volatility (options under valued) you might want to buy a straddle; if your historical forecast is less than implied volatility you might want to sell a straddle.

Unlike volatility, which is all important for determining the fair value of an option, views about the future direction of an underlying asset (i.e. whether you think it will go up or down in the future and by how much) are completely irrelevant.

Significantly, the expected rate of return of the stock (which would incorporate risk preferences of investors as an equity risk premium) is not one of the variables in the Black-Scholes model (or any other model for option valuation). The important implication is that the value of an option is completely independent of the expected growth of the underlying asset (and is therefore risk neutral).

Thus, while any two investors may strongly disagree on the rate of return they expect on a stock they will, given agreement to the assumptions of volatility and the risk free rate, always agree on the fair value of the option on that underlying asset.

The fact that a prediction of the future price of the underlying asset is not necessary to value an option may appear to be counter intuitive, but it can easily be shown to be correct. Dynamically hedging a call using underlying asset prices generated from Monte

Carlo simulation is a particularly convincing way of demonstrating this. Irrespective of the assumptions regarding stock price growth built into the Monte Carlo simulation the cost of hedging a call (i.e. dynamically maintaining a delta neutral position by buying & selling the underlying asset) will always be the same, and will be very close to the Black-Scholes value.

Putting it another way, whether the stock price rises or falls after, e.g., writing a call, it will always cost the same (provided volatility remains constant) to dynamically hedge the call and this cost, when discounted back to present value at the risk free rate, is very close to the Black-Scholes value.

This is hardly surprising given that the Black-Scholes price is nothing more than the amount an option writer would require as compensation for writing a call and completely hedging the risk. The important point is that the hedger's view about future stock prices is irrelevant.

This key concept underlying the valuation of all derivatives -- that fact that the price of an option is independent of the risk preferences of investors -- is called risk-neutral valuation. It means that all derivatives can be valued by assuming that the return from their underlying assets is the risk free rate.

The main advantage of the Black-Scholes model is speed -- it lets you calculate a very large number of option prices in a very short time.

The Black-Scholes model has one major limitation: it cannot be used to accurately price options with an American-style exercise as it only calculates the option price at one point of time -- at expiration. It does not consider the steps along the way where there could be the possibility of early exercise of an American option.

As all exchange traded equity options have American-style exercise (i.e. they can be exercised at any time as opposed to European options which can only be exercised at expiration) this is a significant limitation.

The exception to this is an American call on a non-dividend paying asset. In this case the call is always worth the same as its European equivalent as there is never any advantage in exercising early.

Various adjustments are sometimes made to the Black-Scholes price to enable it to approximate American option prices (e.g. the Fischer Black Pseudo-American method) but these only work well within certain limits and they don't really work well for puts.

(b) Binomial Model: The binomial model breaks down the time to expiration into potentially a very large number of time intervals, or steps. A tree of stock prices is initially produced working forward from the present to expiration. At each step it is assumed that the stock price will move up or down by an amount calculated using volatility and time to expiration. This produces a binomial distribution, or recombining tree, of underlying stock

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prices. The tree represents all the possible paths that the stock price could take during the life of the option.

At the end of the tree - i.e. at expiration of the option - all the terminal option prices for each of the final possible stock prices are known as they simply equal their intrinsic values.

Next the option prices at each step of the tree are calculated working back from expiration to the present. The option prices at each step are used to derive the option prices at the next step of the tree using risk neutral valuation based on the probabilities of the stock prices moving up or down, the risk free rate and the time interval of each step. Any adjustments to stock prices (at an ex-dividend date) or option prices (as a result of early exercise of American options) are worked into the calculations at the required point of time. At the top of the tree you are left with one option price.

The big advantage the binomial model has over the Black-Scholes model is that it can be used to accurately price American options. This is because with the binomial model it's possible to check at every point in an option's life (i.e. at every step of the binomial tree) for the possibility of early exercise (e.g. where, due to e.g. a dividend, or a put being deeply in the money the option price at that point is less than its intrinsic value).

Where an early exercise point is found it is assumed that the option holder would elect to exercise, and the option price can be adjusted to equal the intrinsic value at that point. This then flows into the calculations higher up the tree and so on.

The binomial model basically solves the same equation, using a computational procedure that the Black-Scholes model solves using an analytic approach and in doing so provides opportunities along the way to check for early exercise for American options.

The main limitation of the binomial model is its relatively slow speed. It's great for half a dozen calculations at a time but even with today's fastest PCs it's not a practical solution for the calculation of thousands of prices in a few seconds.

The same underlying assumptions regarding stock prices underpin both the binomial and Black-Scholes models: that stock prices follow a stochastic process described by geometric brownian motion. As a result, for European options, the binomial model converges on the Black-Scholes formula as the number of binomial calculation steps increases. In fact the Black-Scholes model for European options is really a special case of the binomial model where the number of binomial steps is infinite. In other words, the binomial model provides discrete approximations to the continuous process underlying the Black-Scholes model.

(c) Greeks: The Greeks are a collection of statistical values (expressed as percentages) that give the investor a better overall view of how a stock has been performing. These statistical values can be helpful in deciding what options strategies are best to use. The investor should remember that statistics show trends based on past performance. It is not

guaranteed that the future performance of the stock will behave according to the historical numbers. These trends can change drastically based on new stock performance.

(i) **Delta:** A by-product of the Black-Scholes model is the calculation of the delta: the degree to which an option price will move given a small change in the underlying stock price. For example, an option with a delta of 0.5 will move half a rupee for every full rupee movement in the underlying stock.

A deeply out-of-the-money call will have a delta very close to zero; a deeply in-the-money call will have a delta very close to 1.

The formula for a delta of a European call on a non-dividend paying stock is:

$\Delta = N(d_1)$ (see Black-Scholes formula above for d_1)

Call deltas are positive; put deltas are negative, reflecting the fact that the put option price and the underlying stock price are inversely related. The put delta equals the call delta - 1.

The delta is often called the hedge ratio: If you have a portfolio short 'n' options (e.g. you have written n calls) then n multiplied by the delta gives you the number of shares (i.e. units of the underlying) you would need to create a risk less position - i.e. a portfolio which would be worth the same whether the stock price rose by a very small amount or fell by a very small amount. In such a "delta neutral" portfolio any gain in the value of the shares held due to a rise in the share price would be exactly offset by a loss on the value of the calls written, and vice versa.

Note that as the delta changes with the stock price and time to expiration the number of shares would need to be continually adjusted to maintain the hedge. How quickly the delta changes with the stock price are given by gamma.

In addition to delta there are some other "Greeks" which some find useful when constructing option strategies:

(ii) **Gamma:** It measures how fast the delta changes for small changes in the underlying stock price. i.e. the delta of the delta. If you are hedging a portfolio using the delta-hedge technique described under "Delta", then you will want to keep gamma as small as possible as the smaller it is the less often you will have to adjust the hedge to maintain a delta neutral position. If gamma is too large a small change in stock price could wreck your hedge. Adjusting gamma, however, can be tricky and is generally done using options -- unlike delta, it can't be done by buying or selling the underlying asset as the gamma of the underlying asset is, by definition, always zero so more or less of it won't affect the gamma of the total portfolio.

(iii) **Theta:** The change in option price given a one day decrease in time to expiration. Basically it is a measure of time decay. Unless you and your portfolio are travelling at close to the speed of light the passage of time is constant and inexorable. Thus, hedging

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a portfolio against time decay, the effects of which are completely predictable, would be pointless.

(iv) Rho: The change in option price given a one percentage point change in the risk-free interest rate. It is sensitivity of option value to change in interest rate. Rho indicates the absolute change in option value for a one percent change in the interest rate. For example, a Rho of .060 indicates the option's theoretical value will increase by .060 if the interest rate is decreased by 1.0.

(v) Vega: Sensitivity of option value to change in volatility. Vega indicates an absolute change in option value for a one percent change in volatility. For example, a Vega of .090 indicates an absolute change in the option's theoretical value will increase by .090 if the volatility percentage is increased by 1.0 or decreased by .090 if the volatility percentage is decreased by 1.0. Results may not be exact due to rounding. It can also be stated as the change in option price given a one percentage point change in volatility. Like delta and gamma, Vega is also used for hedging.

10.5.3 PRICING OF FUTURES

Two important characteristics of futures prices are:

1. The futures price of a commodity or asset, F , is greater than the spot price, P ; i.e., $F \geq P$.
2. The futures price rises as the time to maturity increases.

These characteristics reflect the cost of carry for a futures contract and illustrate a critical arbitrage relation.

Two implications on the movements of futures prices are:

1. The convergence of the futures price to the spot price is implied by the cost of carry relation.
2. The convergence of the futures price to the cash price at expiration of the futures contract

The Convergence of the Future Price to the Cash Price; If the future position is untwined prior to contract maturity, the return from the futures position could differ from the return on the asset due to the basis risk.

Changes in Factors Affecting the Cost of Carry; the most significant determinant of the cost of carrying is the interest rate. As the interest rate increases, the opportunity cost of holding the asset rises, so the cost of carry- and therefore the basis-rises.

In a cross-hedge, there is an additional source of basis risk. Basis results not only from differences between the futures price and the prevailing spot price of the deliverable asset, but also from differences between the spot Prices of the deliverable asset and the

exposure being hedged. Major factors responsible for variation in the basis for a cross-hedge:

- Maturity mismatch
- Liquidity differences
- Credit Risk Differences

Random Deviations from the Cost-of-Carry Relation: "White noises", but they are canceled out in the long run.

Mismatches between the Exposure Being Hedged and the Futures Contract Being Used as the Hedge:

10.5.3.1 Cost-of-Carry Model: It is an arbitrage-free pricing model. Its central theme is that futures contract is so priced as to preclude arbitrage profit. In other words, investors will be indifferent to spot and futures market to execute their buying and selling of underlying asset because the prices they obtain are effectively the same. Expectations do influence the price, but they influence the spot price and, through it, the futures price. They do not directly influence the futures price. According to the cost-of-carry model, the futures price is given by

Futures price = Spot Price + Carry Cost – Carry Return(1)

Carry cost (CC) is the interest cost of holding the underlying asset (purchased in spot market) until the maturity of futures contract. Carry return (CR) is the income (e.g., dividend) derived from underlying asset during holding period. Thus, the futures price (F) should be equal to spot price (S) plus carry cost minus carry return. If it is otherwise, there will be arbitrage opportunities as follows.

When $F > (S + CC - CR)$: Sell the (overpriced) futures contract, buy the underlying asset in spot market and carry it until the maturity of futures contract. This is called "cash-and-carry" arbitrage.

When $F < (S + CC - CR)$: Buy the (under priced) futures contract, short-sell the underlying asset in spot market and invest the proceeds of short-sale until the maturity of futures contract. This is called "reverse cash-and-carry" arbitrage. (The "reverse cash-and-carry" arbitrage assumes that the short-sellers receive the full proceeds of short-sale).

Thus, it makes no difference whether we buy or sell the underlying asset in spot or futures market. If we buy it in spot market, we require cash but also receive cash distributions (e.g., dividend) from the asset. If we buy it in futures market, the delivery is postponed to a later day and we can deposit the cash in an interest-bearing account but will also forego the cash distributions from the asset. However, the difference in spot and futures price is just equal to the interest cost and the cash distributions.

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Let us translate carry cost and carry return into computable numbers. There is no subjectivity or uncertainty about carry return. For example, if the underlying asset pays cash dividend during the life of futures contract, the carry return is the value of cash dividend. We have to make a finer adjustment here. The equation for futures price gives the current price whereas the cash dividend is payable sometime during contract life. To bring all terms on a common footing, we will have to use the present-value of cash dividend rather than the dividend amount itself. Let us now examine the carry cost, which is essentially the interest rate. There are a number of interest rates in the economy, even for the same period. There are deposit rate, lending rate, repo rate, treasury bill yield, etc. Since the Clearing Corporation guarantees the futures contract, it is a risk-free asset, like treasury bills. Accordingly, the interest rate factored in futures price should be the interest rate on risk-free assets like treasury bills. This is called the "risk-free rate." We can now translate the futures pricing equation in computable terms as follows. Let

F = futures price

S = spot price

r = risk-free interest rate (pa)

D = cash dividend from underlying stock

t = period (in years) after which cash dividend will be paid

T = maturity of futures contract (in years)

The futures price will thus be

$$F = S + (S r T) - (D - D r t) \quad (2)$$

It is customary to apply the compounding principle in financial calculations. With compounding, the above equation will change to

$$F = S (1+r)^T - D (1+r)^{-t}. \quad (3)$$

Alternately, using the continuous compounding or discounting,

$$F = Se^{rT} - De^{-rt}. \quad (4)$$

There are two good reasons why continuous compounding is preferable to discrete compounding. First, it is computationally easier in a spreadsheet. Second, it is internally consistent. For example, interest rate is always quoted on an annual basis but the compounding frequency may be different in different markets. Bond markets use half-yearly compounding; banks use quarterly compounding for deposits and loans; and money markets may use overnight or weekly or monthly intervals for compounding. With continuous compounding, we do not have to specify the frequency of compounding. This is the reason why the academic prefer continuous compounding to discrete compounding.

Before we use r in the above equation, we will have to convert the simple interest rate into

its continuously compounded equivalent, as follows.

$$\text{Continuously compounded rate} = \text{LN}(1 + \text{simple rate})$$

Where,

LN is the spreadsheet function for natural logarithm.

Similarly, we can convert the continuously compounded interest rate into simple rate equivalent as follows.

$$\text{Simple rate} = \text{EXP}(\text{continuously compounded rate}) - 1$$

Where,

EXP is the spreadsheet function for exponentiation.

Illustration 8: Let us illustrate the pricing of 90-day futures contract on a stock that pays Rs 1.50 dividend on 50th day. The current stock price is Rs 100. The yield on risk-free assets is 10% pa on simple interest rate basis (or 9.53% p.a. continuous compounding basis). The inputs are thus: $S = 50$; $r = 0.0953$; $T = 0.246575$ year (or 90 days); $t = 0.136986$ year (50 days).

Solution

$$F = 100e^{0.0953 \times 0.246575} - 1.50e^{-0.0953 \times 0.136986} = 100.82$$

$$\text{Let } x = 100e^{0.0953 \times 0.246575} = 100 e^{0.02349859}$$

$$\text{Then } \log x = \log 100 + 0.02349859 \times \log e$$

$$\log x = 10 + 0.02349859 \times 0.43429$$

$$\log x = 10 + 0.0102053 = 10.0102053$$

$$\text{Antilog}(\log x) = \text{Antilog } 10.0102053$$

$$x = 102.30$$

$$\text{Similarly for } 1.50 e^{-0.0953 \times 0.136986} = 1.48$$

Readers may check that if the stock pays no cash dividend during futures life, the futures price would be higher at 102.38. If the cash dividend amount is higher at Rs 3, then the futures price would be 99.42, which is lower than current spot price.

10.5.4 EMBEDDED DERIVATIVES

A derivative is defined as a contract that has all the following characteristics:

- Its value changes in response to a specified underlying, e.g. an exchange rate, interest rate or share price;
- It requires little or no initial net investment;

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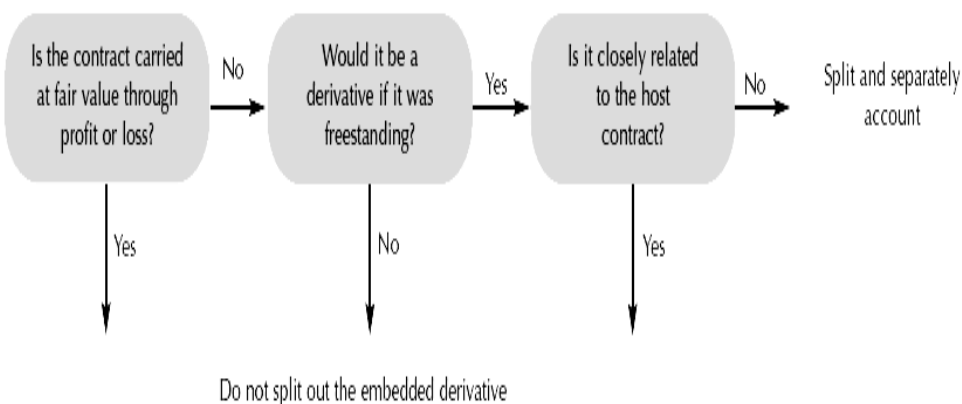
- It is settled at a future date;

The most common derivatives are currency forwards, futures, options, interest rate swaps etc.

An embedded derivative is a derivative instrument that is embedded in another contract - the host contract. The host contract might be a debt or equity instrument, a lease, an insurance contract or a sale or purchase contract. Derivatives require to be marked-to-market through the income statement, other than qualifying hedging instruments. This requirement on embedded derivatives are designed to ensure that mark-to-market through the income statement cannot be avoided by including - embedding - a derivative in another contract or financial instrument that is not marked-to market through the income statement.

An embedded derivative can arise from deliberate financial engineering and intentional shifting of certain risks between parties. Many embedded derivatives, however, arise inadvertently through market practices and common contracting arrangements. Even purchase and sale contracts that qualify for executory contract treatment may contain embedded derivatives. An embedded derivative causes modification to a contract's cash flow, based on changes in a specified variable.

Illustration 9: A coal purchase contract may include a clause that links the price of the coal to a pricing formula based on the prevailing electricity price or a related index at the date of delivery. The coal purchase contract, which qualifies for the executory contract exemption, is described as the host contract, and the pricing formula is the embedded derivative. The pricing formula is an embedded derivative because it changes the price risk from the coal price to the electricity price.



When must embedded derivatives be accounted for?

An embedded derivative is split from the host contract and accounted for separately if:

- Its economics are not 'closely related' to those of the host contract;

- A separate instrument with the same terms as the embedded derivative would meet the definition of a derivative; and
- The entire contract is not carried at fair value through profit or loss.

See the decision tree on accounting for embedded derivatives.

An embedded derivative that modifies an instrument's inherent risk (such as a fixed to floating interest rate swap) would be considered closely related. Conversely, an embedded derivative that changes the nature of the risks of a contract is not closely related.

Most equity- or commodity-linked features embedded in a debt instrument will not be closely related. This includes puts that force the issuer to reacquire an instrument based on changes in commodity price or index, equity or commodity indexed interest or principal payments and equity conversion features. Puts or calls on equity instruments at specified prices (that is, not market on date of exercise) are seldom closely related, neither are calls, puts or prepayment penalties on debt instruments. Credit derivatives embedded in a host debt instrument are seldom closely related to it.

The economic characteristics and risks of an embedded derivative are closely related to the economic characteristics and risks of the host contract when the host contract is a debt instrument and the embedded derivative is an interest rate floor or a cap out of the money when the instrument is issued. An entity would not account for the embedded derivative separately from the host contract. The same principle applies to caps and floors in a sale or purchase contract.

Closely related- Examples of embedded derivatives that need not be separated

- A derivative embedded in a host lease contract is closely related to the host contract if the embedded derivative comprises contingent rentals based on related sales;
- An inflation index term in a debt instrument as long as it is not leveraged and relates to the inflation index in the economic environment in which the instrument is denominated or issued;
- Not closely related- Examples of embedded derivatives that must be separated
- Equity conversion feature embedded in a debt instrument e.g. investment in convertible bonds;
- Option to extend the term of a debt instrument unless there is a concurrent adjustment of the interest rate to reflect market prices;
- Equity-indexed interest embedded in a debt instrument

Illustration 10: A manufacturer enters into a long-term contract to purchase a specified quantity of a commodity from a supplier. In future periods, the supplier will provide the commodity at the current market price but within a specified range. For example, the

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purchase price may not exceed 120 per unit or fall below 100 per unit; the market price at the inception of the contract is 110 per unit. The commodity-based contract is not within the scope of IAS 39 (a standard for accounting embedded derivative) because it will be settled by delivery in the normal course of business. The price limits specified in the purchase contract can be viewed as a purchased 'call' on the commodity with a strike price of 120 per unit (a cap) and a written 'put' on the commodity with a strike price of 100 per unit (a floor). At inception, both the cap and floor on the purchase price are out of the money. They are therefore considered closely related to the host purchase contract and are not recognised as embedded derivatives.

Contracts for goods and services in a foreign currency Sales and purchase contracts that are denominated in a foreign currency may include embedded derivatives if the foreign currency is not:

- A currency in which the product is routinely denominated in international commerce, or
- The reporting currency of either party to the contract, or
- A currency commonly used in the economic environment in which the transaction takes place.

Illustration 11: A French company sells regularly to customers in the Asia-Pacific region and has a price list denominated in US dollars as well as euros. It agrees a contract with an Australian customer, with payment specified in US dollars. It might agree to do this, for example, if the Australian company has US dollar revenues or simply prefers an exposure in US dollars than in euros.

The forward contract embedded in the sales agreement is separated from the host contract and accounted for as a derivative by the French and the Australian companies. The product is not routinely priced in US dollars in international commerce, the contract is not in the functional currency of either company, and the US dollar is not a currency commonly used for local business transactions in Australia.

10.5.4.1 Fair Valuing Embedded Derivatives: Embedded derivatives that are separated from the host contract are accounted for at fair value with changes in fair value taken through the income statement. Published price quotations in an active market are normally the best evidence of fair value.

Valuation techniques are used to determine the fair value of the derivative if there is no active market that matches the exact terms of the embedded derivative.

In the case of option derivatives (e.g. puts & calls), the embedded derivatives should be separated from the host contract and valued based on the stated terms of the option. It is assumed that an option derivative will not normally have a fair value of zero initial recognition. In the case of non-option derivatives, the embedded derivatives should be

separated from the host contract based on its stated and implied terms and is assumed to have a fair value of zero at initial recognition.

Illustration 12: A utility has purchased gas under a contract indexed to the prices of oil. The oil pricing component is an embedded derivative. The host contract (the purchase of gas) is an executory contract and outside the scope of IAS 39. The embedded derivative is a contract for the difference between the gas price and oil price. If there is an active and liquid market with forward price curves for gas and oil, these prices are obtained and used to value the embedded derivative. If the contract has delivery dates extending over several years, there may not be price quotes for delivery on all relevant dates. Prices are then constructed based on consistent and realistic assumptions about price movements.

The table below provides further examples of embedded derivatives that are closely related and those that are not.

Not 'closely related'	'Closely related'
<ul style="list-style-type: none"> x Equity conversion or 'put' option in debt instrument x Fixed-rate debt extension option x Debt security with interest or principal linked to commodity or equity prices x Credit derivatives embedded in a host debt instrument x Sales or purchases not in <ul style="list-style-type: none"> (1) measurement currency of either party, (2) currency in which products are routinely denominated in international commerce, or (3) currency commonly used in the economic environment in which the transaction takes place. 	<ul style="list-style-type: none"> ✓ Interest-rate swap embedded in a debt instrument ✓ Inflation-indexed lease contracts ✓ Cap and floor in a sale and purchase contract ✓ Prepayment option in a mortgage where the option's exercise price is approximately equal to the mortgage's amortised cost on each exercise date ✓ A forward foreign exchange contract that results in payments in either party's reporting currency ✓ Dual currency bonds ✓ Foreign currency denominated debt

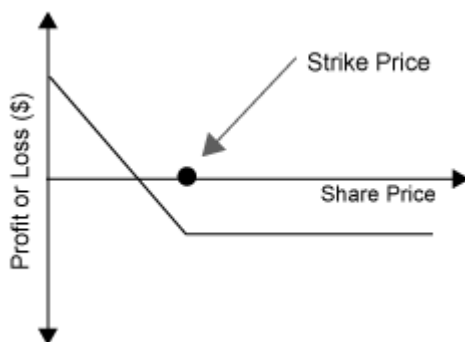
10.5.5 GLOSSARY

Call: An option contract giving the owner the right (but not the obligation) to buy a specified amount of an underlying security at a specified price within a specified time. In some exchanges, the call period is an important time in which to match and execute a large number of orders before opening and closing. A call becomes more valuable as the price of the underlying asset (stock) appreciates.

Put: An option contract giving the owner the right, but not the obligation, to sell a specified amount of an underlying asset at a set price within a specified time. The buyer of a put option estimates that the underlying asset will drop below the exercise price before the expiration date.

The possible payoff for a holder of a put option contract is illustrated by the following diagram:

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When an individual purchases a put, they expect the underlying asset will decline in price. They would then profit by either selling the put options at a profit, or by exercising the option. If an individual writes a put contract, they are estimating the stock will not decline below the exercise price, and will not increase significantly beyond the exercise price.

Consider if an investor purchased one put option contract for 100 shares of ABC Co. for Rs.1, or Rs.100 ($\text{Rs.1} \times 100$). The exercise price of the shares is Rs.10 and the current ABC share price is Rs.12. This contract has given the investor the right, but not the obligation, to sell shares of ABC at Rs.10.

If ABC shares drop to Rs.8, the investor's put option is in-the-money and he can close his option position by selling his contract on the open market. On the other hand, he can purchase 100 shares of ABC at the existing market price of Rs.8, then exercise his contract to sell the shares for Rs.10. Excluding commissions, his total profit for this position would be Rs.100 [$100 \times (\text{Rs.10} - \text{Rs.8} - \text{Rs.1})$]. If the investor already owned 100 shares of ABC, this is called a "married put" position and serves as a hedge against a decline in share price.

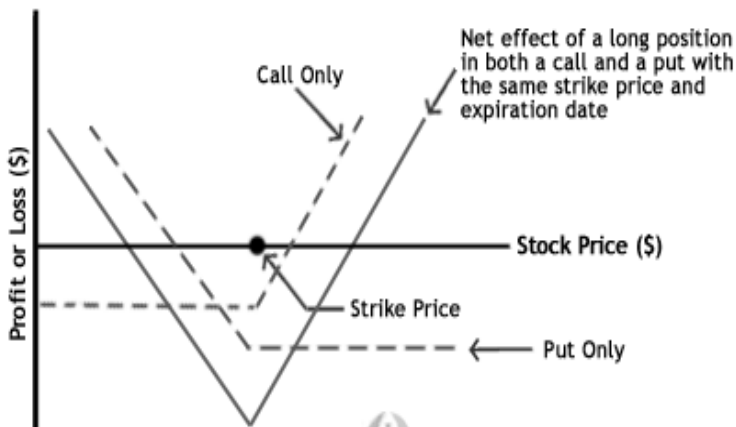
Leverage: The use of various financial instruments or borrowed capital, such as margin, to increase the potential return of an investment. The amount of debt used to finance a firm's assets. A firm with significantly more debt than equity is considered to be highly leveraged. Leverage helps both the investor and the firm to invest or operate. However, it comes with greater risk. If an investor uses leverage to make an investment and the investment moves against the investor, his or her loss is much greater than it would have been if the investment had not been leveraged - leverage magnifies both gains and losses. In the business world, a company can use leverage to try to generate shareholder wealth, but if it fails to do so, the interest expense and credit risk of default destroys shareholder value. Leverage can be created through options, futures, margin and other financial instruments. For example, say you have Rs.1,000 to invest. This amount could be invested in 10 shares of NTPC stock, but to increase leverage, you could invest the Rs.1,000 in five options contracts. You would then control 500 shares instead of just 10.

Most companies use debt to finance operations. By doing so, a company increases its leverage because it can invest in business operations without increasing its equity. For example, if a

company formed with an investment of Rs.5 million from investors, the equity in the company is Rs.5 million - this is the money the company uses to operate. If the company uses debt financing by borrowing Rs.20 million, the company now has Rs.25 million to invest in business operations and more opportunity to increase value for shareholders.

Sideways: A situation where stock prices change little over a specific period of time. Consequently, traders who follow trends when making their investment decisions will tend to perform poorly during a sideways market.

Calendar Spreads: Also known as "horizontal price movement" or "flat market." involving the simultaneous purchase and sale of two options of the same type, having the same strike price, but different expiration dates. An example of this would be the purchase of a Dec 20 call and the sale of a June 20 call. This strategy is used to profit from a change in the price difference as the securities move closer to maturity. Also referred to as "time spread".



Straddles: An options strategy with which the investor holds a position in both a call and put with the same strike price and expiration date. Straddles are a good strategy to pursue if an investor believes that a stock's price will move significantly, but is unsure as to which direction. The stock price must move significantly if the investor is to make a profit. As shown in the diagram above, should only a small movement in price occur in either direction, the investor will experience a loss. As a result, a straddle is extremely risky to perform. Additionally, on stocks that are expected to jump, the market tends to price options at a higher premium, which ultimately reduces the expected payoff should the stock move significantly. This is a good strategy if you think there will be a large price movement in the near future but is unsure of which way that price movement will be.

Strangle: The strategy involves buying an out-of-the-money call and an out-of-the-money put option. A strangle is generally less expensive than a straddle as the contracts are purchased out of the money. For example, imagine a stock currently trading at Rs.50 a share. To employ the strangle option strategy a trader enters into two option positions, one call and one put. Say

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the call is for Rs.55 and costs Rs.300 (Rs.3.00 per option x 100 shares) and the put is for Rs.45 and costs Rs.285 (Rs.2.85 per option x 100 shares). If the price of the stock stays between Rs.45 and Rs.55 over the life of the option the loss to the trader will be Rs.585 (total cost of the two option contracts). The trader will make money if the price of the stock starts to move outside the range. Say that the price of the stock ends up at Rs.35. The call option will expire worthless and the loss will be Rs.300 to the trader. The put option however has gained considerable value, it is worth Rs.715 (Rs.1,000 less the initial option value of Rs.285). So the total gain the trader has made is RS.415.

Straddles & Strangles are both options strategies that allow the investor to gain on significant moves either up or down in a stock's price. Both strategies consist of buying an equal number of call and put options with the same expiration date; the only difference is that the strangle has two different strike prices, while the straddle has one common strike price.

For example, let's say you believe your favourite diamond mining company is going to release its latest results in three weeks time, but you have no idea whether the news will be good or bad. This would be a good time to enter into a straddle, because when the results are released the stock is likely to be more sharply higher or lower.

Let's assume the price is currently at Rs.15 and we are currently in April 06. Suppose the price of the Rs.15 call option for June 06 has a price of Rs.2. The price of the Rs.15 put option for June 06 has a price of Rs.1. A straddle is achieved by buying both the call and the put for a total of Rs.300: $(Rs.2 + Rs.1) \times 100 = 300$. The investor in this situation will gain if the stock moves higher (because of the long call option) or if the stock goes lower (because of the long put option). Profits will be realized as long as the price of the stock moves by more than Rs.3 per share in either direction. A strangle is used when the investor believes the stock has a better chance of moving in a certain direction, but would still like to be protected in the case of a negative move. For example, let's say you believe the mining results will be positive, meaning you require less downside protection. Instead of buying the put option with the strike price of Rs.15, maybe you should look at buying the Rs.12.50 strike that has a price of Rs.0.25. In this case, buying this put option will lower the cost of the strategy and will also require less of an upward move for you to break even. Using the put option in this strangle will still protect the extreme downside, while putting you, the investor, in a better position to gain from a positive announcement.

Butterflies: An option strategy combining a bull and bear spread. It uses three strike prices. The lower two strike prices are used in the bull spread, and the higher strike price in the bear spread. Both puts and calls can be used. This strategy has limited risk and limited profit.

Volatility: A variable in option-pricing formulas showing the extent to which the return of the underlying asset will fluctuate between now and the option's expiration. Volatility, as expressed as a percentage coefficient within option-pricing formulas, arises from daily trading activities. How volatility is measured will affect the value of the coefficient used. In other

words, volatility refers to the amount of uncertainty or risk about the size of changes in a security's value. A higher volatility means that a security's value can potentially be spread out over a larger range of values. This means that the price of the security can change dramatically over a short time period in either direction. Whereas a lower volatility would mean that a security's value does not fluctuate dramatically, but changes in value at a steady pace over a period of time.

One measure of the relative volatility of a particular stock to the market is its beta. A beta approximates the overall volatility of security's returns against the returns of a relevant benchmark (usually the NIFTY or BSE index). For example, a stock with a beta value of 1.1 has historically moved 110% for every 100% move in the benchmark, based on price level. Conversely, a stock with a beta of .9 has historically moved 90% for every 100% move in the underlying index.

PART C

COMMODITY DERIVATIVES

11. INTRODUCTION

Trading in derivatives first started to protect farmers from the risk of the value of their crop going below the cost price of their produce. Derivative contracts were offered on various agricultural products like cotton, rice, coffee, wheat, pepper, et cetera.

The first organised exchange, the Chicago Board of Trade (CBOT) -- with standardised contracts on various commodities -- was established in 1848. In 1874, the Chicago Produce Exchange - which is now known as Chicago Mercantile Exchange - was formed (CME).

CBOT and CME are two of the largest commodity derivatives exchanges in the world.

12. NECESSARY CONDITIONS TO INTRODUCE COMMODITY DERIVATIVES

The commodity characteristic approach defines feasible commodities for derivatives trading based on an extensive list of required commodity attributes. It focuses on the technical aspects of the underlying commodity. The following attributes are considered crucial for qualifying for the derivatives trade: 1) a commodity should be durable and it should be possible to store it; 2) units must be homogeneous; 3) the commodity must be subject to frequent price fluctuations with wide amplitude; supply and demand must be large; 4) supply must flow naturally to market and there must be breakdowns in an existing pattern of forward contracting.

The first attribute, durability and storability, has received considerable attention in commodity finance, since one of the economic functions often attributed to commodity derivatives markets is the temporal allocation of stocks. The commodity derivatives market is an integral part of this storage scenario because it provides a hedge against price risk for the carrier of stocks.

Since commodity derivatives contracts are standardized contracts, this approach requires the underlying product to be homogeneous, the second attribute, so that the underlying commodity as defined in the commodity derivatives contract corresponds with the commodity traded in the cash market. This allows for actual delivery in the commodity derivatives market.

The third attribute, a fluctuating price, is of great importance, since firms will feel little incentive to insure themselves against price risk if price changes are small. A broad cash market is important because a large supply of the commodity will make it difficult to establish dominance in the market place and a broad cash market will tend to provide for a continuous and orderly meeting of supply and demand forces.

The last crucial attribute, breakdowns in an existing pattern of forward trading, indicates that cash market risk will have to be present for a commodity derivatives market to come into existence. Should all parties decide to eliminate each and every price fluctuation by using cash forward contracts for example, a commodity derivatives market would be of little interest.

A commodity derivative must reflect the commercial movement of a commodity both loosely and broadly enough, so that price distortions will not be a result of specifications in the contract. To warrant hedging, the contract must be as close a substitute for the cash commodity as possible. Hedging effectiveness is an important determinant in explaining the success of commodity derivatives and as a result considerable attention has been paid to the hedging effectiveness of commodity derivatives.

The total set of customer needs concerning commodity derivatives is differentiated into instrumental needs and convenience needs (see Figure 1). Customers will choose that “service-product” (futures, options, cash forwards, etc.) which best satisfy their needs, both instrumental and convenience, at an acceptable price.

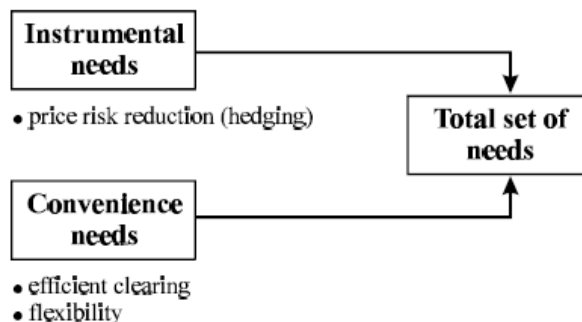


Fig.1

Instrumental needs are the hedgers' needs for price risk reduction. Hedgers wish to reduce, or, if possible, eliminate portfolio risks at low cost. The instrumental needs are related to the core service of the commodity derivatives market, which consists of reducing price variability to the customer. Not only do hedgers wish to reduce price risk, they also desire flexibility in doing business, easy access to the market, and an efficient clearing system. These needs are called convenience needs. They deal with the customer's need to be able to use the core service provided by the exchange with relative ease. The extent to which the commodity derivatives exchange is able to satisfy convenience needs determines the process quality. The service offering is not restricted to the core service, but has to be complemented by so-called peripheral services

13. THE INDIAN SCENARIO

Commodity derivatives have had a long and a chequered presence in India. The commodity derivative market has been functioning in India since the nineteenth century

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with organised trading in cotton through the establishment of Cotton Trade Association in 1875. Over the years, there have been various bans, suspensions and regulatory dogmas on various contracts.

There are 25 commodity derivative exchanges in India as of now and derivative contracts on nearly 100 commodities are available for trade. The overall turnover has crossed the mark of Rs 5 lakh crore (Rs 5 trillion) during the end of recent years.

National Commodity and Derivatives Exchange (NCDEX) is the largest commodity derivatives exchange with a turnover of around Rs 3,000 crore (Rs 30 billion) every fortnight.

It is only in the last decade that commodity derivatives exchanges have been actively encouraged. But, the markets have suffered from poor liquidity and have not grown to any significant level, till recently.

However, in the year 2003, four national commodity exchanges became operational; National Multi-Commodity Exchange of India (NMCE), National Board of Trade (NBOT), National Commodity and Derivatives Exchange (NCDEX) and Multi Commodity Exchange (MCX).

(a) National Commodity & Derivatives Exchange Limited (NCDEX): is a professionally managed online multi commodity exchange promoted by ICICI Bank Limited (ICICI Bank), Life Insurance Corporation of India (LIC), National Bank for Agriculture and Rural Development (NABARD) and National Stock Exchange of India Limited (NSE). Punjab National Bank (PNB), CRISIL Limited (formerly the Credit Rating Information Services of India Limited), Indian Farmers Fertiliser Cooperative Limited (IFFCO), Canara Bank and Goldman Sachs by subscribing to the equity shares have joined the initial promoters as shareholders of the Exchange. NCDEX is the only commodity exchange in the country promoted by national level institutions. This unique parentage enables it to offer a bouquet of benefits, which are currently in short supply in the commodity markets. The institutional promoters of NCDEX are prominent players in their respective fields and bring with them institutional building experience, trust, nationwide reach, technology and risk management skills.

NCDEX is a public limited company incorporated on April 23, 2003 under the Companies Act, 1956. It obtained its Certificate for Commencement of Business on May 9, 2003. It has commenced its operations on December 15, 2003.

NCDEX is a nation-level, technology driven de-mutualized on-line commodity exchange with an independent Board of Directors and professionals not having any vested interest in commodity markets. It is committed to provide a world-class commodity exchange platform for market participants to trade in a wide spectrum of commodity derivatives driven by best global practices, professionalism and transparency.

NCDEX is regulated by Forward Market Commission in respect of futures trading in commodities. Besides, NCDEX is subjected to various laws of the land like the Companies Act, Stamp Act, Contracts Act, Forward Commission (Regulation) Act and various other legislations, which impinge on its working.

NCDEX is located in Mumbai and offers facilities to its members in more than 550 centres throughout India. The reach will gradually be expanded to more centres. NCDEX currently facilitates trading of 57 commodities.

(b) Multi Commodity Exchange (MCX): MCX is an independent and de-mutualised multi commodity exchange. It has permanent recognition from the Government of India for facilitating online trading, clearing and settlement operations for commodities futures market across the country. Today, MCX features amongst the world's top three bullion exchanges and top four energy exchanges.

MCX offers a wide spectrum of opportunities to a large cross section of participants including producers/ processors, traders, corporate, regional trading centre, importers, exporters, co-operatives and industry associations amongst others. Headquartered in the financial capital of India, Mumbai, MCX is led by an expert management team with deep domain knowledge of the commodities futures market. Presently, the average daily turnover of MCX is around USD1.55 bn (Rs.7,000 crore - April 2006), with a record peak turnover of USD3.98 bn (Rs.17,987 crore) on April 20, 2006. In the first calendar quarter of 2006, MCX holds more than 55% market share of the total trading volume of all the domestic commodity exchanges. The exchange has also affected large deliveries in domestic commodities, signifying the efficiency of price discovery.

Being a nation-wide commodity exchange having state-of-the-art infrastructure, offering multiple commodities for trading with wide reach and penetration, MCX is well placed to tap the vast potential poised by the commodities market.

The key shareholders of MCX are Financial Technologies (I) Ltd., State Bank of India and its associates, National Bank for Agriculture and Rural Development (NABARD), National Stock Exchange of India Ltd. (NSE), Fid Fund (Mauritius) Ltd. - an affiliate of Fidelity International, Corporation Bank, Union Bank of India, Canara Bank, Bank of India, Bank of Baroda, HDFC Bank and SBI Life Insurance Co. Ltd.

(c) National Board of Trade (NBOT): It is incorporated on July 30, 1999 to offer integrated, state-of-the-art commodity futures exchange. The Board of directors, consists of respectful personalities drawn from different categories of trade and commerce has been giving necessary impetus and thrust for setting up of the exchange and provide guidance for its proper functioning.

NBOT has been set up to strengthen the move towards professionalism in the commodities market and to provide nation-wide trading facilities to market players in tune

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with the international standards. NBOT will soon introduce screen based trading system which will bring in more efficiency, integrity and transparency in the market.

NBOT has been recognised by the Government of India to organise futures trading in Soybean, its oil and meal and Mustard seed / Rapeseed, its oil and cake.

(d) National Multi-Commodity Exchange of India (NMCE): It is the first de-mutualised Electronic Multi-Commodity Exchange of India granted the National status on a permanent basis by the Government of India and operational since 26th November 2002.

It is promoted by commodity-relevant public institutions, viz., Central Warehousing Corporation (CWC), National Agricultural Cooperative Marketing Federation of India (NAFED), Gujarat Agro-Industries Corporation Limited (GAICL), Gujarat State Agricultural Marketing Board (GSAMB), National Institute of Agricultural Marketing (NIAM), and Neptune Overseas Limited (NOL). While various integral aspects of commodity economy, viz., warehousing, cooperatives, private and public sector marketing of agricultural commodities, research and training were adequately addressed in structuring the Exchange, finance was still a vital missing link. Punjab National Bank (PNB) took equity of the Exchange to establish that linkage. Even today, NMCE is the only Exchange in India to have such investment and technical support from the commodity relevant institutions.

NMCE is unique in many other respects. It is a zero-debt company; following widely accepted prudent accounting and auditing practices. It has robust delivery mechanism making it the most suitable for the participants in the physical commodity markets. The exchange does not compromise on its delivery provisions to attract speculative volume. Public interest rather than commercial interest guide the functioning of the Exchange. It has also established fair and transparent rule-based procedures and demonstrated total commitment towards eliminating any conflicts of interest. It is the only Commodity Exchange in the world to have received ISO 9001:2000 certification from British Standard Institutions (BSI).

The onset of these exchanges and the introduction of futures contracts on new commodities by the Forwards Market Commission have triggered significant levels of trade. Now the commodities futures trading in India is all set to match the volumes on the capital markets.

14. INVESTING IN COMMODITY DERIVATIVES

Commodity derivatives, which were traditionally developed for risk management purposes, are now growing in popularity as an investment tool. Most of the trading in the commodity derivatives market is being done by people who have no need for the commodity itself.

They just speculate on the direction of the price of these commodities, hoping to make money if the price moves in their favour.

The commodity derivatives market is a direct way to invest in commodities rather than investing in the companies that trade in those commodities.

For example, an investor can invest directly in a steel derivative rather than investing in the shares of Tata Steel. It is easier to forecast the price of commodities based on their demand and supply forecasts as compared to forecasting the price of the shares of a company -- which depend on many other factors than just the demand -- and supply of the products they manufacture and sell or trade in.

Also, derivatives are much cheaper to trade in as only a small sum of money is required to buy a derivative contract.

Let us assume that an investor buys a tonne of soybean for Rs 8,700 in anticipation that the prices will rise to Rs 9,000 by June 30, 2006. He will be able to make a profit of Rs 300 on his investment, which is 3.4%. Compare this to the scenario if the investor had decided to buy soybean futures instead.

Before we look into how investment in a derivative contract works, we must familiarise ourselves with the buyer and the seller of a derivative contract. A buyer of a derivative contract is a person who pays an initial margin to buy the right to buy or sell a commodity at a certain price and a certain date in the future.

On the other hand, the seller accepts the margin and agrees to fulfill the agreed terms of the contract by buying or selling the commodity at the agreed price on the maturity date of the contract.

Now let us say the investor buys soybean futures contract to buy one tonne of soybean for Rs 8,700 (exercise price) on June 30, 2006. The contract is available by paying an initial margin of 10%, i.e. Rs 870. Note that the investor needs to invest only Rs 870 here.

On June 30, 2006, the price of soybean in the market is, say, Rs 9,000 (known as Spot Price -- Spot Price is the current market price of the commodity at any point in time).

The investor can take the delivery of one tonne of soybean at Rs 8,700 and immediately sell it in the market for Rs 9,000, making a profit of Rs 300. So the return on the investment of Rs 870 is 34.5%. On the contrary, if the price of soybean drops to Rs 8,400 the investor will end up making a loss of 34.5%.

If the investor wants, instead of taking the delivery of the commodity upon maturity of the contract, an option to settle the contract in cash also exists. Cash settlement comprises exchange of the difference in the spot price of the commodity and the exercise price as per the futures contract.

At present, the option of cash settlement lies only with the seller of the contract. If the seller decides to make or take delivery upon maturity, the buyer of the contract has to fulfill his obligation by either taking or making delivery of the commodity, depending on the specifications of the contract.

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In the above example, if the seller decides to go for cash settlement, the contract can be settled by the seller by paying Rs 300 to the buyer, which is the difference in the spot price of the commodity and the exercise price. Once again, the return on the investment of Rs 870 is 34.5%.

The above example shows that with very little investment, the commodity futures market offers scope to make big bucks. However, trading in derivatives is highly risky because just as there are high returns to be earned if prices move in favour of the investors, an unfavourable move results in huge losses.

The most critical function in a commodity derivatives exchange is the settlement and clearing of trades. Commodity derivatives can involve the exchange of funds and goods. The exchanges have a separate body to handle all the settlements, known as the clearing house.

For example, the holder of a futures contract to buy soybean might choose to take delivery of soyabean rather than closing his position before maturity. The function of the clearing house or clearing organisation, in such a case, is to take care of possible problems of default by the other party involved by standardising and simplifying transaction processing between participants and the organisation.

In spite of the surge in the turnover of the commodity exchanges in recent years, a lot of work in terms of policy liberalisation, setting up the right legal system, creating the necessary infrastructure, large-scale training programs, et cetera still needs to be done in order to catch up with the developed commodity derivative markets.

Special characteristics/benefits of Commodity derivatives trading are:

- To complement investment in companies that use commodities;
- To invest in a country's consumption and production;
- *No dividends, only returns from price increases

15. COMMODITY MARKET

Commodity markets in a crude early form are believed to have originated in Sumer where small baked clay tokens in the shape of sheep or goats were used in trade. Sealed in clay vessels with a certain number of such tokens, with that number written on the outside, they represented a promise to deliver that number.

In modern times, commodity markets represent markets where raw or primary products are exchanged. These raw commodities are traded on regulated, commodity exchanges in which they are bought and sold in standardized contracts.

Some of the advantages of commodity markets are:

- Most money managers prefer derivatives to tangible commodities;

- Less hassle (delivery, etc);
- Allows indirect investment in real assets that could provide an additional hedge against inflation risk.

15.1 INDIRECT METHODS OF INVESTMENT

- Futures contracts;
- Bonds indexed on a commodity's price;
- Stocks of companies producing a commodity;

15.2 MOTIVATIONS FOR PASSIVE INVESTMENT

- Risk-diversification benefits
- Positive correlation between commodity prices and inflation (stocks and bonds have a negative correlation to inflation)
- Option for Collateralized position in futures contracts
- Long in futures
- Same amount invested in T-bills or another similar government security

15.3 MOTIVATIONS FOR ACTIVE INVESTMENT

- Commodities are good investments during periods of economic growth
- Active investors choose various specific commodities depending on view of the economy

16. COMMODITY FUTURES

The process of economic liberalisation in India began in 1991. As part of this process, several capital market reforms were carried out by the capital market regulator Securities and Exchange Board of India. One such measure was to allow trading in equities-based derivatives on stock exchanges in 2000. This step proved to be a shot in the arm of the capital market and volumes soared within three years. The success of the capital market reforms motivated the government and the Forward Market Commission (the commodities market regulator) to kick off similar reforms in the commodities market. Thus almost all the commodities were allowed to be traded in the futures market from April 2003. To make trading in commodity futures more transparent and successful, multi-commodity exchanges at national level were also conceived and these next generation exchanges were allowed to start futures trading in commodities on-line.

Commodities exchanges have seen a surge in commodity futures volumes in the last few months. This rise in volumes has been led by bullion (gold and silver) trading. Today a whole lot of commodities are available for trading in futures.

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The process of trading commodities is also known as futures trading. Unlike other kinds of investments, such as stocks and bonds, when you trade futures, you do not actually buy anything or own anything. You are speculating on the future direction of the price in the commodity you are trading. This is like a bet on future price direction. The terms "buy" and "sell" merely indicate the direction you expect future prices will take.

If, for instance, you were speculating in corn, you would buy a futures contract if you thought the price would be going up in the future. You would sell a futures contract if you thought the price would go down. For every trade, there is always a buyer and a seller. Neither person has to own any corn to participate. He must only deposit sufficient capital with a brokerage firm to insure that he will be able to pay the losses if his trades lose money.

On one side of a transaction may be a producer like a farmer. He has a field full of corn growing on his farm. It won't be ready for harvest for another three months. If he is worried about the price going down during that time, he can sell futures contracts equivalent to the size of his crop and deliver his corn to fulfill his obligation under the contract. Regardless of how the price of corn changes in the three months until his crop will be ready for delivery, he is guaranteed to be paid the current price.

On the other side of the transaction might be a producer such as a cereal manufacturer who needs to buy lots of corn. The manufacturer, such as Kellogg, may be concerned that in the next three months the price of corn will go up, and it will have to pay more than the current price. To protect against this, Kellogg can buy futures contracts at the current price. In three months Kellogg can fulfill its obligation under the contracts by taking delivery of the corn. This guarantees that regardless of how the price moves in the next three months, Kellogg will pay no more than the current price for its commodity.

In addition to agricultural commodities, there are futures for financial instruments and intangibles such as currencies, bonds and stock market indexes. Each futures market has producers and consumers who need to hedge their risk from future price changes. The speculators, who do not actually deal in the physical commodities, are there to provide liquidity. This maintains an orderly market where price changes from one trade to the next are small.

Rather than taking delivery or making delivery, the speculator merely offsets his position at some time before the date set for future delivery. If price has moved in the right direction, he will profit. If not, he will lose.

16.1 ADVANTAGES OF COMMODITY FUTURES

Some of the advantages of commodity futures are:

- Easiest and cheapest way to invest in commodities
- 3 Major Categories:

- Agricultural products (soft commodities) –fibers, grains, food, livestock
- Energy – crude oil, heating oil, natural gas
- Metals – copper, aluminum, gold, silver, platinum

17. COMMODITY SWAPS

Producers need to manage their exposure to fluctuations in the prices for their commodities. They are primarily concerned with fixing prices on contracts to sell their produce. A gold producer wants to hedge his losses attributable to a fall in the price of gold for his current gold inventory. A cattle farmer wants to hedge his exposure to changes in the price of his livestock.

End-users need to hedge the prices at which they can purchase these commodities. A university might want to lock in the price at which it purchases electricity to supply its air conditioning units for the upcoming summer months. An airline wants to lock in the price of the jet fuel it needs to purchase in order to satisfy the peak in seasonal demand for travel.

Speculators are funds or individual investors who can either buy or sell commodities by participating in the global commodities market. While many may argue that their involvement is fundamentally destabilizing, it is the liquidity they provide in normal markets that facilitates the business of the producer and of the end-user.

Why would speculators look at the commodities markets? Traditionally, they may have wanted a hedge against inflation. If the general price level is going up, it is probably attributable to increases in input prices. Or, speculators may see tremendous opportunity in commodity markets. Some analysts argue that commodity markets are more technically-driven or more likely to show a persistent trend.

The futures markets have been the traditional vehicles for participating in the commodities markets. Indeed, derivatives markets started in the commodities field.

17.1 TYPES OF COMMODITY SWAPS

There are two types of commodity swaps: fixed-floating or commodity-for-interest.

(a) Fixed-Floating Swaps: They are just like the fixed-floating swaps in the interest rate swap market with the exception that both indices are commodity based indices.

General market indices in the international commodities market with which many people would be familiar include the Goldman Sachs Commodities Index (GSCI) and the Commodities Research Board Index (CRB). These two indices place different weights on the various commodities so they will be used according to the swap agent's requirements.

(b) Commodity-for-Interest Swaps: are similar to the equity swap in which a total return on the commodity in question is exchanged for some money market rate (plus or minus a spread).

17.2 VALUING COMMODITY SWAPS

In pricing commodity swaps, we can think of the swap as a strip of forwards, each priced at inception with zero market value (in a present value sense). Thinking of a swap as a strip of at-the-money forwards is also a useful intuitive way of interpreting interest rate swaps or equity swaps.

Commodity swaps are characterized by some idiosyncratic peculiarities, though.

These include the following factors for which we must account (at a minimum):

- (i) The cost of hedging
- (ii) The institutional structure of the particular commodity market in question
- (iii) The liquidity of the underlying commodity market
- (iv) Seasonality and its effects on the underlying commodity market
- (v) The variability of the futures bid/offer spread
- (vi) Brokerage fees
- (vii) Credit risk, capital costs and administrative costs.

Some of these factors must be extended to the pricing and hedging of interest rate swaps, currency swaps and equity swaps as well. The idiosyncratic nature of the commodity markets refers more to the often limited number of participants in these markets (naturally begging questions of liquidity and market information), the unique factors driving these markets, the inter-relations with cognate markets and the individual participants in these markets.

18. HEDGING WITH COMMODITY DERIVATIVES

Many times when using commodity derivatives to hedge an exposure to a financial price, there is not one exact contract that can be used to hedge the exposure. If you are trying to hedge the value of a particular type of a refined chemical derived from crude oil, you may not find a listed contract for that individual product. You will find an over-the-counter price if you are lucky.

18.1 HOW DO THE OTC TRADERS HEDGE THIS RISK?

They look at the correlation (or the degree to which prices in the individual chemical trade with respect to some other more liquid object, such as crude oil) for clues as to how to price the OTC product that they offer you. They make assumptions about the stability of the correlation and its volatility and they use that to "shade" the price that they show you.

Correlation is an unhedgeable risk for the OTC market maker, though. There is very little that he can do if the correlation breaks down.

For example, if all of a sudden the price for your individual chemical starts dropping faster than the correlation of the chemical's price with crude oil suggests it should, the OTC dealer has to start dumping more crude oil in order to compensate.

It is a very risky business.

The OTC market maker's best hope is to see enough "two-way" business involving end-users and producers so that his exposure is "naturally" hedged by people seeking to benefit from price movement in either direction.

Commodity swaps and commodity derivatives are a useful and important tool employed by most leading energy, chemical and agricultural corporations in today's world.

PART D

OTC DERIVATIVES

19. INTRODUCTION TO OTC DERIVATIVES

As you are aware that a derivative is a risk-shifting agreement, the value of which is derived from the value of an *underlying asset*. The underlying asset could be a physical commodity, an interest rate, a company's stock, a stock index, a currency, or virtually any other tradable instrument upon which two parties can agree. One of the categories of derivatives is known as OTC derivatives.

Derivatives are traded in two kinds of markets: exchanges and OTC markets. Here we will discuss the derivatives traded on the OTC markets.

An over the counter (OTC) derivative is a derivative contract which is privately negotiated. OTC trades have no anonymity, and they generally do not go through a clearing corporation. Every derivative product can either be traded on OTC (i.e., through private negotiation), or on an exchange. In one specific case, the jargon demarcates this clearly: OTC futures contracts are called 'forwards' (or exchange-traded forwards are called 'futures'). In other cases, there is no such distinguishing notation. There are 'exchange-traded options' as opposed to 'OTC options', but they are both called options.

20. OTC INTEREST RATE DERIVATIVES

Over-the-counter (OTC) interest rate derivatives include instruments such as forward rate agreements (FRAs), interest rate swaps, caps, floors, and collars. Broadly defined, a derivative instrument is a formal agreement between two parties specifying the exchange of cash payments based on changes in the price of a specified underlying item or differences in the returns to different securities. Like exchange-traded interest rate derivatives such as interest rate futures and futures options, OTC interest rate derivatives set terms for the exchange of cash payments based on changes in market interest rates. An FRA is a forward contract that sets terms for the exchange of cash payments based on changes in the London Interbank Offered Rate (LIBOR); interest rate swaps provide for the exchange of payments based on differences between two different interest rates; and interest rate caps, floors, and collars are option-like agreements that require one party to make payments to the other when a stipulated interest rate, most often a specified maturity of LIBOR, moves outside of some predetermined range.

The over-the-counter market differs from futures markets in a number of important respects. Whereas futures and futures options are standardized agreements that trade on organized exchanges, the over-the-counter market is an informal market consisting of dealers, or market makers, who trade price information and negotiate transactions over

electronic communications networks. Although a great deal of contract standardization exists in the over-the-counter market, dealers active in this market custom-tailor agreements to meet the specific needs of their customers. And unlike futures markets, where futures exchange clearinghouses guarantee contract performance through a system of margin requirements combined with the daily settlement of gains or losses, counterparties to OTC derivative agreements must bear some default or credit risk.

The rapid growth and energized pace of innovation in the market for interest rate derivatives since 1981, the date of the first widely publicized swap agreement, has proven truly phenomenal. The advent of trading in interest rate swaps was soon followed by FRAs, caps, floors, collars, as well as other hybrid instruments such as forward swaps, options on swaps (swaptions), and even options on options (captions).

Illustration 13: (Application of Black Scholes model for valuation of option)

- (i) The shares of TIC Ltd. are currently priced at Rs. 415 and call option exercisable in three months' time has an exercise rate of Rs. 400. Risk free interest rate is 5% p.a. and standard deviation (volatility) of share price is 22%. Based on the assumption that TIC Ltd. is not going to declare any dividend over the next three months, is the option worth buying for Rs. 25?
- (ii) Calculate value of aforesaid call option based on Black Scholes valuation model if the current price is considered as Rs. 380.
- (iii) What would be the worth of put option if current price is considered Rs. 380.
- (iv) If TIC Ltd. share price at present is taken as Rs. 408 and a dividend of Rs.10 is expected to be paid in the two months time, then, calculate value of the call option.

Solution

- (i) Given: TIC Ltd. Current Price = Rs. 415

Exercise rate = 400

Risk free interest rate is = 5% p.a.

SD (Volatility) = 22%

Based on the above bit is calculated value of an option based on Black Scholes Model:

$$\begin{aligned}
 d_1 &= \frac{I_n \left(\frac{415}{400} \right) + \left[.05 + \frac{1}{2} (.22)^2 \right] .25}{.22 \sqrt{.25}} \\
 &= \frac{.03681 + .01855}{.11} \\
 &= .5032727
 \end{aligned}$$

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$$d_2 = \frac{I_n \left(\frac{415}{400} \right) + \left[.05 - \frac{1}{2} (.22)^2 \right] .25}{.22 \sqrt{.25}}$$

$$= \frac{.03681 + .00645}{.11}$$

$$= .3932727$$

$$N(d_1) = N(.50327) = 1 - .3072 = .6928$$

$$N(d_2) = N(.39327) = 1 - .3471 = .6529$$

$$\text{Value of Option} = 415 (.6928) - \frac{400}{e^{(.05)(.25)}} (.6529)$$

$$= 287.512 - \frac{400}{1.012578} (.6529)$$

$$= 287.512 - 259.916$$

$$= \text{Rs. } 27.60$$

NB : $N(0.39327)$ can also be find as under :

Step 1 : From table of area under normal curve find the area of variable 0.39 i.e. 0.6517.

Step 2 : From table of area under normal curve find the area of variable 0.40.

Step 3 : Find out the difference between above two variables and areas under normal curve.

Step 4 : Using interpolation method find out the value of 0.00327. Which is as follows:

$$\frac{0.0037}{0.01} \times 0.00327 = 0.0012$$

Step 5 : Add this value, computed above to the $N(0.39)$. Thus $N(0.39327) = 0.6517 + 0.0012 = 0.6529$

Since market price of Rs. 25 is less than Rs. 27.60 (Block Scholes Valuation model) indicate that option is underpriced, hence worth buying.

(ii) If the current price is taken as Rs. 380 the computations are as follows:

$$d_1 = \frac{I_n \left(\frac{380}{400} \right) + \left[.05 + \frac{1}{2} (.22)^2 \right] .25}{.22 \sqrt{.25}}$$

$$\begin{aligned}
 &= \frac{-0.05129 + .01855}{.11} \\
 &= -0.297636 \\
 d_2 &= \frac{I_n \left(\frac{380}{400} \right) + \left[.05 - \frac{1}{2} (.22)^2 \right] .25}{.22 \sqrt{.25}} \\
 &= \frac{-0.05129 + .00645}{.11} \\
 &= -0.407666
 \end{aligned}$$

$$V_o = V_s N(d_1) - \frac{E}{e^{rt}} N(d_2)$$

$$N(d_1) = N(-0.297636) = .3830$$

$$N(d_2) = N(-0.407666) = .3418$$

$$380 (.3830) - \frac{400}{e^{(.05)(.25)}} \times (.3418)$$

$$145.54 - \frac{400}{1.012578} (.3418)$$

$$= 145.54 - 138.4397$$

$$= \text{Rs. } 7.10$$

(iii) Value of call option = Rs. 7.10

Current Market Value = Rs. 415

$$\text{Present Value of Exercise Price} = \frac{400}{1.0125} = 395.06$$

$$V_p = -V_s + V_s + \text{PV}(E)$$

$$V_p = -380 + 7.10 + 395.06$$

$$= 22.16$$

$$= \text{Rs. } 22.16 \text{ Ans}$$

(iv) Since dividend is expected to be paid in two months time we have to adjust the share price and then use Block Scholes model to value the option:

Present Value of Dividend (using continuous discounting) = Dividend $\times e^{-rt}$

$$= \text{Rs. } 10 \times e^{-.05 \times .1666}$$

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$$= \text{Rs. } 10 \times e^{-.008333}$$

$$= \text{Rs. } 9.917 \text{ (Please refer Exponential Table)}$$

Adjusted price of shares is Rs. $408 - 9.917 = \text{Rs. } 398.083$

This can be used in Block Scholes model

$$d_1 = \frac{\ln\left(\frac{398.083}{400}\right) + \left[.05 + \frac{1}{2}(.22)^2\right].25}{.22\sqrt{.25}}$$

$$= \frac{-.00480 + .01855}{.11}$$

$$= .125$$

$$d_2 = \frac{\ln\left(\frac{398.083}{400}\right) + \left[.05 - \frac{1}{2}(.22)^2\right].25}{.22\sqrt{.25}}$$

$$= \frac{-.00480 + .00645}{.11}$$

$$= .015$$

$$N(d_1) = N(.125) = .5498$$

$$N(d_2) = N(.015) = .5060$$

$$\text{Value of Option} = 398.083 (.5498) - \frac{400}{e^{(.05)(.25)}} (.5060)$$

$$218.866 - \frac{400}{e^{.0125}} (.5060)$$

$$218.866 - \frac{400}{1.012578} (.5060)$$

$$= 218.866 - 199.8858$$

$$= \text{Rs. } 18.98$$

Illustration 14: (Application of Black Scholes model for valuation of option)

We have been given the following information about XYZ company's shares and call options:

$$\text{Current share price} = \text{Rs. } 165$$

$$\text{Option exercise price} = \text{Rs. } 150$$

Risk free interest rate	= 6%
Time to option expiry	= 2 years
Volatility of share price (Standard deviation)	= 15%
Calculate value of the option.	

Solution

Applying Black Scholes Model

$$d_1 = \frac{\ln\left(\frac{165}{150}\right) + \left[.06 + \frac{1}{2}(.15)^2\right] 2}{.15 \sqrt{2}}$$

$$= \frac{.095310 + .1425}{.212132}$$

$$= 1.12104$$

$$d_2 = \frac{\ln\left(\frac{165}{150}\right) + \left[.06 - \frac{1}{2}(.15)^2\right] 2}{.15 \sqrt{2}}$$

$$= \frac{.095310 + .0975}{.212132}$$

$$= .9089$$

$$N(d_1) = N(1.12104) = .8688$$

$$N(d_2) = N(.9089) = .8161$$

$$\begin{aligned} \text{Value of Option} &= V_s N(d_1) - \frac{E}{e^{rt}} N(d_2) \\ &= 165 \times (.8688) - \frac{150}{e^{(.06)(2)}} (.8161) \end{aligned}$$

$$143.352 - \frac{150}{e^{.12}} (.8161)$$

$$143.352 - \frac{150}{1.127497} (.8161)$$

$$= 143.352 - 108.5723$$

$$= \text{Rs. } 34.779$$

$$= \text{Rs. } 34.78$$

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Self-examination Questions

1. What is a Capital Market? What are the various functions, advantages and disadvantages of capital market?
2. How many stock exchanges are there in India? Which one is the oldest stock exchange of the country?
3. What is a stock exchange index? How it is constituted? What is the main objective of constructing an Index?
4. What is a settlement cycle? Write briefly about the settlement cycle of NSE?
5. What is the difference between the settlement cycle of BSE and NSE?
6. Outline the concept of rolling settlement cycles. Who had introduced the concept of rolling settlement cycle in India? What are its advantages and disadvantages?
7. What is a Clearing House? Outline its role, contribution, advantages and disadvantages in the settlement process.
8. What is known as 'Margin'? How it is calculated? Who deposit the margin? What are the various instruments which can be used as collaterals to the margin?
9. Write a detailed note on Arbitration and its process followed in Indian Stock Exchanges.
10. Explain the concept of differential pricing of shares/securities permissible under SEBI regulations.
11. What is promoter's contribution? Outline slab wise the promoter's need to contribute in case of public right issues as prescribed by SEBI guidelines.
12. What are the securities excluded for the purpose of Computing Promoter's Contribution?
13. For how many years the promoter's contribution is locked? From which date the locked in period would be counted and how?
14. What are the different guidelines as framed by SEBI in respect of advertisement for a public issue?
15. What is Book Building? What are the different guidelines as prescribed by SEBI in respect of Book Building process?
16. Comment on Green-shoe option?
17. What is red herring prospectus? Write in detail?
18. What is e-IPO?

19. Discuss the term 'underwriting'. What are the guidelines of SEBI relating to underwriting?
20. Write a note on 'stock invest'.
21. What is abridged prospectus?
22. Write a note on 'Warrant'?
23. What is Clearing Corporation of India (CCIL). What is the role to be played?
24. What is a stock future contract? Outline some of the standardized specifications as prevalent in International markets like USA?
25. What do you understand by the term 'volatility'?
26. Define the concept 'Call' and 'Put'. What are the different strategies which can be followed in options?
27. What is beta? How it is measured. For what purpose it is used?
28. What is small cap company? How it is defined?
29. Write about the differences between Binomial valuation model and Black-schole valuation model of an option?
30. What are Delta, Theta, Gamma, Vega and Rho? Comment upon them.
31. Do we need commodity derivatives in India? If so, outline various features of commodity derivatives.
32. A 5 years bond with 8% coupon rate and maturity value of Rs. 1,000 is currently selling at Rs. 925 what is its yield to maturity.
33. A bond pays Rs. 90 interest annually into perpetuity. (i) What is its value if the current yield is 10 per cent? (ii) If the current yield changes to 8% and 12%, then what is its value.
34. A had purchased a bond at a price of Rs. 800 with a coupon payment of Rs. 150 and sold at for Rs. 1,000. (i) What is his holding period return (ii) If the bond is sold for Rs. 750 after receiving Rs. 150 as coupon payment, then what is his holding period return?
35. A is willing to purchase a five years Rs. 1,000 par value bond having a coupon rate of 9%. A's required rate of return is 10%. How much A should pay to purchase the bond if it matures at par?
36. A PSU is proposing to sell a 8 years bond of Rs. 1,000 at 10% coupon rate per annum. The bond amount will be amortised equally over its life. If an investor has a minimum required rate of return of 8%, what is the bond's present value?

1. INTRODUCTION

Investment decision depends on securities to be bought, held or sold. Buying security is based on highest return per unit of risk or lowest risk per unit of return. Selling security does not depend on any such requirement. A security considered for buying today may not be attractive tomorrow due to management policy changes in the company or economic policy changes adopted by the government. The reverse is also true. Therefore, analysis of the security on a continuous basis is a must.

Security Analysis stands for the proposition that a well-disciplined investor can determine a rough value for a company from all of its financial statements, make purchases when the market inevitably under-prices some of them, earn a satisfactory return, and never be in real danger of permanent loss.

Two approaches viz. fundamental analysis and technical analysis are in vogue while making investment decisions. In fundamental analysis, factors affecting risk-return characteristic of the security is looked into while in technical analysis, demand/ supply position of the securities along with prevalent share price trends measured by market indices are noted.

2. FUNDAMENTAL ANALYSIS

Fundamental analysis is based on the assumption that the share prices depend upon the future dividends expected by the shareholders. The present value of the future dividends can be calculated by discounting the cash flows at an appropriate discount rate and is known as the '*intrinsic value of the share*'. The intrinsic value of a share, according to a fundamental analyst, depicts the true value of a share. A share that is priced below the intrinsic value must be bought, while a share quoted above the intrinsic value must be sold.

Thus, it can be said that the price the shareholders are prepared to pay for a share is nothing but the present value of the dividends they expect to receive on the share and the price at which they expect to sell it in the future.

As a first step, to arrive at a compact expression, let us make a simple assumption, that the company is expected to pay a uniform dividend of Rs. D per share every year, i.e.,

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$$D(1) = D(2) = D(3) = \dots = D, \quad (1)$$

The Eq., would then become:

$$P(0) = \frac{D}{(1+k)} + \frac{D}{(1+k)^2} + \frac{D}{(1+k)^3} + \dots + \dots \quad (2)$$

But it is unrealistic to assume that dividends remain constant over time. In case of most shares, the dividends per share (DPS) grow because of the growth in the earnings of the firm. Most companies, as they identify new investment opportunities for growth, tend to increase their DPS over a period of time.

Let us assume that on an average the DPS of the company grows at the compounded rate of g per annum, so that dividend $D(1)$ at the end of the first period grows to $D(1)(1+g)$, $D(1)(1+g)^2$, etc, at the end of second period, third period, etc. respectively. So we must have:

$$P(0) = \frac{D(1)}{(1+k)} + \frac{D(1)(1+g)}{(1+k)^2} + \frac{D(1)(1+g)^2}{(1+k)^3} + \dots + \dots \quad (3)$$

which is a perpetual geometric series.

If growth rate in dividends, g , is less than the desired rate of return on share, k , we must have:

$$P(0) = \frac{D(1)}{(k-g)} \quad (4)$$

or

$$P(0) = \frac{D(0)(1+g)}{(k-g)} \quad (5)$$

Since $D(1)$ may be approximated as $D(0)(1+g)$, $D(0)$ being the DPS in the current period (0).

When growth rate in dividends, g , is equal to or greater than the desired rate of return on share, k , the above model is not valid, since the geometric series leads to an infinite price. The condition that g be less than k is not very restrictive, since the long-term growth in dividends is unlikely to exceed the rate of return expected by the market on the share.

The above result [Eq.(4)] is also known as Gordon's dividend growth model for stock valuation, named after the model's originator, Myron J. Gordon. This is one of the most well known models in the genre of fundamental analysis.

2.1 DIVIDEND GROWTH MODEL AND THE PE MULTIPLE

Financial analysts tend to relate price to earnings via the P/E multiples (the ratio between the market price and earnings per share).

If a company is assumed to pay out a fraction b of its earnings as dividends on an average, $D(1)$ may be expressed as $b E(1)$, where $E(1)$ is the earning per share (EPS) of the company at the end of the first period. Equation (4) then becomes:

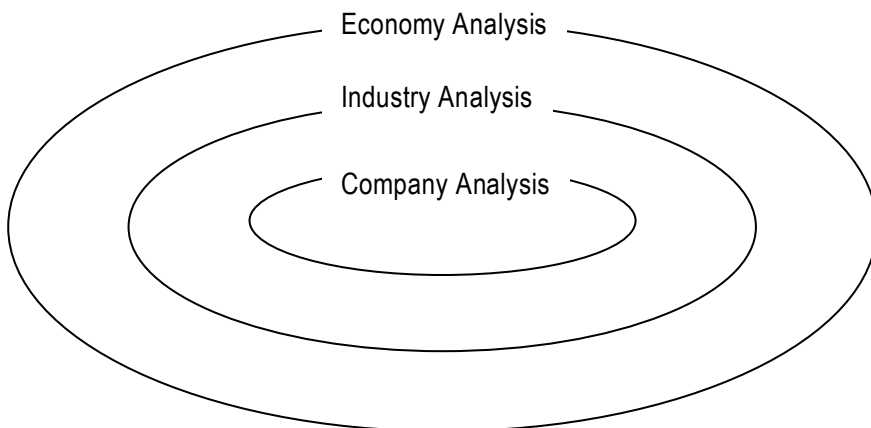
$$P(0) = \frac{bE(1)}{(k-g)} \quad (6)$$

or

$$P(0) = \frac{bE(0)(1+g)}{(k-g)} \quad (7)$$

The fundamental analysts use the above models or some of their variations, for estimating the fundamental or intrinsic price or the fundamental price-earnings multiple of a security. Towards this end, they devote considerable effort in assessing the impact of various kinds of information on a company's future profitability and the expected return of the shareholders. If the prevailing price or the P/E multiple of a security is higher than the estimated fundamental value (i.e. if the security appears to be overpriced), they recommend a selling stance with respect to that security, since once the information becomes common knowledge, the price of the security may be expected to fall. On the other hand, if the security is under-priced in the market, the prevailing price (or the P/E multiple) of the security being lower than the estimated fundamental value, they recommend buying the security, counting upon a price rise.

Because of these inherent complex interrelationships in the production processes, the fortunes of each industry are closely tied to those of other industries and to the performance of the economy as a whole. Within an industry, the prospects of a specific company depend not only on the prospects of the industry to which it belongs, but also on its operating and competitive position within that industry. The key variables that an investor must monitor in order to carry out his fundamental analysis are economy wide factors, industry wide factors and company specific factors. In other words, fundamental analysis encompasses economic, industrial and company analyses. They are depicted by three concentric circles and constitute the different stages in an investment decision making process.



2.2 ECONOMIC ANALYSIS

Macro- economic factors e. g. historical performance of the economy in the past/ present and expectations in future, growth of different sectors of the economy in future with signs of stagnation/degradation at present to be assessed while analyzing the overall economy. Trends in peoples' income and expenditure reflect the growth of a particular industry/company in future. Consumption affects corporate profits, dividends and share prices in the market.

2.2.1 Factors Affecting Economic Analysis: Some of the economy wide factors are discussed as under:

(a) Growth Rates of National Income and Related Measures: For most purposes, what is important is the difference between the nominal growth rate quoted by GDP and the 'real' growth after taking inflation into account. The estimated growth rate of the economy would be a pointer to the prospects for the industrial sector, and therefore to the returns investors can expect from investment in shares.

(b) Growth Rates of Industrial Sector: This can be further broken down into growth rates of various industries or groups of industries if required. The growth rates in various industries are estimated based on the estimated demand for its products.

(c) Inflation: Inflation is measured in terms of either wholesale prices (the Wholesale Price Index or WPI) or retail prices (Consumer Price Index or CPI). The demand in some industries, particularly the consumer products industries, is significantly influenced by the inflation rate. Therefore, firms in these industries make continuous assessment about inflation rates likely to prevail in the near future so as to fine-tune their pricing, distribution and promotion policies to the anticipated impact of inflation on demand for their products.

(d) Monsoon: Because of the strong forward and backward linkages, monsoon is of great concern to investors in the stock market too.

2.2.2 Techniques Used in Economic Analysis: Economic analysis is used to forecast national income with its various components that have a bearing on the concerned industry and the company in particular. Gross national product (GNP) is used to measure national income as it reflects the growth rate in economic activities and has been regarded as a forecasting tool for analyzing the overall economy along with its various components during a particular period.

Some of the techniques used for economic analysis are:

(a) Anticipatory Surveys: They help investors to form an opinion about the future state of the economy. It incorporates expert opinion on construction activities, expenditure on plant and machinery, levels of inventory – all having a definite bearing on economic activities. Also future spending habits of consumers are taken into account.

In spite of valuable inputs available through this method, it has certain drawbacks:

- (i) Survey results do not guarantee that intentions surveyed would materialize.
- (ii) They are not regarded as forecasts per se, as there can be a consensus approach by the investor for exercising his opinion.

Continuous monitoring of this practice is called for to make this technique popular.

(b) *Barometer/Indicator Approach:* Various indicators are used to find out how the economy shall perform in the future. The indicators have been classified as under:

- (i) *Leading Indicators:* They lead the economic activity in terms of their outcome. They relate to the time series data of the variables that reach high/low points in advance of economic activity.
- (ii) *Roughly Coincidental Indicators:* They reach their peaks and troughs at approximately the same in the economy.
- (iii) *Lagging Indicators:* They are time series data of variables that lag behind in their consequences vis-a-vis the economy. They reach their turning points after the economy has reached its own already.

All these approaches suggest direction of change in the aggregate economic activity but nothing about its magnitude. The various measures obtained from such indicators may give conflicting signals about the future direction of the economy. To avoid this limitation, use of diffusion/composite index is suggested whereby combining several indicators into one index to measure the strength/weaknesses in the movement of a particular set of indicators. Computation of diffusion indices is no doubt difficult notwithstanding the fact it does not eliminate irregular movements.

Money supply in the economy also affects investment decisions. Rate of change in money supply in the economy affects GNP, corporate profits, interest rates and stock prices. Increase in money supply fuels inflation. As investment in stocks is considered as a hedge against inflation, stock prices go up during inflationary period.

(c) *Economic Model Building Approach:* In this approach, a precise and clear relationship between dependent and independent variables is determined. GNP model building or sectoral analysis is used in practice through the use of national accounting framework. The steps used are as follows:

- (i) Hypothesize total economic demand by measuring total income (GNP) based on political stability, rate of inflation, changes in economic levels.
- (ii) Forecasting the GNP by estimating levels of various components viz. consumption expenditure, gross private domestic investment, government purchases of goods/services, net exports.
- (iii) After forecasting individual components of GNP, add them up to obtain the forecasted GNP.

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- (iv) Comparison is made of total GNP thus arrived at with that from an independent agency for the forecast of GNP and then the overall forecast is tested for consistency. This is carried out for ensuring that both the total forecast and the component wise forecast fit together in a reasonable manner.

2.3 INDUSTRY ANALYSIS

When an economy grows, it is very unlikely that all industries in the economy would grow at the same rate. So it is necessary to examine industry specific factors, in addition to economy-wide factors.

First of all, an assessment has to be made regarding all the conditions and factors relating to demand of the particular product, cost structure of the industry and other economic and Government constraints on the same. Since the basic profitability of any company depends upon the economic prospects of the industry to which it belongs, an appraisal of the particular industry's prospects is essential.

2.3.1 Factors Affecting Industry Analysis: The following factors may particularly be kept in mind while assessing the factors relating to an industry.

(a) Product Life-Cycle: An industry usually exhibits high profitability in the initial and growth stages, medium but steady profitability in the maturity stage and a sharp decline in profitability in the last stage of growth.

(b) Demand Supply Gap: Excess supply reduces the profitability of the industry because of the decline in the unit price realization, while insufficient supply tends to improve the profitability because of higher unit price realization.

(c) Barriers to Entry: Any industry with high profitability would attract fresh investments. The potential entrants to the industry, however, face different types of barriers to entry. Some of these barriers are innate to the product and the technology of production, while other barriers are created by existing firms in the industry.

(d) Government Attitude: The attitude of the government towards an industry is a crucial determinant of its prospects.

(e) State of Competition in the Industry: Factors to be noted are- firms with leadership capability and the nature of competition amongst them in foreign and domestic market, type of products manufactured viz. homogeneous or highly differentiated, demand prospects through classification viz customer-wise/area-wise, changes in demand patterns in the long/immediate/short run, type of industry the firm is placed viz. growth, cyclical, defensive or decline.

(f) Cost Conditions and Profitability: The price of a share depends on its return, which in turn depends on profitability of the firm. Profitability depends on the state of competition in the industry, cost control measures adopted by its units and growth in demand for its products.

Factors to be considered are:

- (i) Cost allocation among various heads e.g. raw material, labors and overheads and their controllability. Overhead cost for some may be higher while for others labour may be so. Labour cost which depends on wage level and productivity needs close scrutiny.
- (ii) Product price.
- (iii) Production capacity in terms of installation, idle and operating.
- (iv) Level of capital expenditure required for maintenance / increase in productive efficiency.

Investors are required to make a through analysis of profitability. This is carried out by the study of certain ratios such as G.P. Ratio, Operating Profit Margin Ratio, R.O.E., Return on Total Capital etc.

(g) Technology and Research: They play a vital role in the growth and survival of a particular industry. Technology is subject to change very fast leading to obsolescence. Industries which update themselves have a competitive advantage over others in terms of quality, price etc.

Things to be probed in this regard are:

- (i) Nature and type of technology used.
- (ii) Expected changes in technology for new products leading to increase in sales.
- (iii) Relationship of capital expenditure and sales over time. More capital expenditure means increase in sales.
- (iv) Money spent in research and development. Whether this amount relates to redundancy or not?
- (v) Assessment of industry in terms of sales and profitability in short, immediate and long run.

2.3.2 Techniques Used in Industry Analysis: The techniques used for analyzing the industry wide factors are:

(a) Regression Analysis: Investor diagnoses the factors determining the demand for output of the industry through product demand analysis. Factors to be considered are GNP, disposable income, per capita consumption / income, price elasticity of demand. For identifying factors affecting demand, statistical techniques like regression analysis and correlation are used.

(b) Input – Output Analysis: It reflects the flow of goods and services through the economy, intermediate steps in production process as goods proceed from raw material stage through final consumption. This is carried out to detect changing patterns/trends indicating growth/decline of industries.

2.4 COMPANY ANALYSIS

Economic and industry framework provides the investor with proper background against which shares of a particular company are purchased. This requires careful examination of the company's quantitative and qualitative fundamentals.

(a) Net Worth and Book Value : Net Worth is sum of equity share capital, preference share capital and free reserves less intangible assets and any carry forward of losses. The total net worth divided by the number of shares is the much talked about book value of a share. Though the book value is often seen as an indication of the intrinsic worth of the share, this may not be so for two major reasons. First, the market price of the share reflects the future earnings potential of the firm which may have no relationship with the value of its assets. Second, the book value is based upon the historical costs of the assets of the firm and these may be gross underestimates of the cost of the replacement or resale values of these assets.

(b) Sources and Uses of Funds: The identification of sources and uses of funds is known as Funds Flow Analysis.

One of the major uses of funds flow analysis is to find out whether the firm has used short-term sources of funds to finance long-term investments. Such methods of financing increases the risk of liquidity crunch for the firm, as long-term investments, because of the gestation period involved may not generate enough surplus in time to meet the short-term liabilities incurred by the firm. Many a firm has come to grief because of this mismatch between the maturity periods of sources and uses of funds.

(c) Cross-Sectional and Time Series Analysis: One of the main purposes of examining financial statements is to compare two firms, compare a firm against some benchmark figures for its industry and to analyse the performance of a firm over time. The techniques that are used to do such proper comparative analysis are: common-sized statement, and financial ratio analysis.

(d) Size and Ranking: A rough idea regarding the size and ranking of the company within the economy, in general, and the industry, in particular, would help the investment manager in assessing the risk associated with the company. In this regard the net capital employed, the net profits, the return on investment and the sales figures of the company under consideration may be compared with similar data of other companies in the same industry group. It may also be useful to assess the position of the company in terms of technical know-how, research and development activity and price leadership.

(e) Growth Record: The growth in sales, net income, net capital employed and earnings per share of the company in the past few years should be examined. The following three growth indicators may be particularly looked into: (a) Price earnings ratio, (b) Percentage growth rate of earnings per annum, and (c) Percentage growth rate of net block.

The price earnings ratio is an important indicator for the investment manager since it shows the number of times the earnings per share are covered by the market price of a share. Theoretically, this ratio should be the same for two companies with similar features. However, this is not so in practice due to many factors. Hence, by a comparison of this ratio pertaining to different companies the investment manager can have an idea about the image of the company and can determine whether the share is under-priced or over-priced.

Consider the following example:

		<i>Company A</i>	<i>Company B</i>
(a)	Market price of share of Rs. 100	150	250
(b)	Earnings per share	25	25
(c)	Price earnings ratio [(a) ÷ (b)]	6	10

It is obvious that the purchaser of company A's shares pays 6 times its annual earnings while the purchaser of company B's shares pays 10 times. If other factors (intrinsic value of share, growth potential, etc.) are quite similar, it is obvious that the shares of company A are preferable. In practice, however, the other factors are never similar in the case of two companies. The investment manager must try to ascertain why the EPS in company B is comparatively low – may be some factors are not apparent. EPS calculation cannot be the sole basis of deciding about an investment. Yet it is one of the most important factors on the basis of which the investment manager takes a decision to purchase the shares. This is because it relates the market price of the shares and the earnings per share.

The percentage growth rate of net blocks shows how the company has been developing its capacity levels. Obviously, a dynamic company will keep on expanding its capacities and diversify its business. This will enable it to enter new and profitable lines and avoid stagnation in its growth.

In this context, an evaluation of future growth prospects of the company should be carefully made. This requires an analysis of existing capacities and their utilisation, proposed expansion and diversification plans and the nature of the company's technology. The existing capacity utilisation levels can be known from the quantitative information given in the published profit and loss accounts of the company. The plans of the company, in terms of expansion or diversification, can be known from the Directors' Reports, the Chairman's statements and from the future capital commitments as shown by way of notes in the balance sheets. The nature of technology of a company should be seen with reference to technological developments in the concerned fields, the possibility of its product being superseded or the possibility of emergence of a more effective method of manufacturing.

Growth is the single most important factor in company analysis for the purpose of investment management. A company may have a good record of profits and performance in the past; but

6.10 Strategic Financial Management

if it does not have growth potential, its shares cannot be rated high from the investment point of view.

(f) *Financial Analysis:* An analysis of its financial statements for the past few years would help the investment manager in understanding the financial solvency and liquidity, the efficiency with which the funds are used, the profitability, the operating efficiency and the financial and operating leverages of the company. For this purpose, certain fundamental ratios have to be calculated.

From the investment point of view, the most important figures are earnings per share, price earning ratios, yield, book value and the intrinsic value of the share. These five elements may be calculated for the past 10 years or so and compared with similar ratios computed from the financial accounts of other companies in the industry and with the average ratios for the industry as a whole. The yield and the asset backing of a share are important considerations in a decision regarding whether the particular market price of the share is proper or not.

Various other ratios to measure profitability, operating efficiency and turnover efficiency of the company may also be calculated. The return on owners' investment, capital turnover ratio and the cost structure ratios may also be worked out.

To examine the financial solvency or liquidity of the company, the investment manager may work out current ratio, liquidity ratio, debt-equity ratio, etc. These ratios will provide an overall view of the company to the investment analyst. He can analyse its strengths and weaknesses and see whether it is worth the risk or not.

(g) *Quality of Management:* This is an intangible factor. Yet it has a very important bearing on the value of the shares. Every investment manager knows that the shares of certain business houses command a higher premium than those of similar companies managed by other business houses. This is because of the quality of management, the confidence that investors have in a particular business house, its policy vis-a-vis its relationship with the investors, dividend and financial performance record of other companies in the same group, etc. This is perhaps the reason that an investment manager always gives a close look to the management of a company in whose shares he is to invest. Quality of management has to be seen with reference to the experience, skills and integrity of the persons at the helm of affairs of the company. The policy of the management regarding relationship with the shareholders is an important factor since certain business houses believe in very generous dividend and bonus distributions while others are rather conservative.

(h) *Location and Labour-Management Relations:* The locations of the company's manufacturing facilities determines its economic viability which depends on the availability of crucial inputs like power, skilled labour and raw-materials, etc. Nearness to markets is also a factor to be considered.

In the past few years, the investment manager has begun looking into the state of labour-management relations in the company under consideration and the area where it is located.

(i) *Pattern of Existing Stock Holding:* An analysis of the pattern of existing stock holdings of the company would also be relevant. This would show the stake of various parties in the company. An interesting case in this regard is that of the Punjab National Bank in which the Life Insurance Corporation and other financial institutions had substantial holdings. When the bank was nationalised, the residual company proposed a scheme whereby those shareholders, who wish to opt out, could receive a certain amount as compensation in cash. It was only at the instance and the bargaining strength, of institutional investors that the compensation offered to the shareholders, who wished to opt out of the company, was raised considerably.

(j) *Marketability of the Shares:* Another important consideration for an investment manager is the marketability of the shares of the company. Mere listing of a share on the stock exchange does not automatically mean that the share can be sold or purchased at will. There are many shares which remain inactive for long periods with no transactions being effected. To purchase or sell such scrips is a difficult task. In this regard, dispersal of shareholding with special reference to the extent of public holding should be seen. The other relevant factors are the speculative interest in the particular scrip, the particular stock exchange where it is traded and the volume of trading.

2.3.2 Techniques Used in Company Analysis: Through the use of statistical techniques the company wide factors can be analysed. Some of the techniques are discussed as under:

(a) *Correlation & Regression Analysis:* Simple regression is used when inter relationship covers two variables. For more than two variables, multiple regression analysis is followed. Here the inter relationship between variables belonging to economy, industry and company are found out. The main advantage in such analysis is the determination of the forecasted values along with testing the reliability of the estimates.

(b) *Trend Analysis:* The relationship of one variable is tested over time using regression analysis. It gives an insight to the historical behavior of the variable.

(c) *Decision Tree Analysis:* Information relating to the probability of occurrence of the forecasted value is considered useful. A range of values of the variable with probabilities of occurrence of each value is taken up. The limitations are reduced through decision tree analysis and use of simulation techniques.

In decision tree analysis, the decision is taken sequentially with probabilities attached to each sequence. To obtain the probability of final out come, various sequential decisions given along with probabilities, them probabilities of each sequence is to be multiplied and then summed up.

Thus, fundamental analysis is basically an examination of the economic and financial aspects of a company with the aim of estimating future earnings and dividend prospects. It includes an

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analysis of the macro-economic and political factors which will have an impact on the performance of the company. After having analysed all the relevant information about the company and its relative strength vis-a-vis other companies in the industry, the investor is expected to decide whether he should buy or sell the securities.

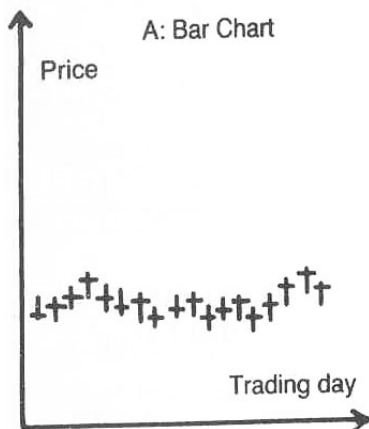
3. TECHNICAL ANALYSIS

Technical Analysis is a method of share price movements based on a study of price graphs or charts on the assumption that share price trends are repetitive, that since investor psychology follows a certain pattern, what is seen to have happened before is likely to be repeated. The technical analyst is concerned with the fundamental strength or weakness of a company or an industry; he studies investor and price behaviour.

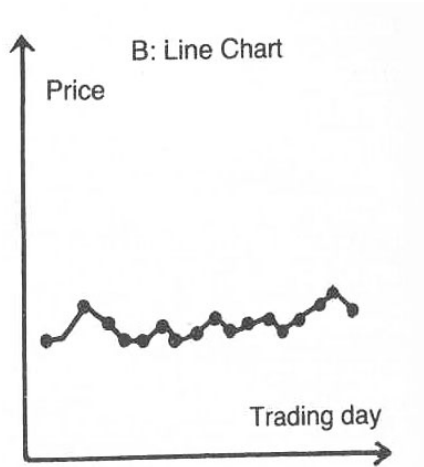
A technical analyst attempts precisely that. The two basic questions that he seeks to answer are: (i) Is there a discernible trend in the prices? (ii) If there is, then are there indications that the trend would reverse? The methods used to answer these questions are visual and statistical. The visual methods are based on examination of a variety of charts to make out patterns, while the statistical procedures analyse price and return data to make trading decisions.

Technical analysts use three types of charts for analyzing data. They are:

(i) Bar Chart : In a bar chart, a vertical line (bar) represents the lowest to the highest price, with a short horizontal line protruding from the bar representing the closing price for the period. Since volume and price data are often interpreted together, it is a common practice to plot the volume traded, immediately below the line and the bar charts.



(ii) Line Chart: In a line chart, lines are used to connect successive day's prices. The closing price for each period is plotted as a point. These points are joined by a line to form the chart. The period may be a day, a week or a month.



(iii) **Point and Figure Chart:** Point and Figure charts are more complex than line or bar charts. They are used to detect reversals in a trend. For plotting a point and figure chart, we have to first decide the box size and the reversal criterion. The box size is the value of each box on the chart, for example each box could be Re.1, Rs.2 or Rs.0.50. The smaller the box size, the more sensitive would the chart be to price change. The reversal criterion is the number of boxes required to be retraced to record prices in the next column in the opposite direction.

Period	Price
1	24
2	26
3	27
4	26
5	28
6	27
7	26
8	25
9	26
10	23

30							
29							
28	X						
27	X						
26	X						
25	X	O					
24	X	O					
23		O					
22							

3.1 GENERAL PRINCIPLES AND METHODS OF TECHNICAL ANALYSIS

3.1.1 The Dow Theory: The Dow Theory is one of the oldest and most famous technical theories. It was originated by Charles Dow, the founder of Dow Jones Company in late nineteenth century. It is a helpful tool for determining the relative strength of the stock market. It can also be used as a barometer of business.

The Dow Theory is based upon the movements of two indices, constructed by Charles Dow, Dow Jones Industrial Average (DJIA) and Dow Jones Transportation Average (DJTA). These averages reflect the aggregate impact of all kinds of information on the market. The movements of the market are divided into three classifications, all going at the same time; the primary movement, the secondary movement, and the daily fluctuations. The primary movement is the main trend of the market, which lasts from one year to 36 months or longer. This trend is commonly called bear or bull market. The secondary movement of the market is shorter in duration than the primary movement, and is opposite in direction. It lasts from two weeks to a month or more. The daily fluctuations are the narrow movements from day-to-day. These fluctuations are not part of the Dow Theory interpretation of the stock market. However, daily movements must be carefully studied, along with primary and secondary movements, as they go to make up the longer movement in the market.

Thus, the Dow Theory's purpose is to determine where the market is and where it is going, although not how far or high. The theory, in practice, states that if the cyclical swings of the stock market averages are successively higher and the successive lows are higher, then the market trend is up and a bullish market exists. Contrarily, if the successive highs and successive lows are lower, then the direction of the market is down and a bearish market exists.

Charles Dow proposed that the primary uptrend would have three moves up, the first one being caused by accumulation of shares by the far-sighted, knowledgeable investors, the second move would be caused by the arrival of the first reports of good earnings by corporations, and the last move up would be caused by widespread report of financial well-being of corporations. The third stage would also see rampant speculation in the market. Towards the end of the third stage, the far-sighted investors, realizing that the high earnings levels may not be sustained, would start selling, starting the first move down of a downtrend, and as the non-sustainability of high earnings is confirmed, the second move down would be initiated and then the third move down would result from distress selling in the market.

3.1.2 Market Indicators

(i) **Breadth Index:** It is an index that covers all securities traded. It is computed by dividing the net advances or declines in the market by the number of issues traded. The breadth index either supports or contradicts the movement of the Dow Jones Averages. If it supports the movement of the Dow Jones Averages, this is considered sign of technical strength and if it does not support the averages, it is a sign of technical weakness i.e. a sign that the market

will move in a direction opposite to the Dow Jones Averages. The breadth index is an addition to the Dow Theory and the movement of the Dow Jones Averages.

(ii) Volume of Transactions: The volume of shares traded in the market provides useful clues on how the market would behave in the near future. A rising index/price with increasing volume would signal buy behaviour because the situation reflects an unsatisfied demand in the market. Similarly, a falling market with increasing volume signals a bear market and the prices would be expected to fall further. A rising market with decreasing volume indicates a bull market while a falling market with dwindling volume indicates a bear market. Thus, the volume concept is best used with another market indicator, such as the Dow Theory.

(iii) Confidence Index: It is supposed to reveal how willing the investors are to take a chance in the market. It is the ratio of high-grade bond yields to low-grade bond yields. It is used by market analysts as a method of trading or timing the purchase and sale of stock, and also, as a forecasting device to determine the turning points of the market. A rising confidence index is expected to precede a rising stock market, and a fall in the index is expected to precede a drop in stock prices. A fall in the confidence index represents the fact that low-grade bond yields are rising faster or falling more slowly than high grade yields. The confidence index is usually, but not always a leading indicator of the market. Therefore, it should be used in conjunction with other market indicators.

(iv) Relative Strength Analysis: The relative strength concept suggests that the prices of some securities rise relatively faster in a bull market or decline more slowly in a bear market than other securities i.e. some securities exhibit relative strength. Investors will earn higher returns by investing in securities which have demonstrated relative strength in the past because the relative strength of a security tends to remain undiminished over time.

Relative strength can be measured in several ways. Calculating rates of return and classifying those securities with historically high average returns as securities with high relative strength is one of them. Even ratios like security relative to its industry and security relative to the entire market can also be used to detect relative strength in a security or an industry.

(v) Odd - Lot Theory: This theory is a contrary - opinion theory. It assumes that the average person is usually wrong and that a wise course of action is to pursue strategies contrary to popular opinion. The odd-lot theory is used primarily to predict tops in bull markets, but also to predict reversals in individual securities.

3.1.3 Support and Resistance Levels: When the index/price goes down from a peak, the peak becomes the resistance level. When the index/price rebounds after reaching a trough subsequently, the lowest value reached becomes the support level. The price is then expected to move between these two levels. Whenever the price approaches the resistance level, there is a selling pressure because all investors who failed to sell at the high would be keen to liquidate, while whenever the price approaches the support level, there is a buying pressure as all those investors who failed to buy at the lowest price would like to purchase the share. A

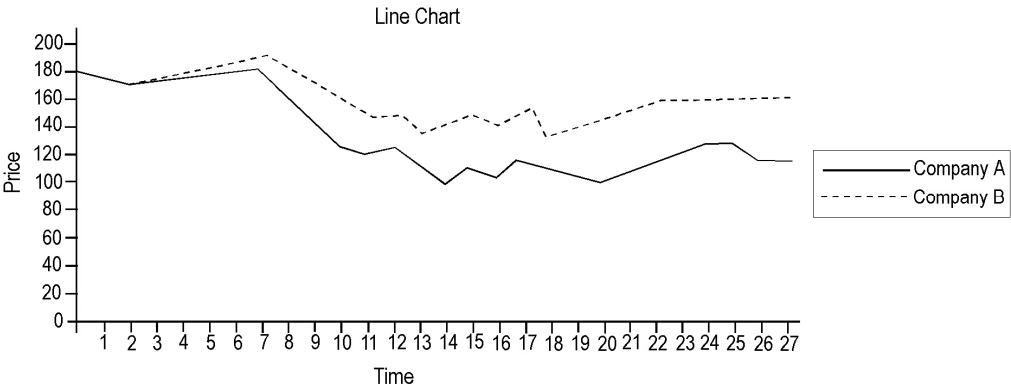
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breach of these levels indicates a distinct departure from status quo, and an attempt to set newer levels. Let us get a better understanding about these levels by using price data for about two months for shares of companies A and B given in the following Table:

Date	A	B
Dec. 1, 2005	177	177
5	171	171.5
7	172	175.5
12	174	177
13	177.5	181
14	181	184
15	180	186.5
18	163	176
19	142	162.5
20	127	156
22	123	147
25	124	147
Jan. 3, 2006	107.5	137.5
4	97.5	140
8	105	145
10	102.5	143.75
12	108.75	150
15	100	142.5
25	95	135
26	91.25	133.75
Feb. 1	97.5	138.75
2	106.25	147.5
5	113.75	152.5
6	120	155

7	120	152.5
8	113.75	150
9	113.75	147.5

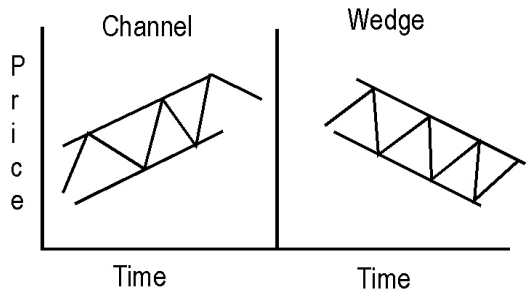
The line charts for Company A and Company B shares are shown in the graph below. From the charts, it appears that the support level and resistance level for Company A at that time were about Rs.90 and Rs.125, while these levels for Company B were Rs.134 and Rs.155.



3.1.4 Interpreting Price Patterns: There are numerous price patterns documented by technical analysts but only a few and important of them have been discussed here:

(a) Channel: A series of uniformly changing tops and bottoms gives rise to a channel formation. A downward sloping channel would indicate declining prices and an upward sloping channel would imply rising prices.

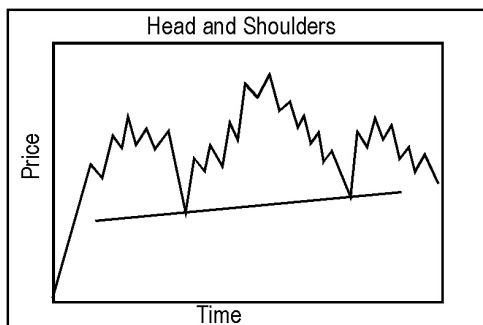
(b) Wedge: A wedge is formed when the tops (resistance levels) and bottoms (support levels) change in opposite direction (that is, if the tops, are decreasing then the bottoms are increasing and vice versa), or when they are changing in the same direction at different rates over time.



(c) Head and Shoulders: It is a distorted drawing of a human form, with a large lump (for head) in the middle of two smaller humps (for shoulders). This is perhaps the single most important pattern to indicate a reversal of price trend. The neckline of the pattern is formed by joining points where the head and the shoulders meet. The price movement after the formation

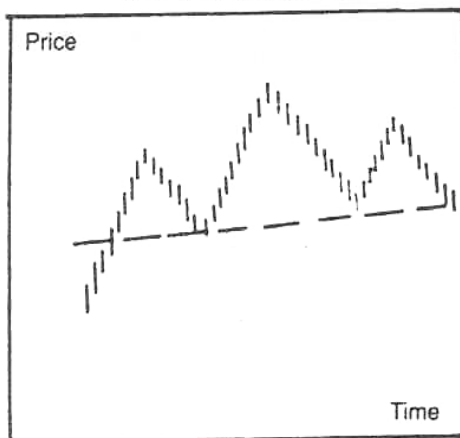
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of the second shoulder is crucial. If the price goes below the neckline, then a drop in price is indicated, with the drop expected to be equal to the distance between the top of the head and the neckline.

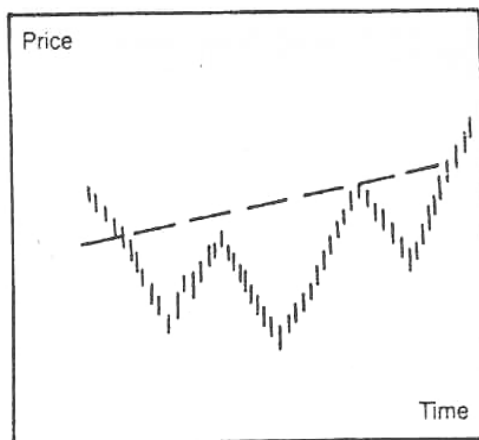


(i) Head and Shoulder Top Pattern: This has a left shoulder, a head and a right shoulder. Such formation represents bearish development. If the price falls below the neck line (line drawn tangentially to the left and right shoulders) a price decline is expected. Hence it's a signal to sell.

(ii) Inverse Head and Shoulder Pattern: As the name indicates this formation, it is an inverse of head and shoulder top formation. Hence it reflects a bullish development. The price rise to above the neck line suggests price rise is imminent and a signal to purchase.



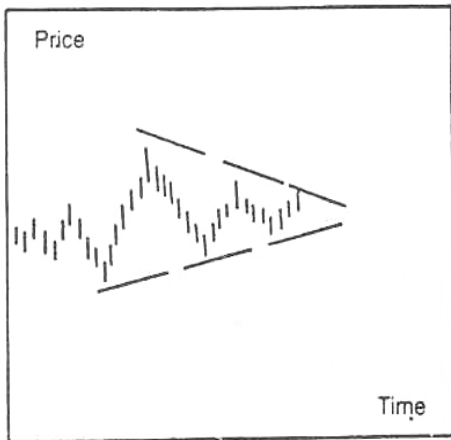
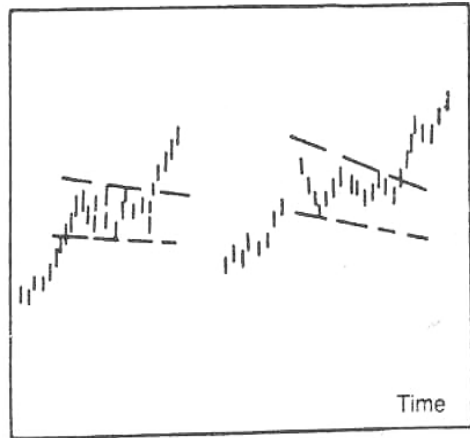
HEAD & SHOULDERS



INVERSE HEAD & SHOULDERS

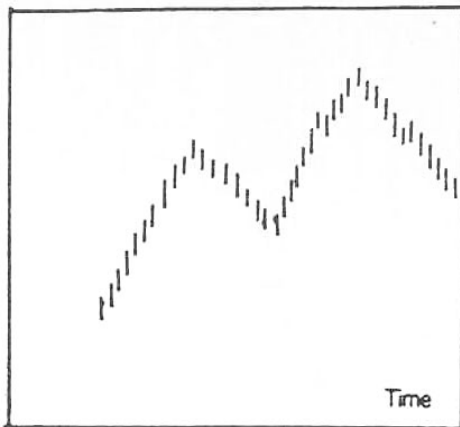
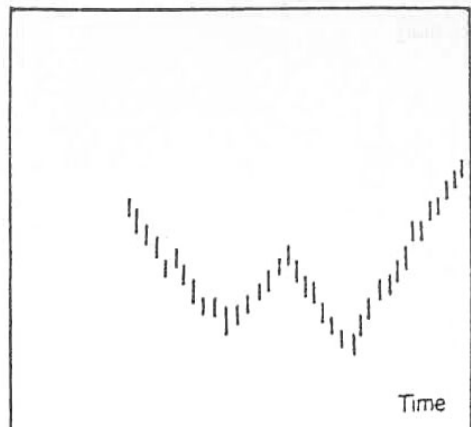
(d) Triangle or Coil Formation: This formation represents a pattern of uncertainty and is difficult to predict which way the price will break out.

(e) Flags and Pennants Form: This form signifies a phase after which the previous price trend is likely to continue.

**TRIANGLE OR COIL****FLAG & PENNANT**

(f) Double Top Form: This form represents a bearish development, signals that price is expected to fall.

(g) Double Bottom Form: This form represents bullish development signaling price is expected to rise.

**DOUBLE TOP****DOUBLE BOTTOM**

(h) Gap: A gap is the difference between the opening price on a trading day and the closing price of the previous trading day. The wider the gap the stronger the signal for a continuation of the observed trend. On a rising market, if the opening price is considerably higher than the previous closing price, it indicates that investors are willing to pay a much higher price to acquire the scrip. Similarly, a gap in a falling market is an indicator of extreme selling pressure.

3.1.5 Decision Using Data Analysis: Technical analysts have developed rules based on simple statistical analysis of price data. Moving Averages is one of the more popular methods of data analysis for decision making.

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Moving Averages: Moving averages are frequently plotted with prices to make buy and sell decisions. The two types of moving averages used by chartists are the Arithmetic Moving Average (AMA) and the Exponential Moving Average (EMA). An n -period AMA, at period t , is nothing but the simple average of the last n period prices.

$$AMA_{n,t} = 1/n[P_t + P_{t-1} + \dots + P_{t-(n-1)}]$$

Unlike the AMA, which assigns equal weight of $1/n$ to each of the n prices used for computing the average, the Exponential Moving Average (EMA) assigns decreasing weights, with the highest weight being assigned to the latest price. The weights decrease exponentially, according to a scheme specified by the exponential smoothing constant, also known as the exponent, a .

$$EMA_t = aP_t + (1-a)(EMA_{t-1})$$

Moving Average is calculated by considering the most recent observation for which the closing price of a stock on '10' successive trading days are taken into account for the calculation of a 5 -day moving average of daily closing prices.

Trading day	Closing prices	Sum of 5 most recent closing price	Two-item Centred Total	Moving Average
1	25.00			
2	26.00			
3	25.50			
4	24.50			
5	26.00	127.00		
6	26.00	128.00	255.00	25.50
7	26.50	128.50	256.50	25.65
8	26.50	129.50	258.00	25.80
9	26.00	131.00	260.50	26.05
10	27.00	132.00	263.00	26.30

To identify trend, technical analysts use moving average analysis:

- (i) A 200 day's moving average of daily prices or a 30 week moving of weekly price for identifying a long term trend.
- (ii) A 60 day's moving average of daily price to discern an intermediate term trend.
- (iii) A 10 day's moving average of daily price to detect a short term trend.

Buy and Sell Signals Provided by Moving Average Analysis

<i>Buy Signal</i>	<i>Sell Signal</i>
(a) Stock price line rise through the moving average line when graph of the moving average line is flattering out.	(a) Stock price line falls through moving average line when graph of the moving average line is flattering out.
(b) Stock price line falls below moving average line which is rising.	(b) Stock price line rises above moving average line which is falling.
(c) Stock price line which is above moving average line falls but begins to rise again before reaching the moving average line	(c) Stock price line which is slow moving average line rises but begins to fall again before reaching the moving average line.

3.1.6 Bollinger Bands: A band is plotted two standard deviations away from a simple moving average. Because standard deviation is a measure of volatility, bollinger bands adjust themselves to the market conditions. When the markets become more volatile, the bands widen (move further away from the average), and during less volatile periods, the bands contract (move closer to the average). The tightening of the bands is often used by technical traders as an early indication that the volatility is about to increase sharply. This is one of the most popular technical analysis techniques. The closer the prices move to the upper band, the more overbought the market, and the closer the prices move to the lower band, the more oversold the market.

John Bollinger, a long-time technician of the markets developed the technique of using moving averages with two trading bands, not unlike using envelopes on either side of a moving average. Unlike using a percentage calculation from a normal moving average, bollinger bands simply add and subtract a standard deviation calculation. Standard deviation is a mathematical formula that measures volatility, showing how the stock price can be spread around it's "true value". The technician can be relatively certain that almost all of the price data needed will be found between the two bands.

Bollinger bands consist of a centreline and two price channels, one above the centreline and one below. The centreline is an exponential moving average, and the price channels are standard deviations of the stock the chartist is studying. The bands will expand and contract as the price action of an issue becomes volatile (expansion) or becomes bound into a tight trading pattern (contraction).

A stock may trade for long periods of time in a trend, albeit from time to time with some volatility. To better see the trend, traders use moving averages to filter the price action. This way, traders can gather important information regarding how the market is trading. For example, after a sharp rise or fall in the trend, the market may consolidate, trading in a narrow

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fashion and criss-crossing above and below the moving average. To better monitor this behavior, traders use price channels, which are designed to encompass the trading activity around the trend.

We know that markets trade erratically on a daily basis even though they are still trading in an uptrend or downtrend. We also know that technicians use moving averages with support and resistance lines to anticipate the price action of a stock. Upper resistance and lower support lines are first drawn and then extrapolated to form channels within which the trader expects prices to be contained. Some traders draw straight lines connecting either tops or bottoms of prices to identify the upper or lower price extremes, respectively, and then add parallel lines to define the channel within which the prices should move. As long as prices do not move out of this channel, the trader can be reasonably confident that prices are moving as expected.

Traders know that when the stock price continually touches the upper bollinger band, the price is thought to be overbought and conversely, when they continually touch the lower band, the prices are thought to be oversold, and a buy signal would thus kick in.

When using Bollinger Bands, designate the upper and lower bands as price targets. If the price deflects off the lower band and crosses above the 20-day average (which is the middle line), the upper band comes to represent the upper price target. In a strong uptrend, prices usually fluctuate between the upper band and the 20-day moving average. When that happens, a crossing below the 20-day moving average warns of a trend reversal to the downside.



Source: Tradestation

You can see in this chart of Nortel Networks from the start of 2001 that for the most part the price action was touching the lower band and the stock price fell from the \$40 level in the dead of winter to its October position of \$5.69. There were a couple of instances that saw the price action cut through the centreline (mid- January and early April), but for many traders, this was certainly not a buy signal as the trend had not been broken.

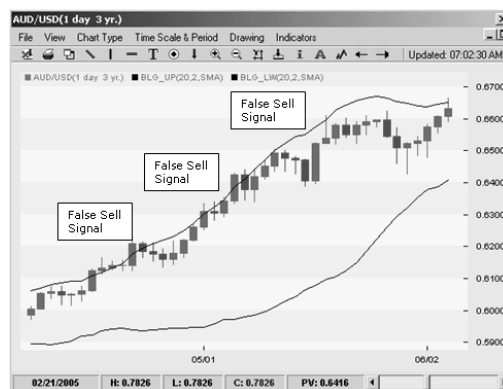


Source: Tradestation

In the 2001 chart of Microsoft Corporation, you can see the trend reversed to an uptrend in the early part of January, but look how slow it was in showing the trend change. Before the price action crossed over the centerline, the stock price had moved from \$40 to \$47 and then on to between \$48 and \$49 before some traders would have confirmation of this trend reversal.

3.1.6.1 Using Bollinger Band "Bands" To Gauge Trends: Bollinger bands are one of the most popular technical indicators for traders in any financial market - stocks, bonds or foreign exchange (FX). Many traders use them primarily to determine overbought and oversold levels, selling when price touches the upper bollinger band and buying when it hits the lower bollinger band. In range-bound markets, this technique works well, as prices travel between the two bands like balls bouncing off the walls of a racquetball court.

Yet as John Bollinger was first to acknowledge, "tags of the bands are just that - tags, not signals. A tag of the upper Bollinger band is not in and of itself a sell signal. A tag of the lower bollinger band is not in and of itself a buy signal". Price often can and does "walk the band". In those markets, traders who continuously try to "sell the top" or "buy the bottom" are faced with an excruciating series of stop-outs or worse, an ever-mounting floating loss as price moves further and further away from the original entry.



Source: Tradestation

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Perhaps a more useful way to trade with bollinger bands is to use them to gauge trends. To understand why bollinger bands may be a good tool for this task we first need to ask - what is a trend?

3.1.6.2 Trend as Deviance: One standard cliché in trading is that prices range 80% of the time. Like many clichés this one contains a good amount of truth since markets mostly consolidate as bulls and bears battle for supremacy. Market trends are rare, which is why trading them is not nearly as easy as it seems. Looking at price this way we can then define trend as deviation from the norm (range).

The Bollinger band formula consists of the following:

$$\text{BOLU} = \text{MA}(\text{TP}, n) + m * \text{SD}[\text{TP}, n]$$

$$\text{BOLD} = \text{MA}(\text{TP}, n) - m * \text{SD}[\text{TP}, n]$$

Where,

BOLU = Upper Bollinger Band

BOLD = Lower Bollinger Band

n = Smoothing Period

m = Number of Standard Deviations (SD)

SD = Standard Deviation over Last n Periods Typical Price (TP) = (HI + LO + CL) / 3

At the core, bollinger bands measure deviation. This is the reason why they can be very helpful in diagnosing trend. By generating two sets of bands - one set using the parameter of "1 standard deviation" and the other using the typical setting of "2 standard deviation" - we can look at price in a whole new way.

In the chart given, we see that whenever price channels between the upper bollinger bands +1 SD and +2 SD away from mean, the trend is up; therefore, we can define that channel as the "buy zone". Conversely, if price channels within bollinger bands -1 SD and -2 SD, it is in the "sell zone". Finally, if price meanders between +1 SD band and -1 SD band, it is essentially in a neutral state, and we can say that it's in "no man's land".

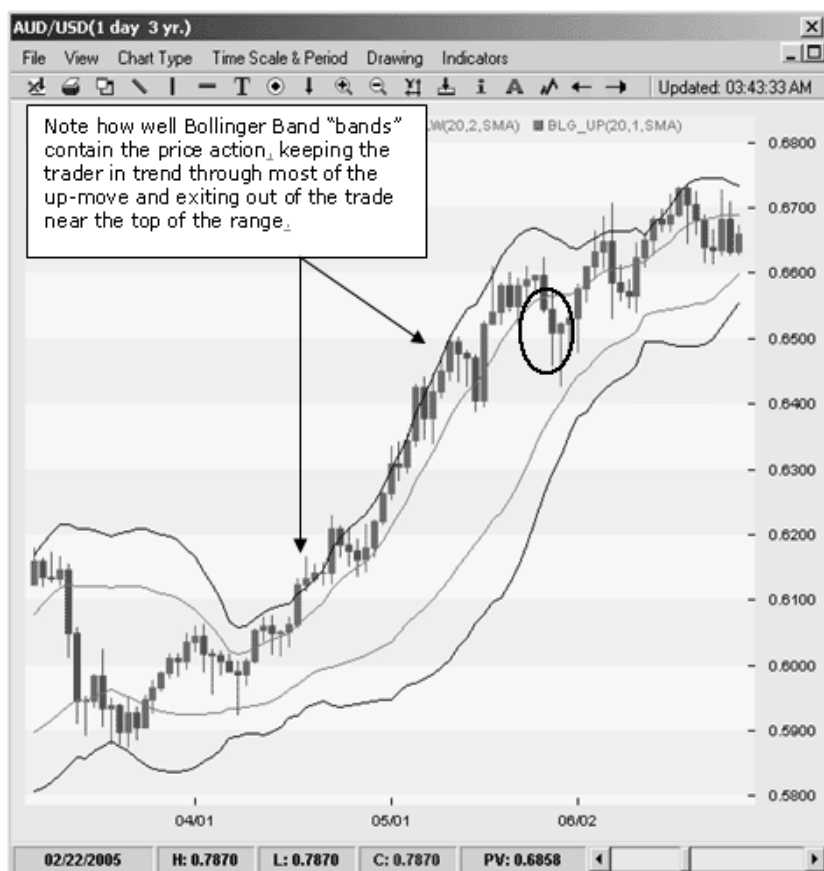
One of the other great advantages of bollinger bands is that they adapt dynamically to price expanding and contracting as volatility increases and decreases. Therefore, the bands naturally widen and narrow in sync with price action, creating a very accurate trending envelope.



Source: Tradestation

3.1.6.3 A Tool for Trend Traders and Faders: Having established the basic rules for Bollinger band "bands", we can now demonstrate how this technical tool can be used by both trend traders who seek to exploit momentum and fade traders who like to profit from trend exhaustion. Returning back to the AUD/USD chart just above, we can see how trend traders would position long once price entered the "buy zone". They would then be able to stay in trend as the Bollinger band "bands" encapsulate most of the price action of the massive up-move.

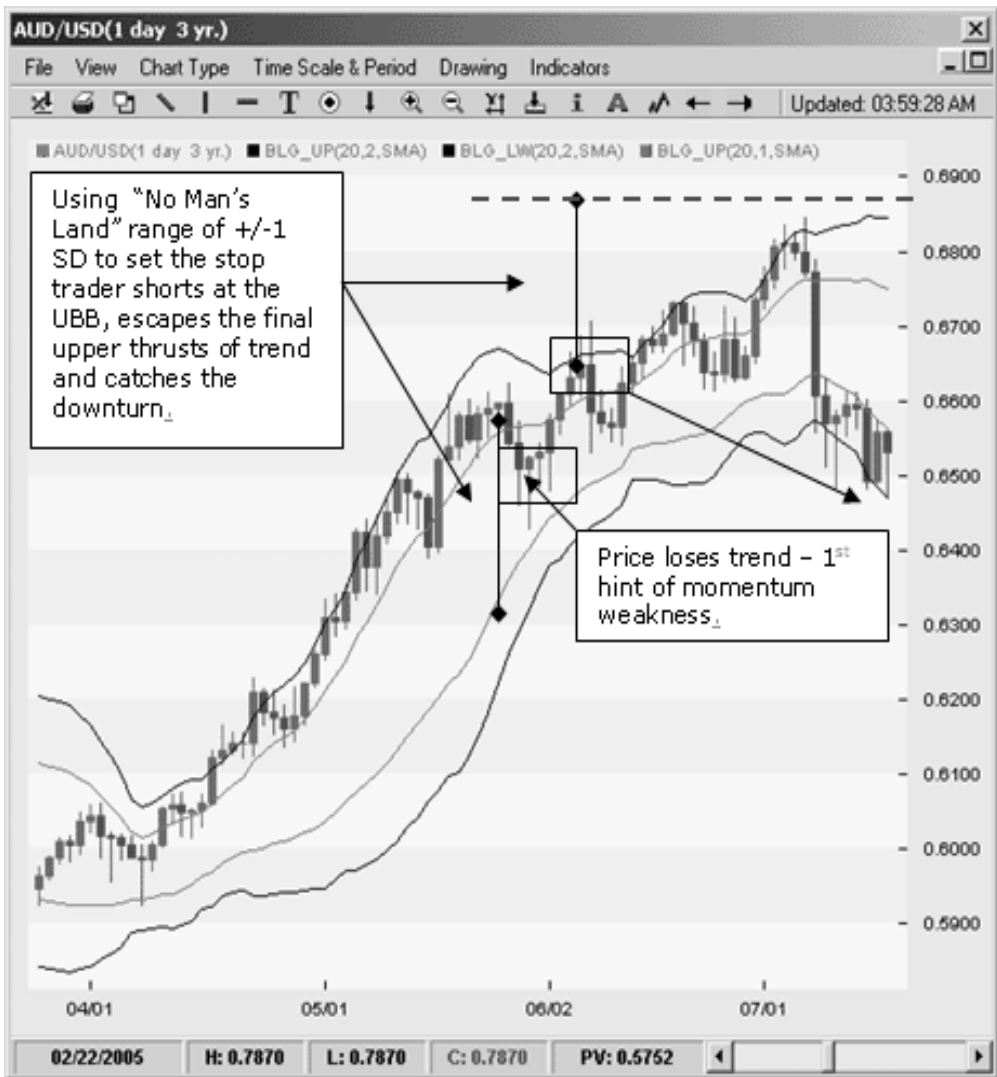
What would be a logical stop-out point? The answer is different for each individual trader, but one reasonable possibility would be to close the long trade if the candle turned red and more than 75% of its body was below the "buy zone". Using the 75% rule is obvious since at that point price clearly falls out of trend, but why insist that the candle be red? The reason for the second condition is to prevent the trend trader from being "wiggled out" of a trend by a quick probative move to the downside that snaps back to the "buy zone" at the end of the trading period. Note how in the following chart the trader is able to stay with the move for most of the uptrend, exiting only when price starts to consolidate at the top of the new range.



Source: Tradestation

Bollinger band "bands" can also be a valuable tool for traders who like to exploit trend exhaustion by picking the turn in price. Note, however, that counter-trend trading requires far larger margins of error as trends will often make several attempts at continuation before capitulating.

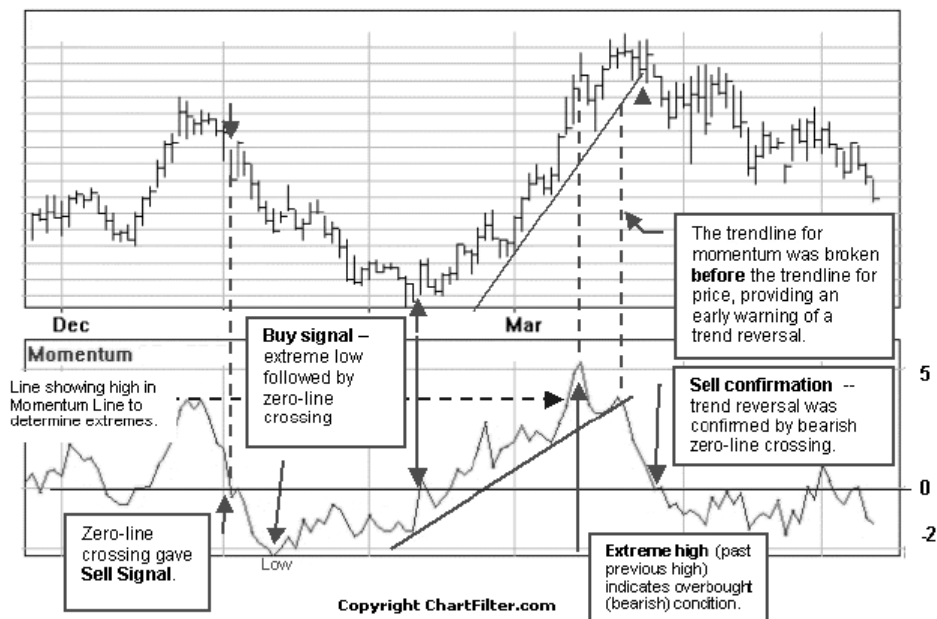
In the chart below, we see that a fade trader using bollinger band "bands" will be able to diagnose quickly the first hint of trend weakness. Having seen prices fall out of the trend channel, the fader may decide to make classic use of bollinger bands by shorting the next tag of the upper bollinger band. But where to place the stop? Putting it just above the swing high will practically assure the trader of a stop-out as price will often make many probative forays to the top of the range, with buyers trying to extend the trend. Here is where the volatility property of bollinger bands becomes an enormous benefit to the trader. By measuring the width of the "no man's land" area, which is simply the range of +1 to -1 SD from the mean, the trader can create a quick and very effective projection zone which will prevent him or her from being stopped out on market noise and yet protect his or her capital if trend truly regains its momentum.



Source: Tradestation

Thus, it can be said that as one of the most popular technical-analysis indicators, bollinger bands have become crucial to many technically oriented traders. By extending their functionality through the use of Bollinger band "bands", traders can achieve a greater level of analytical sophistication using this simple and elegant tool for both trending and fading strategies.

3.1.7 Momentum Analysis: Momentum measures the speed of price change and provides a leading indicator of changes in trend. The momentum line leads price action frequently enough to signal a potential trend reversal in the market. Momentum indicators can warn of dormant strength or weakness in the price well ahead of the turning point. At extreme positive values, momentum implies an overbought position; at extreme negative values, an oversold position



3.1.7.1 Interpretation of Momentum Line: A strongly trending market acts like a pendulum; the move begins at a fast pace, with strong momentum. It gradually slows down, or loses momentum, stops and reverses course.

The momentum line is always a step ahead of the price movement. It leads the advance or decline in prices and levels off while the current price trend is still in effect. It then begins to move in the opposite direction as prices begin to level off.

The 10 day momentum line fluctuates on an open scale around a zero line. When the latest closing price is higher than that of 10 days ago, a positive value is plotted above the zero line. If the latest close is lower than 10 days previous, a negative value is plotted.

Ten days or periods are usually used in calculating momentum, but any time period can be employed. The shorter the time frame used the more sensitive momentum becomes to short term fluctuations with more marked oscillations. Oscillator swings are smoother and more stable when a longer number of days are used.

(a) Upward Momentum: When an up trending momentum line begins to flatten out it means that the new gains being achieved by the latest closing prices are the same as the gains 10 days earlier. The rate of upward momentum has leveled off even though prices may still be advancing. When the momentum line begins to drop further, below the zero line, the uptrend in prices could still be in force, but the last price gains are less than those of 10 days ago. The uptrend is losing momentum.

(b) Downward Momentum: When the momentum line moves below the zero line, the latest close is now under the close of 10 days ago and a short term downtrend is in effect. As

momentum continues to drop farther below the zero line, the downtrend gains momentum. The downtrend decelerates when the line begins to turn around. If loss of momentum is experienced in a market at the same time as selling resistance is met or when buying power is temporarily exhausted, momentum and price peak simultaneously.

3.1.7.2 Signals: Momentum is a basic application of oscillator analysis, designated to measure the rate of price change, not the actual price level. Three common signals are generated by the momentum oscillator: zero line crossings, trend line violations and extreme values.

(a) Zero-line Crossings: Although the long term price trend is still the overriding consideration, a crossing above the zero line could be a buy signal if the price trend is up and a crossing below the zero line, a sell signal, if the price trend is down.

(b) Trend line Violations: The trend lines on the momentum chart are broken sooner than those on the price chart. The value of the momentum indicator is that it turns sooner than the market itself, making it a leading indicator.

(c) Extreme Values: One of the benefits of oscillator analysis is being able to determine when markets are in extreme areas. At extreme positive values, momentum implies an overbought position; at extreme negative values, an oversold position.

The absence of a fixed upper and lower boundary presents a difficulty with the momentum line. To help solve this problem look at the long term history of the momentum line and draw horizontal lines along its upper and lower boundaries. Adjust these lines periodically, especially after important trend changes.

3.2 EVALUATION OF TECHNICAL ANALYSIS

Technical Analysis has several supporters as well several critics. The advocates of technical analysis offer the following interrelated argument in their favour:

- (a) Under influence of crowd psychology trend persist for some time. Tools of technical analysis help in identifying these trends early and help in investment decision making.
- (b) Shift in demand and supply are gradual rather than instantaneous. Technical analysis helps in detecting this shift rather early and hence provides clues to future price movements.
- (c) Fundamental information about a company is observed and assimilated by the market over a period of time. Hence price movement tends to continue more or less in same direction till the information is fully assimilated in the stock price.

Detractors of technical analysis believe that it is an useless exercise; their arguments are as follows:

- (a) Most technical analysts are not able to offer a convincing explanation for the tools employed by them.
- (b) Empirical evidence in support of random walk hypothesis cast its shadow over the usefulness of technical analysis.

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- (c) By the time an up trend and down trend may have been signalled by technical analysis it may already have taken place.
- (d) Ultimately technical analysis must be self defeating proposition. With more and more people employing it, the value of such analysis tends to decline.

In a nutshell, it may be concluded that in a rational, well ordered and efficient market, technical analysis may not work very well. However with imperfection, inefficiency and irrationalities that characterizes the real world market, technical analysis may be helpful. If technical analysis is used in conjunction with fundamental analysis, it might be useful in providing proper guidance to investment decision makers.

4. BOND VALUATION

A bond or debenture is an instrument of debt issued by a business or government.

4.1 SOME BASICS OF A BOND

(a) Par Value: Value stated on the face of the bond. It is the amount a firm borrows and promises to repay at the time of maturity.

(b) Coupon Rate and Interest: A bond carries a specific interest rate known as the coupon rate. The interest payable to the bond holder is par value of the bond \times coupon rate. If, the annual interest payable on a bond with a par value of Rs 100 and a coupon rate of 13.5 percent is Rs 13.50 (Rs 100 \times 13.5 per cent).

(c) Maturity Period: Corporate bonds have a maturity period of 3 to 10 years. While government bonds have maturity periods extending up to 20-25 years. At the time of maturity the par (face) value plus nominal premium is payable to the bondholder.

4.2 BOND VALUATION MODEL

The holder of a bond receives a fixed annual interest payment for a certain number of years and a fixed principal repayment (equal to par value) at the time of maturity. So the value of a bond is:

$$V = \sum_{t=1}^n \frac{I}{(1+k_d)^t} + \frac{F}{(1+k_d)^n}$$
$$V = I(PVIFA_{k_d, n}) + F(PVIF_{k_d, n})$$

Where,

V = value of the bond

I = annual interest payable on the bond

F = principal amount (par value) of the bond repayable at the time of maturity

n = maturity period of the bond.

Illustration 1: A Rs 1,000 par value bond bearing a coupon rate of 14 per cent matures after 5 years, the required rate of return on this bond is 13 per cent. Calculate the value of the bond.

Solution

The value of the bond is

$$\begin{aligned} V &= \text{Rs } 140(\text{PVIFA}_{13\%, 5\text{yrs}}) + \text{Rs } 1,000(\text{PVIF}_{13\%, 5\text{yrs}}) \\ &= \text{Rs } 140(3.517) + \text{Rs } 1,000(0.543) \\ &= \text{Rs } 1,035.4 \end{aligned}$$

4.3 BOND VALUE THEOREMS

Some basic rules which should be remembered with regard to bonds are:

- (a) When the required rate of return equals the coupon rate, the bond sells at par value.
- (b) When the required rate of return exceeds the coupon rate, the bond sells at a discount. The discount declines as maturity approaches.
- (c) When the required rate of return is less than the coupon rate, the bond sells at a premium. The premium declines as maturity approaches.
- (d) The longer the maturity of a bond, the greater is its price change with a given change in the required rate of return.

4.4 YIELD TO MATURITY

If the market price of a Rs 1,000 par value bond, carrying a coupon rate of 9 per cent and maturing after 8 years, is Rs 800. What would be the rate of return, if one buys the bond and holds it till its maturity? The rate of return one earns is called the Yield to Maturity (YTM). The value of k_d is

$$\begin{aligned} \text{Rs } 800 &= \sum_{t=1}^n \frac{\text{Rs } 90}{(1+k_d)^t} + \frac{\text{Rs } 1,000}{(1+k_d)^8} \\ &= \text{Rs } 90 (\text{PVIFA}_{K_d, 8\text{yrs}}) + \text{Rs } 1,000 (\text{PVIF}_{K_d, 8\text{yrs}}) \end{aligned}$$

To find the value of k_d , several values of k_d are considered till the right value is obtained. With a discount rate of 12 percent and putting a value of 12 per cent for k_d the right-hand side becomes

$$\text{Rs } 90 (\text{PVIFA}_{12\%, 8\text{yrs}}) + \text{Rs } 1,000 (\text{PVIF}_{12\%, 8\text{yrs}}) = \text{Rs } 90 (4.968) + \text{Rs } 1,000(0.404) = \text{Rs } 851.00$$

Since this value is greater than Rs 800 a higher value for k_d is opted. Let $k_d = 14$ per cent so that

$$\text{Rs } 90(\text{PVIFA}_{14\%, 8\text{yrs}}) + \text{Rs } 1,000 (\text{PVIF}_{14\%, 8\text{yrs}}) = \text{Rs } 90(4.639) + \text{Rs } 1,000(0.351) = \text{Rs } 768.10$$

Since this value is less than Rs 800 a lower value for k_d is used. Let us try $k_d = 13$ per cent.

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$$\text{Rs } 90(\text{PVIFA}_{13\%, 8\text{yrs}}) + \text{Rs } 1,000 (\text{PVIF}_{13\%, 8\text{yrs}}) = \text{Rs } 90 (4.800) + \text{Rs } 1,000(0.376) = \text{Rs } 808$$

Thus k_d lies between 13 per cent and 14 per cent. Using linear interpolation in the range of 13 percent to 14 percent, k_d is equal to 13.2 per cent

$$13\% + (14\% - 13\%) \frac{808 - 800}{808 - 768.1} = 13.2\%$$

Illustration 2: If the price per bond is Rs 90 and the bond has a par value of Rs 100, a coupon rate of 14 per cent, and a maturity period of 6 years, calculate its yield to maturity.

Solution

$$\begin{aligned} \text{Rs. } 90 &= \sum_{t=1}^6 \frac{\text{Rs. } 14}{(1 + k_d)^t} + \frac{\text{Rs. } 100}{(1 + k_d)^6} \\ &= \text{Rs. } 14 (\text{PVIFA}_{k_d, 6 \text{ yrs}}) + \text{Rs. } 100 (\text{PVIF}_{k_d, 6 \text{ yrs}}) \end{aligned}$$

To find the value of k_d , several values of k_d are considered till the right value is obtained. With a discount rate of 14 percent and putting a value of 14 per cent for k_d the right-hand side becomes Rs 14 ($\text{PVIFA}_{14\%, 6\text{yrs}}$) + Rs 100 ($\text{PVIF}_{14\%, 6\text{yrs}}$) = Rs 14 (3.889) + Rs 100(0.456) = Rs 100.046

Since this value is greater than Rs 90 a higher value for k_d is opted. Let $k_d = 17$ per cent so that Rs 14($\text{PVIFA}_{17\%, 6\text{yrs}}$) + Rs 100 ($\text{PVIF}_{17\%, 6\text{yrs}}$) = Rs 14(3.589) + Rs 100(0.390) = Rs 89.246

Thus k_d lies between 14 per cent and 17 per cent. Using linear interpolation in the range of 14 percent to 17 percent, k_d is equal to 16.79 per cent

$$14\% + (17\% - 14\%) \frac{100.046 - 90}{100.046 - 89.246}$$

4.5 BOND VALUES WITH SEMI-ANNUAL INTEREST

Bonds pay interest semi-annually. This requires the bond valuation equation to be modified as follows:

- The annual interest payment, I , divided by two to obtain the semi-annual interest payment.
- The number of years to maturity is multiplied by two to get the number of half-yearly periods.
- The discount rate divided by two to get the discount rate applicable to half-yearly periods.

The basic bond valuation equation thus becomes:

$$V = \sum_{t=1}^{2n} [(I/2) / \{(1+k_d/2)^t\}] + [F / (1+k_d/2)^{2n}]$$

$$= I/2(PVIFA_{kd/2, 2n}) + F(PVIF_{kd/2, 2n})$$

Where,

V = Value of the bond

I/2 = Semi-annual interest payment

Kd/2 = Discount rate applicable to a half-year period

F = Par value of the bond repayable at maturity

2n = Maturity period expressed in terms of half-yearly periods.

Illustration 3: If a Rs 100 par value bond carries a coupon rate of 12 per cent and a maturity period of 8 years and interest payable semi-annually then the value of the bond with required rate of return of 14 per cent will be what?

Solution

$$V = \sum_{t=1}^{16} \{6 / (1.07)^t\} + \{100 / (1.07)^{16}\}$$

$$= 6(PVIFA_{7\%, 16\text{yrs}}) + 100(PVIF_{7\%, 16\text{yrs}})$$

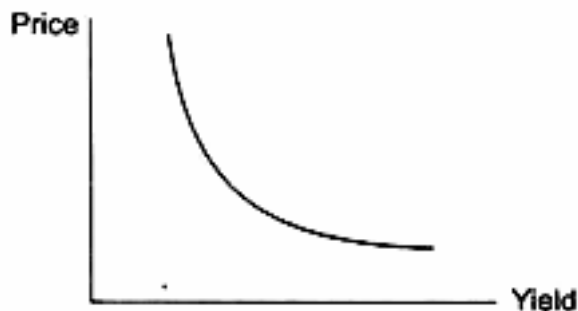
$$= \text{Rs } 6(9.447) + \text{Rs } 100(0.339)$$

$$= \text{Rs } 90.58$$

4.6 PRICE-YIELD RELATIONSHIP

A basic property of a bond is that its price varies inversely with yield. The reason is simple. As the required yield increases, the present value of the cash flow decreases; hence the price decreases. Conversely, when the required yield decreases, the present value of the cash flow increases; hence the price increases. The graph of the price-yield relationship for any callable bond has a convex shape as shown in diagram.

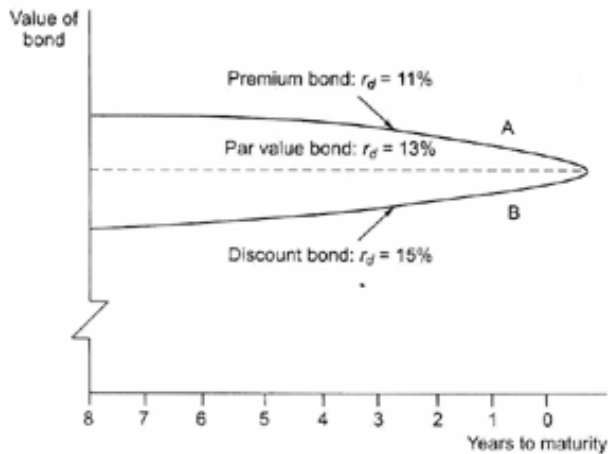
Price – Yield Relationship



4.7 RELATIONSHIP BETWEEN BOND PRICE AND TIME

Since the price of a bond must equal its par value at maturity (assuming that there is no risk of default), bond prices change with time. For example, a bond that is redeemable for Rs.1000 (which is its par value) after five years when it matures, will have a price of Rs.1,000 at maturity, no matter what the current price is. If its current price is Rs.1,100, it is said to be a premium bond. If the required yield does not change between now and the maturity date, the premium will decline over time as shown by curve A in the following diagram. On the other hand, if the bond has a current price of Rs.900, it is said to be a discount bond. The discount too will disappear over time as shown by curve B in the same diagram. Only when the current price is equal to par value – in such a case only the bond is said to be a par bond – there is no change in price as time passes, assuming that the required yield does not change between now and the maturity date. This is reflected by the dashed line in the diagram.

Price Changes with Time



4.8 THE YIELD CURVE

The term structure of interest rates, popularly known as Yield Curve, shows how yield to maturity is related to term to maturity for bonds that are similar in all respects, except maturity.

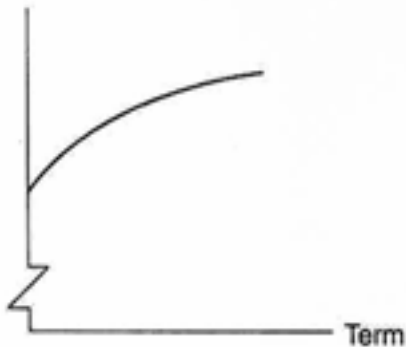
Consider the following data for Government securities:

Face Value	Interest Rate	Maturity (years)	Current Price	Yield to Maturity
100,000	0	1	88,968	12.40
100,000	12.75	2	99,367	13.13
100,000	13.50	3	100,352	13.35
100,000	13.50	4	99,706	13.60
100,000	13.75	5	99,484	13.90

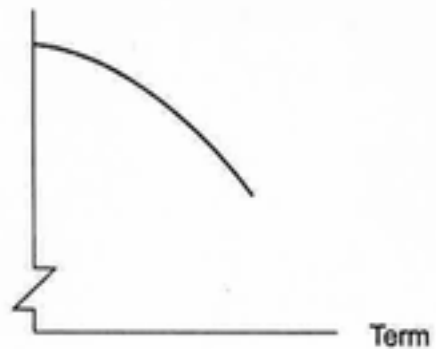
The yield curve for the above bonds is shown in the diagram. It slopes upwards indicating that long-term rates are greater than short-term rates. Yield curves, however, do not have to necessarily slope upwards. They may follow any pattern. Four patterns are depicted in the given diagram:

Types of Yield Curve

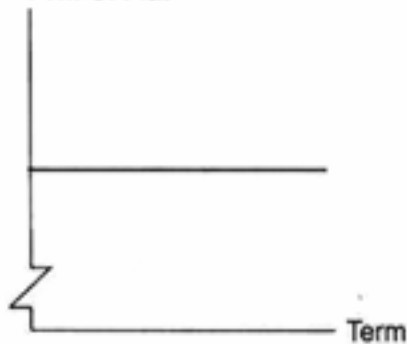
YTM A. Upward sloping



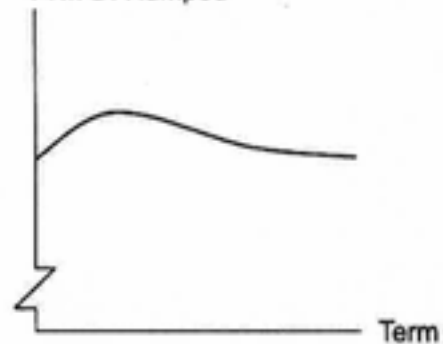
YTM B. Downward sloping



YTM C. Flat



YTM D. Humped



Another perspective on the term structure of interest rates is provided by the forward interest rates, viz., the interest rates applicable to bonds in the future.

To get forward interest rates, begin with the one-year Treasury bill:

$$88,968 = 100,000 / (1 + r_1)$$

Where,

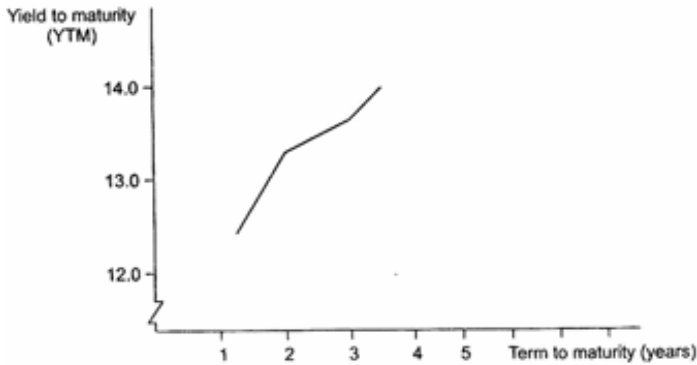
r_1 is the one-year spot rate i.e. the discount rate applicable to a risk less cash flow receivable a year hence.

Solving for r_1 , we gets $r_1 = 0.124$.

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Next, consider the two-year government security and split its benefits into two parts, the interest of Rs.12,750 receivable at the end of year 1 and Rs.112,750 (representing the interest and principal repayment) receivable at the end of year 2. The present value of the first part is:

$$\frac{12,750}{(1+r_1)} = \frac{12,750}{1.124} = 11,343.4$$



To get the present value of the second year's cash flow of Rs.112,750, discount it twice at r_1 (the discount rate for year 1) and r_2 (the discount rate for year 2)

$$\frac{112,750}{(1+r_1)(1+r_2)} = \frac{112,750}{(1.124)(1+r_2)}$$

r_2 is called the 'forward rate' for year two, i.e., the current estimate of the next year's one-year spot interest rate. Since r_1 , the market price of the bond, and the cash flow associated with the bond are known the following equation can be set up:

$$99,367 = \frac{12,750}{(1.124)} + \frac{112,750}{(1.124)(1+r_2)}$$

$$99,367(1.124)(1+r_2) = 12,750(1+r_2) + 1,12,750$$

$$1,11,689 + 1,11,689 r_2 = 12,750 + 12,750 r_2 + 1,12,750$$

$$1,11,689 r_2 - 12,750 r_2 = 1,12,750 - 1,11,689 + 12,750$$

$$98,939 r_2 = 13,811$$

$$r_2 = \frac{13,811}{98,939} = 0.1396$$

Thus solving this equation we get $r_2 = 0.1396$

To get the forward rate for year 3 (r_3), set up the equation for the value of the three year bond:

$$\begin{aligned}
 100,352 &= \frac{13,500}{(1+r_1)} + \frac{13,500}{(1+r_1)(1+r_2)} + \frac{13,500}{(1+r_1)(1+r_2)(1+r_3)} \\
 100,352 &= \frac{13,500}{(1.124)} + \frac{13,500}{(1.124)(1.140)} + \frac{113,500}{(1.124)(1.140)(1+r_3)} \\
 1,00,352 &= \frac{13,500}{1.124} + \frac{13,500}{1.28136} + \frac{1,13,500}{1.28136(1+r_3)} \\
 1,00,352 &= 12,011 + 10,536 + \frac{1,13,500}{1.28136(1+r_3)} \\
 77805 &= \frac{113500}{1.28136(1+r_3)} \\
 1+r_3 &= 1.134845 \\
 r_3 &= 0.13845
 \end{aligned}$$

Solving this equation we get $r_3=0.13845$. This is the forward rate for year three. Continuing in a similar fashion, set up the equation for the value of the four-year bond:

$$99,706 = \frac{13,500}{(1+r_1)} + \frac{13,500}{(1+r_1)(1+r_2)} + \frac{13,500}{(1+r_1)(1+r_2)(1+r_3)} + \frac{1,13,500}{(1+r_1)(1+r_2)(1+r_3)(1+r_4)}$$

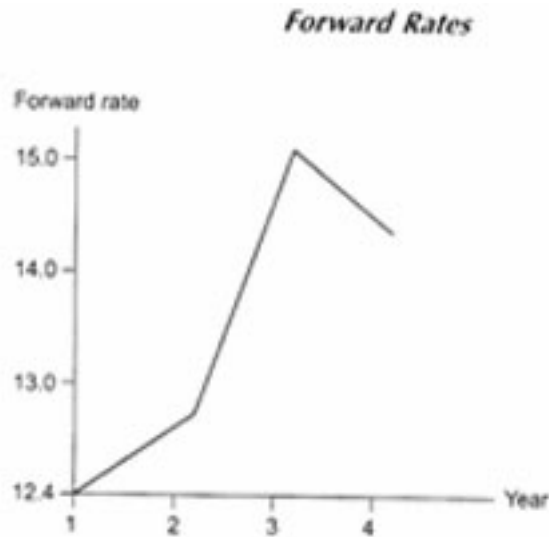
Solving this equation for r_4 , leads to $r_4 = 0.1458$. The following diagram plots the one-year spot rate and forward rates r_2, r_3, r_4 . Notice that while the current spot rate and forward rates are known, the future spot rates are not known – they will be revealed as the future unfolds.

Given this information on yields to maturity and forward rates, these are two distinct, yet equivalent, ways of valuing a risk less cash flow.

$$\text{Discount at the yield to maturity : } (R_t) \text{ PV [CF(t)]} = \frac{CF(t)}{(1+R_t)^t}$$

Discount by the product of a spot rate plus the forward rates

$$\text{PV [CF(t)]} = \frac{CF(t)}{(1+r_1)(1+r_2)...(1+r_t)}$$



Self-examination Questions

1. State some important factors which help the investment manager in identifying certain industries which may have a high growth potential.
2. State some important factors which will help the investment manager in analysing the desirability of a company from the point of view of investment in it.
3. Which of the following indications show to the investment manager that a turn in share prices has taken place?
 - (a) When the share market price index reaches a peak which is higher than the previous peak but the successive trough is lower than the previous trough.
 - (b) When the successive peaks and troughs are lower than earlier.
 - (c) When the successive peaks and trough are higher than earlier.
 - (d) When the successive troughs are higher than the earlier ones but the peak are lower than the earlier ones.
4. Discuss some of the charts used by a technical analyst.
5. Write short notes on the following:
 - (a) Intrinsic value
 - (b) Bollinger bands
 - (c) Momentum analysis.
6. Explain briefly Dow Theory and how it can be used to determine the direction of the stock market?
7. Discuss the techniques used for economic and industry analysis.

8. Mr. Mehta recently purchased a bond with a Rs. 1,000 face value, a 10 per cent coupon rate, and four years to maturity. The bond makes annual interest payments, the first to be received one year from today. Mr. Mehta paid Rs. 1,032.40 for the bond. Calculate
 - (i) The bond's yield-to-maturity.
 - (ii) The bond's yield-to-call, if the bond can be called two years from now at a price of Rs. 1,100.
9. An investor purchased at par a bond with a face value of Rs. 1,000. The bond had five years to maturity and a 10 per cent coupon rate. The bond was called two years later for a price of Rs. 1,200, after making its second annual interest payment. He then reinvested the proceeds in a bond selling at its face value of Rs. 1,000, with three years to maturity and a 7 per cent coupon rate. What was his actual YTM over the five-year period?
10. An investor is considering investing in a bond currently selling for Rs. 8,785.07. The bond has four years to maturity, a Rs. 10,000 face value, and 8 per cent coupon rate. The next annual interest payment is due one year from today. The approximate discount factor for investments of similar risk is 10 per cent. Calculate
 - (i) The intrinsic value of the bond. Based on this calculation, should the investor purchase the bond?
 - (ii) The YTM of the bond. Based on this calculation, should he purchase the bond?
11. An investor acquired at par a bond for Rs. 1,000 that offered a 15 per cent coupon rate. At the time of purchase, the bond had four years to maturity. Assuming annual interest payments, calculate his actual yield-to-maturity if all the interest payments were reinvested in an investment, earning 18 per cent per year. What would his actual yield-to-maturity be if all interest payments were spend immediately upon receipt?
12. An investor is considering buying a 13 per cent, five-year bond that pays interest once per year. The bond sells for Rs. 1,036, which represents a 12 per cent yield to maturity. What is the bond's duration?

1. INTRODUCTION

Originally developed by Harry Markowitz in the early 1950's, Portfolio Theory - sometimes referred to as Modern Portfolio Theory - provides a mathematical framework in which investors can minimize risk and maximize returns. The central plank of the theory is that diversifying holdings can reduce risk, and that returns are a function of expected risk. It can also be stated as an investment approach that tries to construct a portfolio offering maximum expected returns for a given level of risk tolerance. Portfolio theory forms the basis for portfolio management. Portfolio management deals with the selection of securities and their continuous shifting in the portfolio to optimise returns to suit the objectives of an investor. This, however, requires financial expertise in selecting the right mix of securities in changing market conditions to get the best out of the stock market. In India, as well as in a number of Western countries, portfolio management service has assumed the role of a specialised service now-a-days and a number of professional merchant bankers compete aggressively to provide the best to high networth clients, who have little time to manage their investments. The idea is catching on with the boom in the capital market and an increasing number of people are inclined to make profits out of their hard-earned savings.

Portfolio management service is one of the merchant banking activities recognised by Securities and Exchange Board of India (SEBI). The portfolio management service can be rendered either by the SEBI authorised categories I & II merchant bankers or portfolio managers or discretionary portfolio manager as defined in clauses (e) and (f) of Rule 2 of Securities and Exchange Board of India (Portfolio Managers) Rules, 1993.

Realising the importance of portfolio management services, the Securities and Exchange Board of India (SEBI) has laid down certain guidelines for the proper and professional conduct of portfolio management services. As per guidelines, only recognised merchant bankers registered with SEBI are authorised to offer these services.

2. PORTFOLIO THEORIES

A portfolio theory guides investors about the method of selecting securities that will provide the highest expected rate of return for any given degree of risk or that will expose the investor to a degree of risk for a given expected rate of return. Portfolio theory can be discussed under the following heads:

2.1 TRADITIONAL APPROACH

The traditional approach to portfolio management concerns itself with the investor, definition of portfolio objectives, investment strategy, diversification and selection of individual investment as detailed below:

- (i) Investor's study includes an insight into his – (a) age, health, responsibilities, other assets, portfolio needs; (b) need for income, capital maintenance, liquidity; (c) attitude towards risk; and (d) taxation status;
- (ii) Portfolio objectives are defined with reference to maximising the investors' wealth which is subject to risk. The higher the level of risk borne, the more the expected returns.
- (iii) Investment strategy covers examining a number of aspects including:
 - (a) Balancing fixed interest securities against equities;
 - (b) Balancing high dividend payout companies against high earning growth companies as required by investor;
 - (c) Finding the income of the growth portfolio;
 - (d) Balancing income tax payable against capital gains tax;
 - (e) Balancing transaction cost against capital gains from rapid switching; and
 - (f) Retaining some liquidity to seize upon bargains.
- (iv) Diversification reduces volatility of returns and risks and thus adequate equity diversification is sought. Balancing of equities against fixed interest bearing securities is also sought.
- (v) Selection of individual investments is made on the basis of the following principles:
 - (a) Methods for selecting sound investments by calculating the true or intrinsic value of a share and comparing that value with the current market value (i.e. by following the fundamental analysis) or trying to predict future share prices from past price movements (i.e., following the technical analysis);
 - (b) Expert advice is sought besides study of published accounts to predict intrinsic value;
 - (c) Inside information is sought and relied upon to move to diversified growth companies, switch quickly to winners than loser companies;
 - (d) Newspaper tipsters about good track record of companies are followed closely;

- (e) Companies with good asset backing, dividend growth, good earning record, high quality management with appropriate dividend paying policies and leverage policies are traced out constantly for making selection of portfolio holdings.

In India, most of the share and stock brokers follow the above traditional approach for selecting a portfolio for their clients.

2.2 DOW JONES THEORY

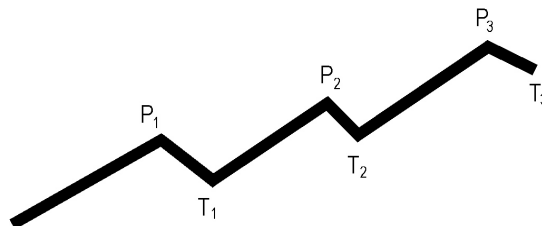
As already discussed in the previous chapter, the Dow Jones Theory is probably the most popular theory regarding the behaviour of stock market prices. The theory derives its name from Charles H. Dow, who established the Dow Jones & Co., and was the first editor of the Wall Street Journal – a leading publication on financial and economic matters in the U.S.A. Although Dow never gave a proper shape to the theory, ideas have been expanded and articulated by many of his successors. Let us study the theory once again but in detail.

The Dow Jones theory classifies the movements of the prices on the share market into three major categories:

- Primary movements,
- Secondary movements, and
- Daily fluctuations.

(i) **Primary Movements:** They reflect the trend of the stock market and last from one year to three years, or sometimes even more.

If the long range behaviour of market prices is seen, it will be observed that the share markets go through definite phases where the prices are consistently rising or falling. These phases are known as bull and bear phases.



Graph 1

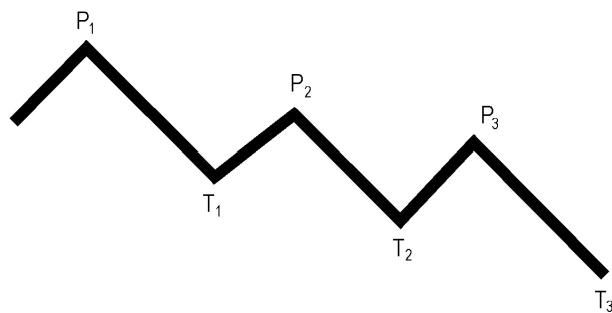
During a bull phase, the basic trend is that of rise in prices. Graph 1 above shows the behaviour of stock market prices in bull phase.

Students would notice from the graph that although the prices fall after each rise, the basic trend is that of rising prices, as can be seen from the graph that each trough prices reach, is at a higher level than the earlier one. Similarly, each peak that the prices reach

7.4 Strategic Financial Management

is on a higher level than the earlier one. Thus P_2 is higher than P_1 and T_2 is higher than T_1 . This means that prices do not rise consistently even in a bull phase. They rise for some time and after each rise, they fall. However, the falls are of a lower magnitude than earlier. As a result, prices reach higher levels with each rise.

Once the prices have risen very high, the bear phase is bound to start, i.e., price will start falling. Graph 2 shows the typical behaviour of prices on the stock exchange in the case of a bear phase. It would be seen that prices are not falling consistently and, after each fall, there is a rise in prices. However, the rise is not much as to take the prices higher than the previous peak. It means that each peak and trough is now lower than the previous peak and trough.



Graph 2

The theory argues that primary movements indicate basic trends in the market. It states that if cyclical swings of stock market price indices are successively higher, the market trend is up and there is a bull market. On the contrary, if successive highs and lows are successively lower, the market is on a downward trend and we are in a bear market. This theory thus relies upon the behaviour of the indices of share market prices in perceiving the trend in the market.

According to this theory, when the lines joining the first two troughs and the lines joining the corresponding two peaks are convergent, there is a rising trend and when both the lines are divergent, it is a declining trend.

(ii) Secondary Movements: We have seen that even when the primary trend is upward, there are also downward movements of prices. Similarly, even where the primary trend is downward, there is an upward movement of prices also. These movements are known as secondary movements and are shorter in duration and are opposite in direction to the primary movements. These movements normally last from three weeks to three months and retrace 1/3 to 2/3 of the previous advance in a bull market or previous fall in the bear market.

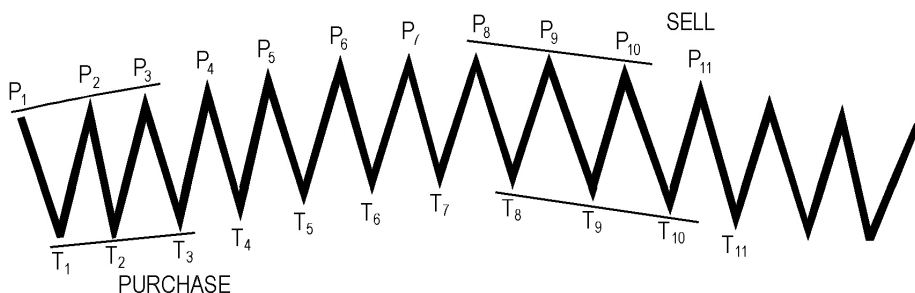
(iii) Daily Movements: There are irregular fluctuations which occur every day in the market. These fluctuations are without any definite trend. Thus if the daily share market price index for a few months is plotted on the graph it will show both upward and

downward fluctuations. These fluctuations are the result of speculative factors. An investment manager really is not interested in the short run fluctuations in share prices since he is not a speculator. It may be reiterated that any one who tries to gain from short run fluctuations in the stock market, can make money only by sheer chance. The investment manager should scrupulously keep away from the daily fluctuations of the market. He is not a speculator and should always resist the temptation of speculating. Such a temptation is always very attractive but must always be resisted. Speculation is beyond the scope of the job of an investment manager.

2.2.1 Timing of Investment Decisions on the Basis of Dow Jones Theory : Ideally speaking, the investment manager would like to purchase shares at a time when they have reached the lowest trough and sell them at a time when they reach the highest peak. However, in practice, this seldom happens. Even the most astute investment manager can never know when the highest peak or the lowest trough has been reached. Therefore, he has to time his decision in such a manner that he buys the shares when they are on the rise and sells them when they are on the fall. It means that he should be able to identify exactly when the falling or the rising trend has begun.

This is technically known as identification of the turn in the share market prices. Identification of this turn is difficult in practice because of the fact that, even in a rising market, prices keep on falling as a part of the secondary movement. Similarly even in a falling market prices keep on rising temporarily. How to be certain that the rise in prices or fall in the same is due to a real turn in prices from a bullish to a bearish phase or *vice versa* or that it is due only to short-run speculative trends?

Dow Jones theory identifies the turn in the market prices by seeing whether the successive peaks and troughs are higher or lower than earlier. Consider the following graph:



Graph 3

According to the theory, the investment manager should purchase investments when the prices are at T₁. At this point, he can ascertain that the bull trend has started, since T₂ is higher than T₁ and P₂ is higher than P₁.

Similarly, when prices reach P_7 he should make sales. At this point he can ascertain that the bearish trend has started, since P_9 is lower than P_8 and T_8 is lower than T_7 .

2.3 EFFICIENT MARKET THEORY

In 1953, Maurice Kendall a distinguished statistician of the Royal Statistical Society, London examined the behaviour of the stock and commodity prices in search of regular cycles instead of discovering any regular price cycle. He found each series to be “wandering one, almost as if once a week, the Demon of Chance drew a random number and added it to the current price to determine next week’s price”.

Prices appeared to follow a random walk implying that successive price changes are independent of one another. In 1959 two interesting papers supporting the Random Walk Theory were published. Harry Roberts showed that a series obtained by cumulating random numbers bore resemblance to a time series of stock prices. In the second, Osborne, an eminent physicist, examined that the stock price behavior was similar to the movements of very small particles suspended in a liquid medium. Such movement is referred to as the Brownian motion. He found a remarkable similarity between stock price movements and the Brownian motion.

Inspired by the works of Kendall, Roberts & Osborn, a number of researchers employed indigenous tests of randomness on stock price behaviour. By and large, these tests have indicated the Random Walk hypothesis.

2.3.1 Search for Theory: When empirical evidence in favour of Random walk hypothesis seemed overwhelming, researchers wanted to know about the Economic processes that produced a Random walk. They concluded that randomness of stock price was a result of efficient market that led to the following view points:

- Information is freely and instantaneously available to all market participants.
- Keen competition among the market participants more or less ensures that market will reflect intrinsic values. This means that they will fully impound all available information.
- Price change only response to new information that is unrelated to previous information and therefore unpredictable.

2.3.2 Misconception about Efficient Market Theory: Though the Efficient Market Theory implies that market has perfect forecasting abilities, in fact, it merely signifies that prices impound all available information and as such does not mean that market possesses perfect forecasting abilities.

Although price tends to fluctuate they cannot reflect fair value. This is because the feature is uncertain and the market springs surprises continually as price reflects the surprises they fluctuate.

Inability of institutional portfolio managers to achieve superior investment performance implies that they lack competence in an efficient market. It is not possible to achieve superior investment performance since market efficiency exists due to portfolio managers doing this job well in a competitive setting.

The random movement of stock prices suggests that stock market is irrational. Randomness and irrational are two different things, if investors are rational and competitive, price changes are bound to be random.

2.3.3 Level of Market Efficiency: That price reflects all available information, the highest order of market efficiency. According to FAMA, there exist three levels of market efficiency:-

- (i) *Weak form efficiency* – Price reflect all information found in the record of past prices and volumes.
- (ii) *Semi – Strong efficiency* – Price reflect not only all information found in the record of past prices and volumes but also all other publicly available information.
- (iii) *Strong form efficiency* – Price reflect all available information public as well as private.

2.3.3.1 Empirical Evidence on Weak form Efficient Market Theory: According to the Weak form Efficient Market Theory current price of a stock reflect all information found in the record of past prices and volumes. This means that there is no relationship between the past and future price movements.

Three types of tests have been employed to empirically verify the weak form of Efficient Market Theory- Serial Correlation Test, Run Test and Filter Rule Test.

(a) Serial Correlation Test: To test for randomness in stock price changes, one has to look at serial correlation. For this purpose, price change in one period has to be correlated with price change in some other period. Price changes are considered to be serially independent. Serial correlation studies employing different stocks, different time lags and different time period have been conducted to detect serial correlation but no significant serial correlation could be discovered. These studies were carried on short term trends viz. daily, weekly, fortnightly and monthly and not in long term trends in stock prices as in such cases. Stock prices tend to move upwards.

(b) Run Test: Given a series of stock price changes each price change is designated + if it represents an increase and – if it represents a decrease. The resulting series may be - , +, - , - , - , +, +, +.

A run occurs when there is no difference between the sign of two changes. When the sign of change differs, the run ends and new run begins.

7.8 Strategic Financial Management

$$\frac{++}{1} / \frac{---}{2} / \frac{+}{3} / \frac{-}{4} / \frac{+}{5} / \frac{--}{6} \quad \frac{++}{1} / \frac{---}{2} / \frac{+}{3} / \frac{-}{4} / \frac{+}{5} / \frac{--}{6}$$

To test a series of price change for independence, the number of runs in that series is compared with a number of runs in a purely random series of the size and in the process determines whether it is statistically different. By and large, the result of these studies strongly supports the Random Walk Model.

(c) Filter Rules Test: If the price of stock increases by at least N% buy and hold it until its price decreases by at least N% from a subsequent high. When the price decreases at least N% or more, sell it. If the behaviour of stock price changes is random, filter rules should not apply in such a buy and hold strategy. By and large, studies suggest that filter rules do not out perform a single buy and hold strategy particular after considering commission on transaction.

2.3.3.2 Empirical Evidence on Semi-strong Efficient Market Theory: Semi-strong form efficient market theory holds that stock prices adjust rapidly to all publicly available information. By using publicly available information, investors will not be able to earn above normal rates of return after considering the risk factor. To test semi-strong form efficient market theory, a number of studies was conducted which lead to the following queries: Whether it was possible to earn on the above normal rate of return after adjustment for risk, using only publicly available information and how rapidly prices adjust to public announcement with regard to earnings, dividends, mergers, acquisitions, stock-splits?

Several studies support the Semi-strong form Efficient Market Theory. Fama, Fisher, Jensen and Roll in their adjustment of stock prices to new information examined the effect of stock split on return of 940 stock splits in New York Stock Exchange during the period 1957-1959 They found that prior to the split, stock earns higher returns than predicted by any market model.

Boll and Bound in an empirical evaluation of accounting income numbers studied the effect of annual earnings announcements. They divided the firms into two groups. First group consisted of firms whose earnings increased in relation to the average corporate earnings while second group consists of firms whose earnings decreased in relation to the average corporate earnings. They found that before the announcement of earnings, stock in the first group earned positive abnormal returns while stock in the second group earned negative abnormal returns after the announcement of earnings. Stock in both the groups earned normal returns.

There have been studies which have been empirically documented showing the following inefficiencies and anomalies:

- Stock price adjust gradually not rapidly to announcements of unanticipated changes in quarterly earnings.

- Small firms' portfolio seemed to outperform large firms' portfolio.
- Low price earning multiple stock tend to outperform large price earning multiple stock.
- Monday's return is lower than return for the other days of the week.

2.3.3.3 Empirical Evidence on Strong form Efficient Market Theory: According to the Efficient Market Theory, all available information, public or private, is reflected in the stock prices. This represents an extreme hypothesis.

To test this theory, the researcher analysed returns earned by certain groups viz. corporate insiders, specialists on stock exchanges, mutual fund managers who have access to internal information (not publicly available), or posses greater resource or ability to intensively analyse information in the public domain. They suggested that corporate insiders (having access to internal information) and stock exchange specialists (having monopolistic exposure) earn superior rate of return after adjustment of risk.

Mutual Fund managers do not on an average earn a superior rate of return. No scientific evidence has been formulated to indicate that investment performance of professionally managed portfolios as a group has been any better than that of randomly selected portfolios. This was the finding of Burton Malkiel in his Random Walk Down Wall Street, New York.

2.3.4 Challenges to the Efficient Market Theory: Information inadequacy – Information is neither freely available nor rapidly transmitted to all participants in the stock market. There is a calculated attempt by many companies to circulate misinformation.

(a) Limited information processing capabilities – Human information processing capabilities are sharply limited. According to Herbert Simon every human organism lives in an environment which generates millions of new bits of information every second but the bottle necks of the perceptual apparatus does not admit more than thousand bits per seconds and possibly much less.

David Dreman maintained that under conditions of anxiety and uncertainty, with a vast interacting information grid, the market can become a giant.

(b) Irrational Behaviour – It is generally believed that investors' rationality will ensure a close correspondence between market prices and intrinsic values. But in practice this is not true. J. M. Keynes argued that all sorts of consideration enter into the market valuation which is in no way relevant to the prospective yield. This was confirmed by L. C. Gupta who found that the market evaluation processes work haphazardly almost like a blind man firing a gun. The market seems to function largely on hit or miss tactics rather than on the basis of informed beliefs about the long term prospects of individual enterprises.

(c) Monopolistic Influence – A market is regarded as highly competitive. No single buyer or seller is supposed to have undue influence over prices. In practice, powerful institutions and big operators wield great influence over the market. The monopolistic power enjoyed by them diminishes the competitiveness of the market.

2.4 RANDOM WALK THEORY

Many investment managers and stock market analysts believe that stock market prices can never be predicted because they are not a result of any underlying factors but are mere statistical ups and downs. This hypothesis is known as Random Walk hypothesis which states that the behaviour of stock market prices is unpredictable and that there is no relationship between the present prices of the shares and their future prices. Proponents of this hypothesis argue that stock market prices are independent. A British statistician, M. G. Kendall, found that changes in security prices behave nearly as if they are generated by a suitably designed roulette wheel for which each outcome is statistically independent of the past history. In other words, the fact that there are peaks and troughs in stock exchange prices is a mere statistical happening – successive peaks and troughs are unconnected. In the layman's language it may be said that prices on the stock exchange behave exactly the way a drunk would behave while walking in a blind lane, i.e., up and down, with an unsteady way going in any direction he likes, bending on the side once and on the other side the second time.

The supporters of this theory put out a simple argument. It follows that:

- (a) Prices of shares in stock market can never be predicted.
- (b) The reason is that the price trends are not the result of any underlying factors, but that they represent a statistical expression of past data.
- (c) There may be periodical ups or downs in share prices, but no connection can be established between two successive peaks (high price of stocks) and troughs (low price of stocks).

2.5 MARKOWITZ MODEL OF RISK-RETURN OPTIMIZATION

Harry Markowitz is regarded as the father of modern portfolio theory. According to him, investors are mainly concerned with two properties of an asset: risk and return, but by diversification of portfolio it is possible to tradeoff between them. The essence of his theory is that risk of an individual asset hardly matters to an investor. What really matters is the contribution it makes to the investor's total risk. By turning his principle into a useful technique for selecting the right portfolio from a range of different assets, he developed 'Mean Variance Analysis' in 1952. The thrust has been on balancing safety, liquidity and return depending on the taste of different investors.

The portfolio selection problem can be divided into two stages, (1) finding the mean-variance efficient portfolios and (2) selecting one such portfolio. Investors do not like risk and the greater the riskiness of returns on an investment, the greater will be the returns expected by investors. There is a tradeoff between risk and return which must be reflected in the required rates of return on investment opportunities. The standard deviation (or variance) of return measures the total risk of an investment. It is not necessary for an investor to accept the total risk of an individual security. Investors can and do diversify to reduce risk. As number of holdings approach larger, a good deal of total risk is removed by diversification.

2.5.1 Assumptions of the Model: It is a common phenomenon that the diversification of investments in the portfolio leads to reduction in variance of the return, even for the same level of expected return. This model has taken into account risks associated with investments - using variance or standard deviation of the return. This model is based on the following assumptions. :

- (i) The return on an investment adequately summarises the outcome of the investment.
- (ii) The investors can visualise a probability distribution of rates of return.
- (iii) The investors' risk estimates are proportional to the variance of return they perceive for a security or portfolio.
- (iv) Investors base their investment decisions on two criteria i.e. expected return and variance of return.
- (v) All investors are risk averse. For a given expected return he prefers to take minimum risk, for a given level of risk the investor prefers to get maximum expected return.
- (vi) Investors are assumed to be rational in so far as they would prefer greater returns to lesser ones given equal or smaller risk and are risk averse. Risk aversion in this context means merely that, as between two investments with equal expected returns, the investment with the smaller risk would be preferred.
- (vii) 'Return' could be any suitable measure of monetary inflows like NPV but yield has been the most commonly used measure of return, so that where the standard deviation of returns is referred to it is meant the standard deviation of yield about its expected value.

2.5.2 Efficient Frontier: Markowitz has formalised the risk return relationship and developed the concept of efficient frontier. For selection of a portfolio, comparison between combinations of portfolios is essential. As a rule, a portfolio is not efficient if there is another portfolio with:

- a) A higher expected value of return and a lower standard deviation (risk).
- b) A higher expected value of return and the same standard deviation (risk)
- c) The same expected value but a lower standard deviation (risk)

7.12 Strategic Financial Management

Markowitz has defined the diversification as the process of combining assets that are less than perfectly positively correlated in order to reduce portfolio risk without sacrificing any portfolio returns. If an investors' portfolio is not efficient he may:

- i) Increase the expected value of return without increasing the risk.
- ii) Decrease the risk without decreasing the expected value of return, or
- iii) Obtain some combination of increase of expected return and decrease risk.

This is possible by switching to a portfolio on the efficient frontier.

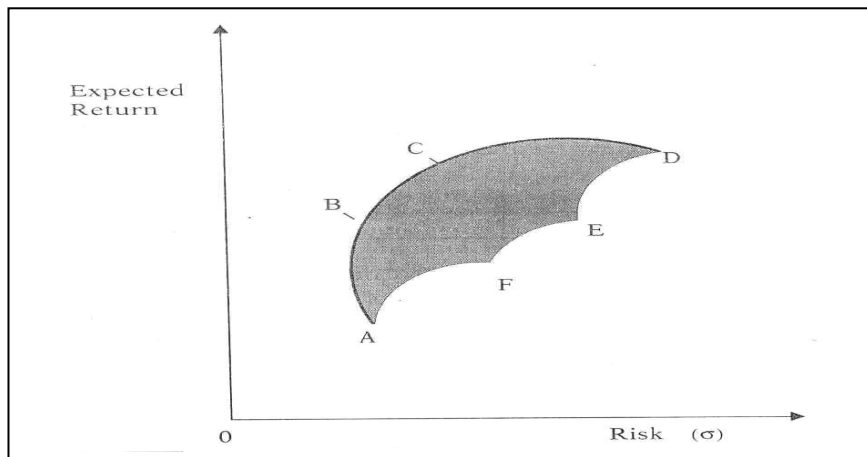


Fig. 1: MARKOWITZ EFFICIENT FRONTIER

If all the investments are plotted on the risk-return sphere, individual securities would be dominated by portfolios, and the efficient frontier would be taken shape indicating investments which yield maximum return given the level of risk bearable, or which minimizes risk given the expected level of return. Fig – 1 depicts the boundary of possible investments in securities, A, B, C, D, E and F; and B, C, D, are lying on the efficient frontier.

The best combination of expected value of return and risk (standard deviation) depends upon the investors' utility function. The individual investor will want to hold that portfolio of securities that places him on the highest indifference curves, choosing from the set of available portfolios. The dark line at the top of the set is the line of efficient combinations, or the efficient frontier. It depicts the tradeoff between risk and expected value of return.

The optimal investment achieved at a point where the indifference curve is at a tangent to the efficient frontier. This point reflects the risk level acceptable to the investor in order to achieve a desired return and provide maximum return for the bearable level of risk. The concept of efficient frontier and the optimal point location is explained with help of Fig -2.

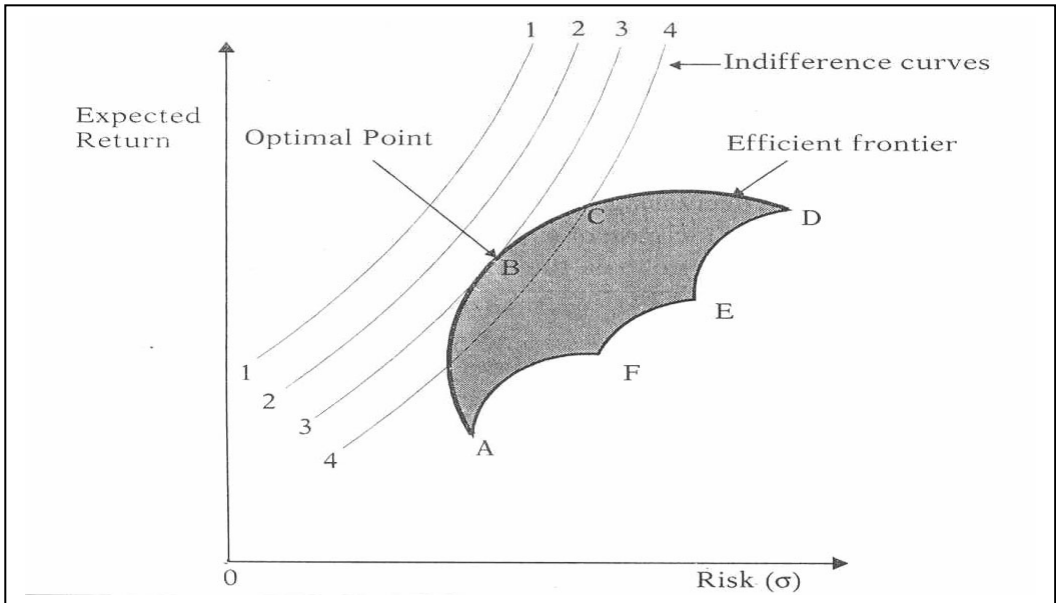


Fig . 2: OPTIMAL INVESTMENT UNDER MARKOWITZ MONDEL

In Fig-2 A, B, C, D, E and F define the boundary of all possible investments out of which investments in B, C and D are the efficient proposals lying on the efficient frontier. The attractiveness of the investment proposals lying on the efficient frontier depends on the investors' attitude to risk. At point B, the level of risk and return is at optimum level. The returns are highest at point D, but simultaneously it carries higher risk than any other investment.

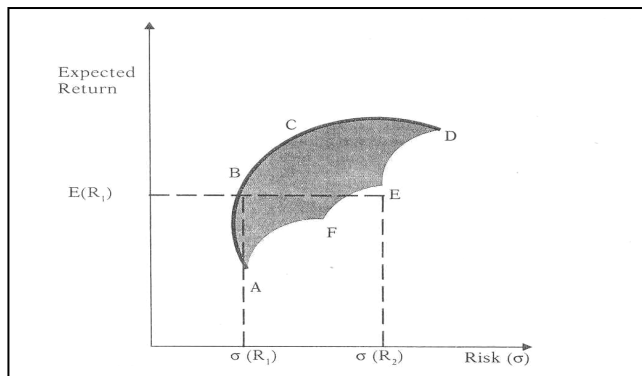


Fig.3 : SELECTION OF PORTFLIOS

The shaded area represents all attainable portfolios, that is all the combinations of risk and expected return which may be achieved with the available securities. The efficient frontier denotes all possible efficient portfolios and any point on the frontier dominates any point to the right of it.

7.14 Strategic Financial Management

Consider the portfolios represented by points B and E portfolios. B and E promise the same expected return $E(R_1)$ but the risk associated with B is $\sigma(R_1)$ whereas the associated with E is $\sigma(R_2)$. Investors, therefore, prefer portfolios on the efficient frontier rather than interior portfolios given the assumption of risk aversion; obviously, point A on the frontier represents the portfolio with the least possible risk, whilst D represents the portfolio with the highest possible rate of return with highest risk.

The investor has to select a portfolio from amongst all those represented by the efficient frontier. This will depend upon his risk-return preference. As different investors have different preferences with respect to expected return and risk, the optimal portfolio of securities will vary considerably among investors.

2.6 CAPITAL ASSET PRICING MODEL (CAPM)

The CAPM distinguishes between risk of holding a single asset and holding a portfolio of assets. There is a trade off between risk and return. Modern portfolio theory concentrates on risk and stresses on risk management rather than on return management. Risk may be security risk involving danger of loss of return from an investment in a single financial or capital asset. Security risk differs from portfolio risk, which is the probability of loss from investment in a portfolio of assets. Portfolio risk is comprised of unsystematic risk and systematic risk. Unsystematic risks can be averted through diversification and is related to random variables. Systematic risk is market related component of portfolio risk. It is commonly measured by regression coefficient Beta or the Beta coefficient. Low Beta reflects low risk and high Beta reflects high risk.

As the unsystematic risk can be diversified by building a portfolio, the relevant risk is the non-diversifiable component of the total risk. As mentioned earlier, it can be measured by using Beta (β) a statistical parameter which measures the market sensitivity of returns. The beta for the market is equal to 1.0. Beta explains the systematic relationship between the return on a security and the return on the market by using a simple linear regression equation. The return on a security is taken as a dependent variable and the return on market is taken as independent variable then $R_j = R_f + \beta (R_m - R_f)$. The beta parameter β in this William Sharpe model represents the slope of the above regression relationship and measures the sensitivity or responsiveness of the security returns to the general market returns. The portfolio beta is merely the weighted average of the betas of individual securities included in the portfolio. Portfolio beta $\beta = \sum \text{proportion of security} \times \text{beta for security}$.

CAPM provides a conceptual framework for evaluating any investment decision where capital is committed with a goal of producing future returns. CAPM is based on certain assumptions to provide conceptual framework for evaluating risk and return. Some of the important assumptions are discussed below:

- (i) **Efficient market:** It is the first assumption of CAPM. Efficient market refers to the existence of competitive market where financial securities and capital assets are bought and sold with full information of risk and return available to all participants. In an efficient market, the price of individual assets will reflect a real or intrinsic value of a share as the market prices will adjust quickly to any new situation, John J. Hampton has remarked in “Financial decision making” that although efficient capital market is not much relevant to capital budgeting decisions, but CAPM would be useful to evaluate capital budgeting proposal because the company can compare risk and return to be obtained by investment in machinery with risk and return from investment in securities.
- (ii) **Rational investment goals:** Investors desire higher return for any acceptable level of risk or the lowest risk for any desired level of return. Such a rational choice is made on logical and consistent ranking of proposals in order of preference for higher good to lower good and this is the scale of the marginal efficiency of capital. Beside, transactive preferences and certainty equivalents are other parameters of rational choice.
- (iii) Risk aversion in efficient market is adhered to although at times risk seeking behaviour is adopted for gains.
- (iv) CAPM assumes that all assets are divisible and liquid assets.
- (v) Investors are able to borrow freely at a risk less rate of interest i.e. borrowings can fetch equal return by investing in safe Government securities.
- (vi) Securities can be exchanged without payment of brokerage, commissions or taxes and without any transaction cost.
- (vii) Securities or capital assets face no bankruptcy or insolvency.

Based on above assumptions the CAPM is developed with the main goal to formulate the return required by investors from a single investment or a portfolio of assets. The required rate of return is defined as the minimum expected return needed so that investors will purchase and hold an asset.

Risk and return relationship in this model stipulates higher return for higher level of risk and *vice versa*. However, there may be exception to this general rule where markets are not efficient.

Three aspects are worth consideration:

- (a) Stock market is not concerned with diversifiable risk
- (b) It is not concerned with an investor having a diversified portfolio
- (c) Compensation paid is restricted to non-diversifiable risk.

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Thus an investor has to look into the non-diversifiable portion of risk on one side and returns on the other side. To establish a link between the two, the required return one expects to get for a given level of risk has been mandated by the Capital Asset Pricing Model.

If the risk free investment R_f is 5%, an investor can earn this return of 5% by investing in risk free investment. Again if the stock market earns a rate of return R_m which is 15% then an investor investing in stocks constituting the stock market index will earn also 15%. Thus the excess return earned over and above the risk free return is called the risk premium ($R_m - R_f$) ie (15% - 5%) = 10% which is the reward for undertaking risk, So, if an investment is as risky as the stock market, the risk premium to be earned is 10%.

If an investment is 30% riskier than the stock market, it would carry risk premium i.e. 30% more than the risk premium of the stock market i.e. 10% + 30% of 10% = 10% + 3% = 13%. β identifies how much more risky is an investment with reference to the stock market. Hence the risk premium that a stock should earn is β times the risk premium from the market [$\beta \times (R_m - R_f)$]. The total return from an investment is the risk free rate of return plus the risk premium. So the required return from a stock would be $R_j = R_f + [\beta \times (R_m - R_f)]$. In the above example $5\% + 1.3 \times (15-5) = 18\%$

The risk premium on a stock varies in direct proportion to its Beta. If the market risk premium is 6% and β of a stock is 1.2 then the risk premium for that stock is 7.2% ($6\% \times 1.2$) where ($R_m - R_f$) = 6% and $\beta = 1.2$

Illustration 1: A company's beta is 1.40. The market return is 14%. The risk free rate is 10% (i) What is the expected return based on CAPM (ii) If the risk premium on the market goes up by 2.5% points, what would be the revised expected return on this stock?

Solution

(i) Computation of expected return based on CAPM

$$\begin{aligned} R_j &= R_f + \beta (R_m - R_f) \\ &= 10\% + 1.40 (14\% - 10\%) = 10\% + 5.6\% = 15.6\% \end{aligned}$$

(ii) Computation of risk premium if the market goes up by 2.5 points

The return from the market goes up by 2.5% i.e. $14\% + 2.5\% = 16.5\%$

Expected Return based on CAPM is given by

$$\begin{aligned} R_j &= 10\% + 1.40 (16.5\% - 10\%) = 10\% + 1.40 \times 6.5\% \\ &= 10\% + 9.1\% = 19.1\% \end{aligned}$$

2.6.1 Security Market Line: A graphical representation of CAPM is the Security Market Line, (SML). This line indicates the rate of return required to compensate at a given level of risk. Plotting required return on Y axis and Beta on the X-axis we get an upward sloping line which is given by ($R_m - R_f$), the risk premium.

The higher the Beta value of a security, higher would be the risk premium relative to the market. This upward sloping line is called the Security Market Line. It measures the relationship between systematic risk and return.

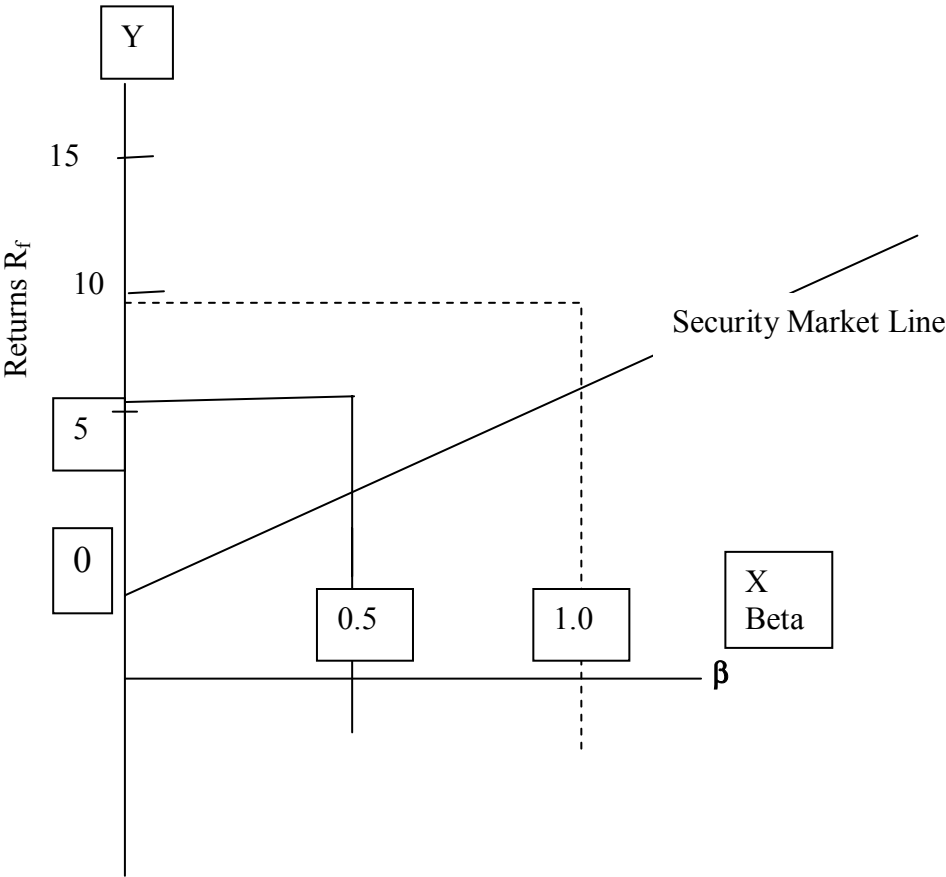


Illustration 2: The risk premium for the market is 10%. Assuming Beta values of 0, 0.25, 0.42, 1.00 and 1.67. Compute the risk premium on Security K

Solution

Market Risk Premium is 10%

β Value of K	Risk Premium of K
0.00	0%
0.25	2.50%
0.42	4.20%
1.00	10.00%
1.67	16.70%

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Illustration 3: Treasury Bills give a return of 5%. Market Return is 13% (i) What is the market risk premium (ii) Compute the β Value and required returns for the following combination of investments.

Treasury Bill	100	70	30	0
Market	0	30	70	100

Solution

Risk Premium $R_m - R_f = 13\% - 5\% = 8\%$

β is the weighted average investing in portfolio consisting of market $\beta = 1$ and treasury bills ($\beta = 0$)

Portfolio	Treasury Bills: Market	β	$R_j = R_f + \beta \times (R_m - R_f)$
1	100:0	0	$5\% + 0(13\%-5\%)=5\%$
2	70:30	$0.7(0)+0.3(1)=0.3$	$5\%+0.3(13\%-5\%)=7.40\%$
3	30:70	$0.3(0)+0.7(1)=0.7$	$5\%+0.7(13\%-5\%)=10.60\%$
4	0:100	1	$5\%+1.0(13\%-5\%)=13\%$

2.6.2 Risk free Rate of Return: In CAPM, there is only one risk free rate. It presumes that the returns on a security include both directed payments and capital appreciation. These require to be factored in judging the value of Beta and in computing the required rate of return.

Illustration 4: Pearl Ltd. expects that considering the current market prices, the equity share holders should get a return of at least 15.50% while the current return on the market is 12%. RBI has closed the latest auction for Rs 2500 crores of 182 day bills for the lowest bid of 4.3% although there were bidders at a higher rate of 4.6% also for lots of less than Rs 10 crores. What is Pearl Ltd's Beta?

Solution

Determining Risk free rate

Two risk free rates are given. The aggressive approach would be to consider 4.6% while the conservative approach would be to take 4.3%. If we take the moderate value then the simple average of the two i.e. 4.45% would be considered

Application of CAPM

$$R_j = R_f + \beta (R_m - R_f)$$

$$15.50\% = 4.45\% + \beta (12\% - 4.45\%)$$

$$\beta = \frac{15.50\% - 4.45\%}{(12\% - 4.45\%)} = \frac{11.05}{7.55} = 1.464$$

Illustration 5: The following information is available with respect of Jaykay Ltd.

Year	Jay Kay Limited		Market		Return on Govt. Bonds
	Average Share Price (Rs.)	DPS (Rs.)	Average Index	Dividend Yield (%)	
2002	242	20	1812	4	6
2003	279	25	1950	5	5
2004	305	30	2258	6	4
2005	322	35	2220	7	5

Compute Beta Value of the company as at the end of 2005. What is your observation?

Solution

Computation of Beta Value

Calculation of Returns

$$\text{Returns} = \frac{D_1 + (P_1 - P_0)}{P_0} \times 100$$

Year

Returns

$$2002 - 2003 \quad \frac{25 + (279 - 242)}{242} \times 100 = 25.62\%$$

$$2003 - 2004 \quad \frac{30 + (305 - 279)}{279} \times 100 = 20.07\%$$

$$2004 - 2005 \quad \frac{35 + (322 - 305)}{305} \times 100 = 17.05\%$$

Calculation of Returns from market Index

Year	% of Index Appreciation	Dividend Yield %	Total Return %
2002 – 2003	$\frac{1950-1812}{1812} \times 100 = 7.62\%$	5%	12.62%
2003 – 2004	$\frac{2258-1950}{1950} \times 100 = 15.79\%$	6%	21.79%
2004 – 2005	$\frac{2220-2258}{2258} \times 100 = (-)1.68\%$	7%	5.32%

Computation of Beta

Year	X	Y	XY	Y ²
2002-2003	25.62	12.62	323.32	159.26
2003-2004	20.07	21.79	437.33	474.80
2004-2005	17.05	5.32	90.71	28.30
	62.74	39.73	851.36	662.36

$$\bar{X} = \frac{62.74}{3} = 20.91, \quad \bar{Y} = \frac{39.73}{3} = 13.24$$

$$\begin{aligned} \beta &= \frac{\sum XY - n \bar{X} \bar{Y}}{\sum Y^2 - n \bar{Y}^2} \\ &= \frac{851.36 - 3(20.91)(13.24)}{662.36 - 3(13.24)^2} \\ &= \frac{851.36 - 830.55}{662.36 - 525.89} = \frac{20.81}{136.47} = 0.15 \end{aligned}$$

2.6.3 Under Valued and Over Valued Stocks: The CAPM model can be practically used to buy, sell or hold stocks. CAPM provides the required rate of return on a stock after considering the risk involved in an investment. Based on current market price or any other judgmental factors (benchmark) one can identify as to what would be the expected return over a period of time. By comparing the required return with the expected return the following investment decisions are available

(a) When CAPM < Expected Return – Buy

This is due to the stock being undervalued i.e. the stock gives more return than what it should give.

(b) When CAPM > Expected Return – Sell

This is due to the stock being overvalued i.e. the stock gives less return than what it should give.

(c) When CAPM = Expected Return – Hold

This is due to the stock being correctly valued i.e. the stock gives same return than what it should give.

From another angle, if the current market price is considered as a basis of CAPM then:

- (i) Actual Market Price < CAPM, stock is undervalued
- (ii) Actual market Price > CAPM, stock is overvalued
- (iii) Actual market Price = CAPM, stock is correctly valued.

Illustration 6: The expected returns and Beta of three stocks are given below

Stock	A	B	C
Expected Return (%)	18	11	15
Beta Factor	1.7	0.6	1.2

If the risk free rate is 9% and the expected rate of return on the market portfolio is 14% which of the above stocks are over, under or correctly valued in the market? What shall be the strategy?

Solution

Required Rate of Return is given by

$$R_j = R_f + \beta (R_m - R_f)$$

For Stock A, $R_j = 9 + 1.7 (14 - 9) = 17.50\%$

Stock B, $R_j = 9 + 0.6 (14 - 9) = 12.00\%$

Stock C, $R_j = 9 + 1.2 (14 - 9) = 15.00\%$

Required Return %	Expected Return %	Valuation	Decision
17.50%	18.00%	Under Valued	Buy
12.00%	11.00%	Over Valued	Sell
15.00%	15.00%	Correctly Valued	Hold

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Illustration 7: Information about return on an investment is as follows:

- (a) Risk free rate 10% (b) Market Return is 15% (c) Beta is 1.2
- (i) What would be the return from this investment?
 - (ii) If the projected return is 18%, is the investment rightly valued?
 - (iii) What is your strategy?

Solution

Required rate of Return as per CAPM is given by

$$\begin{aligned} R_j &= R_f + \beta (R_m - R_f) \\ &= 10 + 1.2 (15 - 10) = 16\% \end{aligned}$$

If projected return is 18%, the stock is undervalued as $CAPM < \text{Expected Return}$. The Decision should be BUY.

2.6.4 Advantages and Limitations of CAPM: The advantages of CAPM can be listed as:

- (i) *Risk Adjusted Return:* It provides a reasonable basis for estimating the required return on an investment which has risk built into it. Hence it can be used as Risk Adjusted Discount Rate in Capital Budgeting.
- (ii) *No Dividend Company:* It is useful in computing the cost of equity of a company which does not declare dividend.

There are certain limitations of CAPM as well, which are discussed as follows:

- (a) *Reliability of Beta:* Statistically reliable Beta might not exist for shares of many firms. It may not be possible to determine the cost of equity of all firms using CAPM. All shortcomings that apply to Beta value applies to CAPM too.
- (b) *Other Risks:* By emphasizing on systematic risk only, unsystematic risks are of importance to share holders who do not possess a diversified portfolio.
- (c) *Information Available:* It is extremely difficult to obtain important information on risk free interest rate and expected return on market portfolio as there is multiple risk free rates for one while for another, markets being volatile it varies over time period.

2.7 ARBITRAGE PRICING THEORY MODEL (APT)

Unlike the CAPM which is a single factor model, the APT is a multi factor model having a whole set of Beta Values – one for each factor. Arbitrage Pricing Theory states that the expected return on an investment is dependent upon how that investment reacts to a set of individual macro-economic factors (degree of reaction measured by the Betas) and the risk premium associated with each of those macro – economic factors. The APT developed by Ross (1976) holds that there are four factors which explain the risk premium

relationship of a particular security. Several factors being identified e.g. inflation and money supply, interest rate, industrial production and personal consumption have aspects of being inter-related.

According to CAPM, $E(R_i) = R_f + \lambda_1 + \lambda_2 + \lambda_3 + \lambda_4 + \lambda \beta_i$

Where, λ is the average risk premium $[E(R_m) - R_f]$

In APT, $E(R_i) = R_f + \lambda_1 \beta_{i_1} + \lambda_2 \beta_{i_2} + \lambda_3 \beta_{i_3} + \lambda_4 \beta_{i_4}$

Where, $\lambda_1, \lambda_2, \lambda_3, \lambda_4$ are average risk premium for each of the four factors in the model and $\beta_{i_1}, \beta_{i_2}, \beta_{i_3}, \beta_{i_4}$ are measures of sensitivity of the particular security i to each of the four factors.

2.8 SHARPE INDEX MODEL

William Sharpe has developed a simplified variant of Markowitz model that reduces substantially its data and computational requirements. It is known as Single index model or One- factor analysis.

2.8.1 Single Index Model: Casual observation of the stock prices over a period of time reveals that most of the stock prices move with the market index. When the Sensex increases, stock prices also tend to increase and vice-versa. This indicates that some underlying factors affect the market index as well as the stock prices. Stock prices are related to the market index and this relationship could be used to estimate the return on stock. Towards this purpose, the following equation can be used:

$$R_i = \alpha_i + \beta_i R_m + \epsilon_i$$

Where,

R_i = expected return on security i

α_i = intercept of the straight line or alpha co-efficient

β_i = slope of straight line or beta co-efficient

R_m = the rate of return on market index

ϵ_i = error term.

According to the equation, the return of a stock can be divided into two components, the return due to the market and the return independent of the market. β_i indicates the sensitiveness of the stock return to the changes in the market return. For example, β_i of 1.5 means that the stock return is expected to increase by 1.5 % when the market index

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return increases by 1 % and vice-versa. Likewise, β_i of 0.5 expresses that the individual stock return would change by 0.5 per cent when there is a change of 1 per cent in the market return. β_i of 1 indicates that the market return and the security return are moving in tandem. The estimates of β_i and α_i are obtained from regression analysis.

The single index model is based on the assumption that stocks vary together because of the common movement in the stock market and there are no effects beyond the market (i.e. any fundamental factor effects) that account the stocks co-movement. The expected return, standard deviation and co-variance of the single index model represent the joint movement of securities. The mean return is:

$$R_i = \alpha_i + \beta_i R_m + \epsilon_i$$

The variance of security's return:

$$\sigma^2 = \beta_i^2 \sigma_m^2 + \sigma_{\epsilon_i}^2$$

The covariance of returns between securities i and j is:

$$\sigma_{ij} = \beta_i \beta_j \sigma_m^2$$

The variance of the security has two components namely, systematic risk or market risk and unsystematic risk or unique risk. The variance explained by the index is referred to systematic risk. The unexplained variance is called residual variance or unsystematic risk.

Systematic risk = $\beta_i^2 \times$ variance of market index

$$= \beta_i^2 \sigma_m^2$$

Unsystematic risk = Total variance - Systematic risk.

$$\epsilon_i^2 = \sigma_i^2 - \text{Systematic risk.}$$

Thus, the total risk = Systematic risk + Unsystematic risk.

$$= \beta_i^2 \sigma_m^2 + \epsilon_i^2.$$

From this, the portfolio variance can be derived

$$\sigma_p^2 = \left[\left(\sum_{i=1}^N X_i \beta_i \right)^2 \sigma_m^2 \right] + \left[\left(\sum_{i=1}^N X_i^2 \epsilon_i^2 \right) \right]$$

Where,

$$\sigma_p^2 = \text{variance of portfolio}$$

$$\sigma_m^2 = \text{expected variance of index}$$

$$\epsilon_i^2 = \text{variation in security's return not related to the market index}$$

$$X_i = \text{the portion of stock i in the portfolio.}$$

Likewise expected return on the portfolio also can be estimated. For each security α_i and β_i should be estimated.

$$R_p = \sum_{i=1}^N x_i (\alpha_i + \beta_i R_m)$$

Portfolio return is the weighted average of the estimated return for each security in the portfolio. The weights are the respective stocks' proportions in the portfolio.

A portfolio's alpha value is a weighted average of the alpha values for its component securities using the proportion of the investment in a security as weight.

$$\sigma_p = \sum_{i=1}^N x_i \alpha_i$$

β_p = Value of the alpha for the portfolio

x_i = Proportion of the investment on security i

α_i = Value of alpha for security i

N = The number of securities in the portfolio

Similarly, a portfolio's beta value is the weighted average of the beta values of its component stocks using relative share of them in the portfolio as weights.

$$\sigma_p = \sum_{i=1}^N x_i \beta_i$$

Where,

β_p is the portfolio beta.

Illustration 8: The following details are given for X and Y companies' stocks and the Bombay Sensex for a period of one year. Calculate the systematic and unsystematic risk for the companies' stocks. If equal amount of money is allocated for the stocks what would be the portfolio risk?

	<i>X Stock</i>	<i>Y Stock</i>	<i>Sensex</i>
Average return	0.15	0.25	0.06
Variance of return	6.30	5.86	2.25
β	0.71	0.27	
Correlation Co-efficient	0.424		
Co-efficient of determination (r^2)	0.18		

Solution

The co-efficient of determination (r^2) gives the percentage of the variation in the security's return that is explained by the variation of the market index return. In the X company stock return, 18 per cent of variation is explained by the variation of the index and 82 per cent is not explained by the index.

Explained by the index = variance of security return x co-efficient of determination

$$= 6.3 \times 0.18 = 1.134$$

Not explained by the index = Variance of security return $\times (1 - r^2)$

$$= 6.3 \times (1 - 0.18)$$

$$= 6.3 \times 0.82 = 5.166$$

According to Sharpe, the variance explained by the index is the systematic risk. The unexplained variance or the residual variance is the unsystematic risk.

Company X:

$$\begin{aligned} \text{Systematic risk} &= \beta^2 \times \text{Variance of market index} \\ &= (0.71)^2 \times 2.25 \\ &= 1.134 \end{aligned}$$

Unsystematic risk = Total variance of security return - systematic risk

$$\begin{aligned} &= \epsilon_i^2 - \text{Systematic risk} \\ &= 6.3 - 1.134 \\ &= 5.166 \end{aligned}$$

$$\begin{aligned} \text{Total risk} &= \beta_i^2 \times \sigma_m^2 + \epsilon_i^2 \\ &= 1.134 + 5.166 \\ &= 6.3 \end{aligned}$$

Company Y:

$$\begin{aligned} \text{Systematic risk} &= \beta_i^2 \times \sigma_m^2 \\ &= (0.27)^2 \times 2.25 \\ &= 0.1640 \end{aligned}$$

Unsystematic risk = Total variance of the security return - systematic risk.

$$= 5.86 - 0.1640$$

$$= 5.696$$

$$\sigma_p^2 = \left[\left(\sum_{i=1}^N X_i \beta_i \right)^2 \sigma_m^2 \right] + \left[\left(\sum_{i=1}^N X_i^2 \epsilon_i^2 \right) \right]$$

$$= [(.5 \times .71 + .5 \times .27)^2 2.25] + [(.5)^2(5.166) + (.5)^2(5.696)]$$

$$= [(.355 + .135)^2 2.25] + [(1.292 + 1.424)]$$

$$= 0.540 + 2.716$$

$$= 3.256$$

2.8.2 Sharpe's Optimal Portfolio: Sharpe had provided a model for the selection of appropriate securities in a portfolio. The selection of any stock is directly related to its excess return-beta ratio.

$$\frac{R_i - R_f}{\beta_i}$$

Where,

R_i = Expected return on stock i

R_f = Return on a risk less asset

β_i = Expected change in the rate of return on stock i associated with one unit change in the market return

The excess return is the difference between the expected return on the stock and the risk less rate of interest such as the rate offered on the government security or treasury bill. The excess return to beta ratio measures the additional return on a security (excess of the risk less asset return) per unit of systematic risk or non-diversifiable risk. This ratio provides a relationship between potential risk and reward.

Ranking of the stocks are done on the basis of their excess return to beta. Portfolio managers would like to include stocks with higher ratios. The selection of the stocks depends on a unique cut-off rate such that all stocks with higher ratios of $R_i - R_f / \beta_i$ are included and the stocks with lower ratios are left off. The cut-off point is denoted by C^* .

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The steps for finding out the stocks to be included in the optimal portfolio are given below:

- Find out the “excess return to beta” ratio for each stock under consideration.
- Rank them from the highest to the lowest.
- Proceed to calculate C_i for all the stocks according to the ranked order using the following formula:

$$C_i = \frac{\sigma_m^2 \sum_{i=1}^N \frac{(R_i - R_f) \beta_i}{\sigma_{ei}^2}}{1 + \sigma_m^2 \sum_{i=1}^N \frac{\beta_i^2}{\sigma_{ei}^2}}$$

Where,

σ_m^2 = variance of the market index

σ_{ei}^2 = variance of a stock's movement that is not associated with the movement of market index i.e. stock's unsystematic risk.

The cumulated values of C_i start declining after a particular C_i and that point is taken as the cut-off point and that stock ratio is the cut-off ratio C . This is explained with the help of an example.

Illustration 9: Data for finding out the optimal portfolio are given below:

Security Number	Mean Return R_i	Excess Return $R_i - R_f$	Beta β	Unsystematic Risk σ_{ei}^2	Excess Return to Beta $\frac{R_i - R_f}{\beta_i}$
1	19	14	1.0	20	14
2	23	18	1.5	30	12
3	11	6	0.5	10	12
4	25	20	2.0	40	10
5	13	8	1.0	20	8
6	9	4	0.5	50	8
7	14	9	1.5	30	6

The riskless rate of interest is 5 per cent and the market variance is 10. Determine the cut-off point.

Solution

Security	$\frac{R_i - R_f}{\beta_i}$	$\frac{(R_i - R_f) \times \beta_i}{\sigma_{ei}^2}$	$\sum_{i=1}^N \frac{(R_i - R_f) \times \beta_i}{\sigma_{ei}^2}$	$\frac{\beta_i^2}{\sigma_{ei}^2}$	$\sum_{i=1}^N \frac{\beta_i^2}{\sigma_{ei}^2}$	C_i
Number 1	2	3	4	5	6	7
1	14	0.7	0.7	0.05	0.05	4.67
2	12	0.9	1.6	0.075	0.125	7.11
3	12	0.3	1.9	0.025	0.15	7.60
4	10	1.0	2.9	0.1	0.25	8.29
5	8	0.4	3.3	0.05	0.3	8.25
6	8	0.04	3.34	0.005	0.305	8.25
7	6	0.45	3.79	0.075	0.38	7.90

' C_i ' calculations are given below:

For Security 1

$$C_1 = \frac{10 \times 0.7}{1 + 10(0.05)} = 4.67$$

Here 0.7 is got from column 4 and 0.05 from column 6. Since the preliminary calculations are over, it is easy to calculate the C_i .

$$C_2 = \frac{10 \times 1.6}{1 + 10(0.125)} = 7.11$$

$$C_3 = \frac{10 \times 1.9}{1 + 10(0.15)} = 7.6$$

$$C_4 = \frac{10 \times 2.9}{1 + 10(0.25)} = 8.29$$

$$C_5 = \frac{10 \times 3.3}{1 + 10(0.3)} = 8.25$$

$$C_6 = \frac{10 \times 3.34}{1 + 10(0.305)} = 8.25$$

$$C_7 = \frac{10 \times 3.79}{1 + 10(0.38)} = 7.90$$

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The highest C_i value is taken as the cut-off point i.e. C^* . The stocks ranked above C^* have high excess returns to beta than the cut-off C and all the stocks ranked below C^* have low excess returns to beta. Here, the cut-off rate is 8.29. Hence, the first four securities are selected. If the number of stocks is larger there is no need to calculate C_i values for all the stocks after the ranking has been done. It can be calculated until the C^* value is found and after calculating for one or two stocks below it, the calculations can be terminated.

The C_i can be stated in a mathematically equivalent way:

$$C_i = \frac{\beta_{ip}(R_p - R_f)}{\beta_i}$$

Where,

β_{ip} = The expected change in the rate of return on stock i associated with 1 per cent change in the return on the optimal portfolio.

R_p = The expected return on the optimal portfolio.

β_{ip} and R_p cannot be determined until the optimal portfolio is found. To find out the optimal portfolio, the formula given previously should be used. Securities are added to the portfolio as long as

$$\frac{R_i - R_f}{\beta_i} > C_i$$

The above equation can be rearranged with the substitution of equation:

$$C_i = \frac{\beta_{ip}(R_p - R_f)}{\beta_i}$$

Now we have,

$$R_i - R_f > \beta_{ip}(R_p - R_f)$$

The right hand side is the expected excess return on a particular stock based on the expected performance of the optimum portfolio. The term on the left hand side is the expected excess return on the individual stock. Thus, if the portfolio manager believes that a particular stock will perform better than the expected return based on its relationship to optimal portfolio, he would add the stock to the portfolio.

3. PORTFOLIO MANAGEMENT

The objective of portfolio management is to achieve the maximum return from a portfolio which has been delegated to be managed by an individual manager or a financial institution. The manager has to balance the parameters which define a good investment i.e. security, liquidity and return. The goal is to obtain the highest return for the investor of the portfolio.

3.1 OBJECTIVES OF PORTFOLIO MANAGEMENT

Some of the important objectives of portfolio management are:

- (i) **Security/Safety of Principal:** Security not only involves keeping the principal sum intact but also keeping intact its purchasing power.
- (ii) **Stability of Income:** To facilitate planning more accurately and systematically the reinvestment or consumption of income.
- (iii) **Capital Growth:** It can be attained by reinvesting in growth securities or through purchase of growth securities.
- (iv) **Marketability i.e. the case with which a security can be bought or sold:** This is essential for providing flexibility to investment portfolio.
- (v) **Liquidity i.e. nearness to money:** It is desirable for the investor so as to take advantage of attractive opportunities upcoming in the market.
- (vi) **Diversification:** The basic objective of building a portfolio is to reduce the risk of loss of capital and/or income by investing in various types of securities and over a wide range of industries.
- (vii) **Favourable Tax Status:** The effective yield an investor gets from his investment depends on tax to which it is subject. By minimising the tax burden, yield can be effectively improved.

3.2 ACTIVITIES IN PORTFOLIO MANAGEMENT

The following three major activities are involved in an efficient portfolio management:

- (a) Identification of assets or securities, allocation of investment and identifying asset classes.
- (b) Deciding about major weights/proportion of different assets/securities in the portfolio.
- (c) Security selection within the asset classes as identified earlier.

The activities are directed to achieve the sole purpose of maximising return and minimising risk in the investments. This will however be depending upon the class of assets chosen for investment.

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The foregoing table gives a bird's view of various parameters attached with different classes of assets/securities return wise for the easy understanding of students.

The table shows that the degree of risk varies according to the class of assets/securities etc. It is also well known by now that the portfolio manager envisages balancing the risk and return in a portfolio investment. With higher risk, higher returns may be expected and vice-versa. However, before we proceed further, let us have a look on the composite risks involving the different risks as indicated below:

(i) **Interest Rate Risk:** This arises due to variability in the interest rates from time to time. A change in the interest rates establishes an inverse relationship in the price of security i.e. price of securities tends to move inversely with change in rate of interest, long term securities show greater variability in the price with respect to interest rate changes than short term securities. Interest rate risk vulnerability for different securities is as under:

<i>Types</i>	<i>Risk extent</i>
Cash equivalent	Less vulnerable to interest rate risk.
Long term bonds	More vulnerable to interest rate risk.

TABLE 1

Class	Type of Security	Period of	Return Maturity	Certainty Shape	Tax of Return	Risk Structure
1. Fixed income class	(a) Bonds/debentures					
	- Govt. Bonds	Long	Interest coupon	Definite	Tax relief	No
	- Local Authority Bonds	Long	-Do-	-Do-	-Do-	No
	- Public Sector Bonds	Long	-Do-	-Do-	-Do-	No
	(b) Corporate debentures	Long	-Do-	High	Taxable	Medium
	Preference stock					
2. Non-specific income	- Redeemable	Long	Dividend	High	Taxable	Medium
	- Non-redeemable	Perpetual	-Do-	Moderately High		
	- Equity	Perpetual	Dividend and capital gains	Least	Tax relief	High
3. Cash equivalent	- Treasury bills	Short	Discount	High	Taxable	Low
	- Commercial papers					

Note : Risk column covers all the following types of risks :

- Interest rate risk.
- Purchasing power risk.
- Business risk.
- Financial risk.

(Source : Merchant Banking - Dr. J. C. Verma).

(ii) **Purchasing Power Risk:** It is also known as inflation risk, as it also emanates from the very fact that inflation affects the purchasing power adversely. Nominal return contains both the real return component and an inflation premium in a transaction involving risk of the above type to compensate for inflation over an investment holding period. Inflation rates vary over time and investors are caught unaware when rate of inflation changes unexpectedly causing erosion in the value of realised rate of return and expected return.

Purchasing power risk is more in inflationary conditions especially in respect of bonds and fixed income securities. It is not desirable to invest in such securities during inflationary periods. Purchasing power risk is however, less in flexible income securities like equity shares or common stock where rise in dividend income off-sets increase in the rate of inflation and provides advantage of capital gains.

(iii) **Business Risk:** Business risk emanates from sale and purchase of securities affected by business cycles, technological changes etc. Business cycles affect all types of securities viz. there is cheerful movement in boom due to bullish trend in stock prices whereas bearish trend in depression brings down fall in the prices of all types of securities. Flexible income securities are more affected than fixed rate securities during depression due to decline in their market price.

(iv) **Financial Risk:** It arises due to changes in the capital structure of the company. It is also known as leveraged risk and expressed in terms of debt-equity ratio. Excess of debt vis-à-vis equity in the capital structure indicates that the company is highly geared. Although a leveraged company's earnings per share are more but dependence on borrowings exposes it to the risk of winding-up for its inability to honour its commitments towards lenders/creditors. This risk is known as leveraged or financial risk of which investors should be aware and portfolio managers should be very careful.

3.3 BASIC PRINCIPLES OF PORTFOLIO MANAGEMENT

There are two basic principles for effective portfolio management:

(i) **Effective investment planning for the investment in securities by considering the following factors:**

- (a) Fiscal, financial and monetary policies of the Government of India and the Reserve Bank of India.
- (b) Industrial and economic environment and its impact on industry prospects in terms of prospective technological changes, competition in the market, capacity utilisation with industry and demand prospects etc.

(ii) **Constant review of investment:** *Portfolio managers are required to review their investment in securities and continue selling and purchasing their investment in*

more profitable avenues. For this purpose they will have to carry the following analysis:

- (a) Assessment of quality of management of the companies in which investment has already been made or is proposed to be made.
- (b) Financial and trend analysis of companies' balance sheets/profit and loss accounts to identify sound companies with optimum capital structure and better performance and to disinvest the holding of those companies whose performance is found to be slackening.
- (c) The analysis of securities market and its trend is to be done on a continuous basis.

The above analysis will help the portfolio manager to arrive at a conclusion as to whether the securities already in possession should be disinvested and new securities be purchased. If so, the timing for investment or dis-investment is also revealed.

3.4 FACTORS AFFECTING INVESTMENT DECISIONS IN PORTFOLIO MANAGEMENT

Given a certain amount of funds, the investment decision basically depends upon the following factors:

(a) Objectives of Investment Portfolio: This is the crucial point which a finance manager must consider. There can be many objectives of making an investment. The manager of a provident fund portfolio has to look for security (low risk) and may be satisfied with none too high a return. An aggressive investment company may, however, be willing to take high risk in order to have high capital appreciation. How the objectives can affect in investment decision can be seen from the fact that the Unit Trust of India has two major schemes: Its capital units are meant for those who wish to have a good capital appreciation and a moderate return. The ordinary units are meant to provide a steady return only. The investment managers, under both the schemes, will invest the funds of the Trust in different kinds of shares and securities.

It is obvious, therefore, that the objectives must be clearly defined before an investment decision is taken. It is on the basis of the objectives that a finance manager decides upon the type of investment to be purchased.

The objectives of an investment portfolio are normally expressed in terms of risk and return. As already mentioned, risk and return have direct relationships. Higher the return that one wishes to have from the investment portfolio, higher could be the risk that one has to take. Thus, if one wishes to double his investment in one year, he can attempt the same by purchasing high risk shares, in which case there is a great amount of risk that he may even lose his initial investment itself.

(b) Selection of Investment: Having defined the objectives of the investment portfolio, the next decision is to decide upon the kind of investment which should be purchased. The decision '*what to buy*' is crucial decision and has to be seen in the context of the following:

- (i) What types of securities to buy or invest in? There is a wide variety of investments available, i.e. debentures, convertible bonds, preference shares, equity shares, Government securities and bonds, units, capital units, etc.
- (ii) What should be the proportion of investment in fixed interest dividend securities and variable dividend bearing securities? Obviously, the fixed interest bearing securities ensure a definite return and thus a lower risk but the return is usually not as higher as that from the variable dividend bearing shares.
- (iii) In case investments are to be made in the shares or debentures of companies, which particular industries show a potential of growth? Industry-wise-analysis is important since various industries are not at the same level from the investment point of view. It is important to recognise that at a particular point of time, a particular industry may have a better growth potential than other industries. For example, there was a time when jute industry was in great favour with the investors because of its growth potential and high profitability. However, with the fall in profitability and the advent of substitute products, the jute industry is no longer, at this point of time, considered as a growth-oriented industry and the likelihood of appreciation in the value of these shares is not considered to be high.
- (iv) Once industries with high growth potential have been identified, the next step is to select the particular companies, in whose shares or securities investments are to be made.

(c) Timing of Purchases: The timing of buying and selling the securities, especially shares, is of crucial importance. Even if one can identify correctly the companies in whose shares the investments are to be made, one may lose money if the timing is bad due to wide fluctuation in the price of shares. At what price the share is acquired for the portfolio, therefore, depends entirely on the timing decision.

The decision regarding timing of purchases is particularly difficult because of certain psychological factors. It is obvious that if a person wishes to make any gains, he should "buy cheap and sell dear", i.e., buy when the shares are selling at a low price and sell when they are at a high price. Although this seems very clear, in practice it is exceedingly difficult to follow. An ordinary investor, on the contrary, normally buys when the prices are rising and sells when they are falling. Why and how this happens is a matter of psychology. When the prices are rising in the share market, i.e., there is bull phase, the general environment is of great confidence. Everybody joins in buying. Those who delay buying regret that they have not done so; since every day prices touch a new high. An

ordinary investor joins the buying rush when it is in full stream and, therefore, usually buys the shares at high prices. Later, when the bear phase starts, prices tumble down every day. An atmosphere of despondency pervades and everybody starts counting the losses as share prices fall. The ordinary investor gets panicky and as every day the prices fall he regrets why he did not sell his shares the previous day. Ultimately, he sells the shares at a loss thanking his stars that he has gone out of the market. This kind of investment decision is entirely devoid of any sense of timing.

3.5 FORMULATION OF PORTFOLIO STRATEGY

Two broad choices are required for the formulation of an appropriate portfolio strategy. They are active portfolio strategy and passive portfolio strategy.

3.5.1 Active Portfolio Strategy (APS): An APS is followed by most investment professionals and aggressive investors who strive to earn superior return after adjustment for risk.

There are four principle vectors of on active strategy. They are:

(a) Market Timing: This involves departing from the normal i.e. strategy for long run asset mix to reflect assessment of the prospect of various assets in the near future. Market timing is based on an explicit or implicit forecast of general market movement. A variety of tools are employed for market timing analysis namely business cycle analysis, moving average analysis, advance-decline analysis, Econometric models. The forecast for the general market movement derived with the help of one or more of these tools is tempted by the subjective judgment of the investors. In most cases investor may go largely by its market sense. Those who reveal the fluctuation in the market may be tempted to play the game of market timing but few will succeed in this game. And an investment manager has to forecast the market correctly, 75% of the time just to break even after taking into account the cost of errors and cost of transactions. According to Fisher Black, the market is just as well as on an average when the investor is out of the market as it does when he is in. So he loses money relative to a single buy and sale strategy by being out of the market part of the time.

(b) Sector Rotation: Sector or group rotation may apply to both stock and bond component of the portfolio. It is used more compulsorily with respect to strategy. The components of the portfolio are used when it involves shifting. The weighting for various industry sectors is based on their asset outlook. If one thinks that steel and pharmaceutical would do well as compared to other sectors in the forthcoming period he may overweigh the sector relative to their position in the market portfolio, with the result that his portfolio will be tilted more towards these sectors in comparison to the market portfolio.

With respect to bond portfolio sector rotation it implies a shift in the composition of the bond portfolio in terms of quality as reflected in credit rating, coupon rate, term of maturity etc. If one anticipates a rise in the interest rate one may shift for long term bonds to medium and short term. A long term bond is more sensitive to interest rate variation compared to a short term bond.

(c) Security Selection: Security selection involves a search for under price security. If one has to resort to active stock selection he may employ fundamental / technical analysis to identify stocks which seems to promise superior return and concentrate the stock components of portfolio on them. Such stock will be over weighted relative to their position in the market portfolio. Like wise stock which are perceived to be unattractive will be under weighted relative to their position in the market portfolio.

As far as bonds are concerned security selection calls for choosing bonds which offer the highest yields to maturity and at a given level of risk.

(d) Use of Specialised Investment Concept: To achieve superior return, one has to employ a specialised concept/philosophy particularly with respect to investment in stocks. The concept which have been exploited successfully are growth stock, neglected or out of favour stocks, asset stocks, technology stocks and cyclical stocks.

The advantage of cultivating a specialized investment concept is that it helps to:

- (i) Focus one's effort on a certain kind of investment that reflects one's ability and talent.
- (ii) Avoid the distraction of perusing other alternatives.
- (iii) Master an approach or style through sustained practice and continual self criticism.

The greatest disadvantage of focusing exclusively on a specialized concept is that it may become obsolete. The changes in the market risk may cast a shadow over the validity of the basic premise underlying the investor philosophy.

3.5.2 Passive Portfolio Strategy: Active strategy was based on the premise that the capital market is characterized by efficiency which can be exploited by resorting to market timing or sector rotation or security selection or use of special concept or some combination of these vectors.

Passive strategy, on the other hand, rests on the tenet that the capital market is fairly efficient with respect to the available information. Hence they search for superior return. Basically, passive strategy involves adhering to two guidelines. They are:

- (a) Create a well diversified portfolio at a predetermined level of risk.
- (b) Hold the portfolio relatively unchanged overtime unless it became adequately diversified or inconsistent with the investor risk return preference.

3.5.3 Portfolio Strategic Matrix: Keth Ambachster has developed a matrix which pulls together the elements of timing and selectivity which can be a useful guide for developing one's portfolio strategy.

<div>Ability to forecast overall market</div> <div>Ability to select under valued security</div>	Good	Poor
Good	(a) Concentrate holding in selective undervalued securities rather than diversify broadly. (b) Shift β above and below the desired long term average based on the market forecasts.	(a) Concentrate holding in selective undervalued security rather than diversify broadly. (b) Keep β stable at the desired long term average.
Poor	(a) Hold a good broadly diversified list of securities. (b) Shift β above and below the desired long term average based market forecast.	(a) Hold a good broadly diversified list of securities. (b) Keep β stable at the desired long-term average.

3.5.4 Selection of Securities: There are certain criteria which must be kept in mind while selecting securities. The selection criteria for both bonds and equity shares are given as following:

3.5.4.1 Selection of Bonds: Bonds are fixed income avenues. The following factors have to be evaluated in selecting fixed income avenues:

- (a) *Yield to maturity:* The yield to maturity for a fixed income avenues represent the rate of return earned by the investor, if he invests in the fixed income avenues and holds it till its maturity.
- (b) *Risk of Default:* To assess such risk on a bond, one has to look at the credit rating of the bond. If no credit rating is available relevant financial ratios of the firm have to be examined such as debt equity, interest coverage, earning power etc and the general prospect of the industry to which the firm belongs have to be assessed.

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- (c) *Tax Shield*: In the past, several fixed income avenues offers tax shields but at present only a few of them do so.
- (d) *Liquidity*: If the fixed income avenues can be converted wholly or substantially into cash at a fairly short notice it possesses a liquidity of a high order.

3.5.4.2 Selection of Stock (Equity Share): Three approaches are applied for selection of equity shares- Technical analysis, Fundamental analysis and Random selection analysis.

- (a) Technical analysis looks at price behaviours and volume data to determine whether the share will move up or down or remain trend less.
- (b) Fundamental analysis focuses on fundamental factors like earning level, growth prospects and risk exposure to establish intrinsic value of a share. The recommendation to buy hold or sell is based on comparison of intrinsic value and prevailing market price.
- (c) Random selection analysis is based on the premise that the market is efficient and security is properly priced.

Levels Of Market Efficiency And Approach To Security Selection

<i>Approach</i> <i>Levels of Efficiency</i>	<i>Technical Analysis</i>	<i>Fundaments Analysis</i>	<i>Random Selection</i>
1) Inefficiency	Best	Poor	Poor
2) Weak form efficiency	Poor	Best	Poor
3) Semi-strong efficiency	Poor	Good	Fair
4) Strong Form efficiency	Poor	Fair	Best

3.5.5 Portfolio Execution: To implement the portfolio plans buying/selling of specified securities in given amounts lead to the phase of portfolio execution. For effectively handling the portfolio execution phase, one has to know what the trading game is like, what is the nature of the key players in this game, who are the likely winners/losers? In this game, what guidelines should be borne in mind while trading has to be looked into?

3.5.5.1 Trading Game: Security transaction differ from normal business transaction in two fundamental ways. A business man entering into a transaction does so with a reasonable understanding of the motives of the party on the other side of the transaction e.g., when one buys a piece of used machinery he is well aware of the motive of the seller, but in case of security transaction the motive along with the identity of the other party is not known. While both parties gain from the business transaction, a security transaction seems to be zero sum game.

A security offers the same cash flow stream to the buyer as well as the seller, so apart from the consideration and differential risk bearing abilities the value of a security is same to the buyer as well as the seller as contrastive motives guide business transactions. This means that if a security transaction benefits one party then it hurts the other, so one wins and the other loses.

3.5.5.2 Key Players: Security market is thronged by four types of players/transactors - Value based transactors, Information based transactors, Liquidity based transactors and Pseudo information based transactors. The dealers are the market maker intermediaries between these transactors.

(a) Value based transactor (V.B.T): He carries out extensive analysis of publicly available information to establish values. He trades when the difference between the values assessed by him and a periodic market price so warrants. He places limit orders to buy and sell with a spread that is large enough to provide a cushion against errors of judgment and informational lacuna. A V.B.T who establishes an intrinsic value of Rs. 500 for some equity share may place an order to buy if net price is Rs. 400 or less and order to sell if the net price is Rs. 600 or more. V.B.T's serve as the anchor for trading system and establish the frame work for operation of dealer. They however do not place much importance to time.

(b) Information based transactor (I.B.T.): He transacts on the basis of information which is not public and hence not reflected in security prices. Since he expects this information to have significant effect on price and he is keen to transact soon. To him time is of great value, while VBT is concerned about how much the market moves towards the justified price. Based on fundamental analysis, IBT is about how soon market price moves up and down in response to new information. The IBT employs incremental fundamental analysis as he is concerned with price movements responding to new information. He also uses technical analysis because timing is crucial in the operations. Unlike VBT he rarely tries to establish absolute value of security instead he tries to access the likely impact of marginal fundamental and technical development.

(c) Liquidity based transactor (L.B.T.): He trades primarily due to liquidity considerations. He deploys surplus funds or obtains funds or rebalances the portfolio. His trade is not based on detailed valuation exercise or access to some information not reflected in market price; hence he is regarded as information less trader driven mainly by liquidity considerations.

(d) Pseudo information based transactor (P.I.B.T.): He believes that he possess information that can be a source of gain even though that information is already captured or impounded in the price of the security. He may exaggerate the value of new information that he may have come across and forms unrealistic expectations. PIBT like the LBT is the information less trader. He is of the opinion that he possesses information which will generate investment advantage to him.

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(e) Dealers: A dealer intermediates between buyer and seller eager to transact. The dealer is ready to buy or sell with a spread which is fairly small for actively traded securities. If the bid and ask prices of a dealer for a certain security is 90-95 it means that he is willing to buy at 90 and sell it at 95. The dealer's quotations may move swiftly in response to changes in demand and supply forces in the market. The dealer bid-ask price band lies well inside the bid ask price band set up by the VBT. This implies that the bid price of the dealer is higher than the bid price of the VBT and asked price of the dealer is lower than the asked price of the VBT. The dealer function is such that it does not require taking a view of whether the security is worth buying or selling. He plays the role of intermediary and does not plan to hold position he acquires in accommodating the transaction. So, the dealer is an innocuous person lurking behind. The dealer is the transaction real trading advisory whose identity and motive are often unknown.

Summary of Trading Motivations, Time, Horizons and Time Vs Price Preferences

<i>Transactors</i>	<i>Motivations</i>	<i>Time Horizons</i>	<i>Time vs. Price preference</i>
<i>V.B.T.</i>	Discrepancy between value and price	Weeks to months	Price
<i>I.B.T.</i>	New information	Hours to days	Time
<i>L.B.T.</i>	Release or absorb cash	Hours to days	Time
<i>P.I.B.T.</i>	Apparently new information	Hours to days	Time
<i>Dealers</i>	Accommodation	Minutes to hour	Indifferent.

3.5.5.3 Guidelines: Following guidelines have to be borne in mind while executing transaction:

(a) Maintain a dialogue with the broker when trade is seriously contemplated. Check with the broker about the sensitivity of the stock to buying and selling pressure. The volume that can be traded without pushing the price out of the desirable range, the manipulative games played by operators and degree of market resilience.

(b) Place an order which serves one's interest best. Different kinds of order can be placed with broker, the common one's are – market order, best effort order, market on open order, limit order.

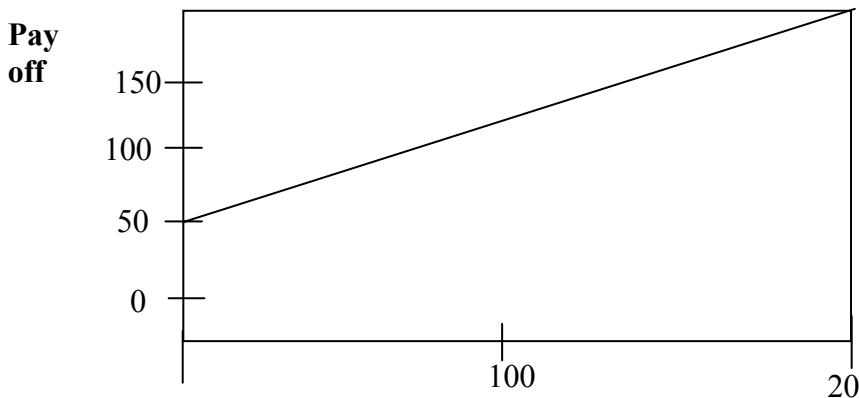
- (i) Market order instructs the broker to execute the transaction promptly at the best available price. This order leaves very little discretion to the broker
- (ii) The best offer order gives the broker a certain measure of discretion to execute a transaction when he considers market condition more favorable.
- (iii) The market on open order instructs the broker to execute the transaction no sooner the market opens.

- (iv) The limit order instructs the broker to execute the transaction only within the price that is specified in the order, the timing of the order trade is left to ebb and flow of market conditions.
- (v) For IBT, the most appropriate order is market order or market open order, for VBT most appropriate order is the limit order, while for LBT and PIBT the most appropriate orders may be the best-effort order.

3.5.6 Portfolio Rebalancing: It means the value of portfolio as well as its composition. The relative proportion of bond and stocks may change as stock and bonds fluctuate in response to such changes. Portfolio rebalancing is necessary. There are three policies of portfolio rebalancing- Buy and hold policy, Constant mix policy, and Constant proportion portfolio insurance policy (CPPI). These policies have different pay off under varying market conditions.

(a) Buy and Hold Policy: The initial mix that is bought is held. This is basically a 'do nothing' policy in respect of what happens to relative values of rebalancing if done.

The graph shows the pay off diagram for a buy and hold policy; if the initial stock: bond mix is 50:50. It illustrates the following features of buy and hold policies:

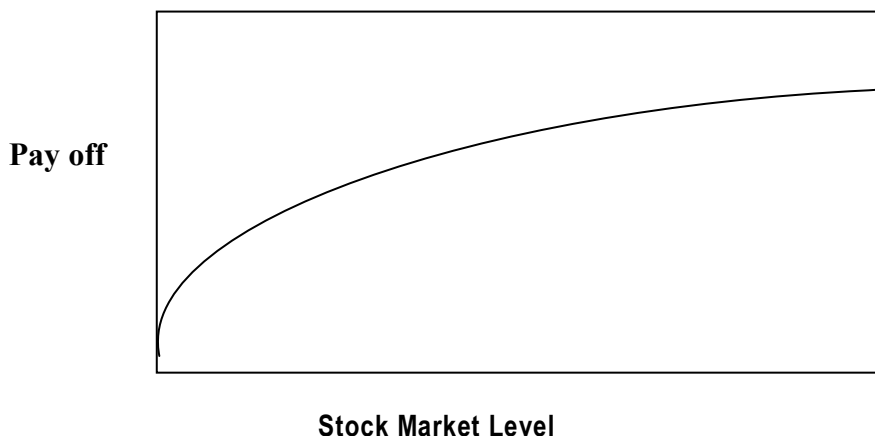


Pay off Diagram for a Buy and Hold Policy

- (i) The value of portfolio is linearly dependent to that of stock market.
- (ii) While the portfolio value can't fall below the value of initial investment in bonds its upside potential is unlimited.
- (iii) When stock outperforms bond, the higher the initial percentage in stocks, the better is the performance of the buy and hold policy. On the other hand, when stock underperforms bond, the higher the initial percentage in stocks the worst the performance of the buy and hold policy.

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(b) Constant Mix Policy: The constant mix policy calls for maintaining an exposure to stocks which is a constant proportion of portfolio value. If the desired constant mix of stock and bonds is 50:50 this policy calls for rebalancing the portfolio when relative values of its components change so that the target proportions are maintained. Thus this policy unlike the buy and hold policy is a “do something” policy. The kind of rebalancing that is done under this policy is shown in the table. The pay off associated with constant mix policy is shown in the graph.



Payoff Diagram for a Constant Mix Policy

Portfolio Rebalancing Under a Constant Mix Policy When the Stock - Bond Ratio Is 50:50.

Stock Market Level	Conditions	Stock	Bond	Total	Stock to Bond Switch	Bond to Stock Switch
	After rebalancing	39.45	39.45	78.90	-	-
60	Before rebalancing	33.90	45.00	78.90	-	
	After rebalancing	39.45	39.45	78.90	-	5.55
80	Before rebalancing	40	50	90	-	
	After rebalancing	45	45	90		5.0
100	Before rebalancing	0	50	50	-	
	After rebalancing	25	25	50		25.0
150	Before rebalancing	75	50	125		-
	After rebalancing	62.5	62.5	125	12.5	
	Before rebalancing	83.1	62.5	145.6		-

200	After rebalancing	72.8	72.8	145.6	10.3	
	Before rebalancing	91	72.8	163.8		-
250	After rebalancing	81.9	81.9	163.8	9.1	

(c) Constant Proportion Portfolio Insurance Policy (CPPI): It takes the following form:

Investment in stocks = m (Portfolio value – Floor value) when $m > 1$

Floor value means value which the market expects.

Illustration 10: If one has wealth of 100000 and Floor of 75000 and multiplier of 2 the pattern of investment associated with such a policy may be illustrated in the following manner.

Solution

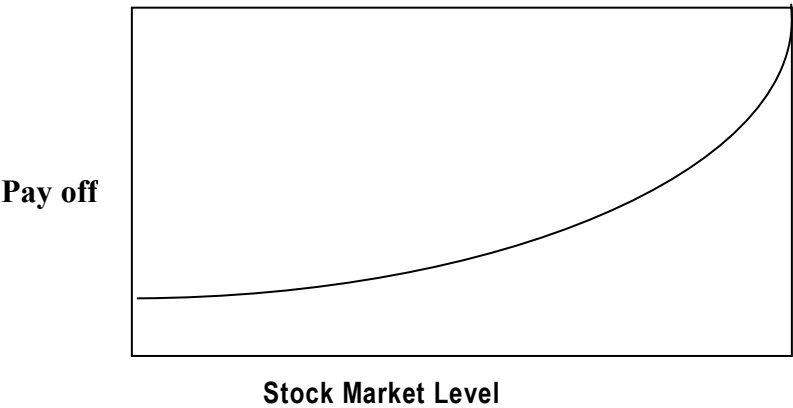
Condition I: As the initial cushion (difference between portfolio value and floor is Rs.25,000 i.e. (1,00,000-75,000)). The initial investment in stock is 50,000 i.e. (twice of initial cushion 25,000 x2). So the initial portfolio means 50,000 in stocks and 50,000 in bonds.

Condition II: If the stock market falls from 100 to 80 value of stocks in the portfolio falls from 50,000 to 40,000; this means that the value of portfolio declines to 90,000 (stock 40,000 and bond 50,000) thereby reducing the cushion to 15,000 (90,000-75,000). As per CPPI policy stock component would be 30,000 (15,000 x2). So 10,000 of stock should be sold and proceeds invested in bonds if stock decline further more bonds should be sold.

Condition III: If the stock market rises from 100 to 150, value of stock in portfolio jumps from 50,000 to 75,000 i.e. (150/100 x 50,000) and a value of portfolio rises to 1,25,000 i.e. (75,000 stock + 50,000 bond), thereby raising the cushion by 50,000 (1,25,000-75,000). As per CPPI policy stock component should go up to 1,00,000 (50,000 x 2). This calls for selling bonds worth 25,000 and reinvesting the proceed in the stocks, if stock rises further in value more stocks should be bought and so on.

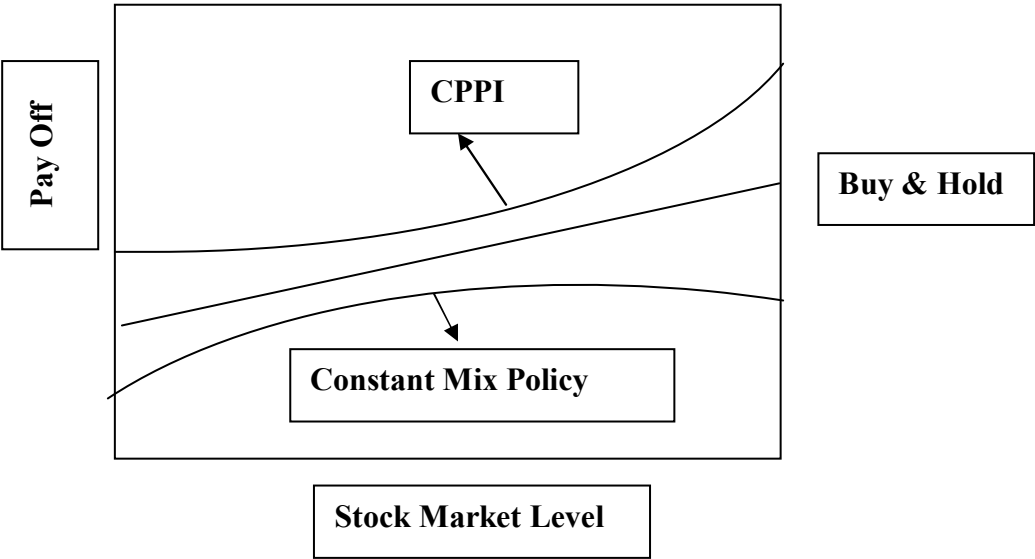
Thus the CPPI policy necessitates selling stock as they fall and buying stocks as they rise, this implies that this policy is the opposite of constant mix policy which calls for buying stocks as they fall and selling stocks as they rise. Hence the pay off curve is convex in nature as shown in the diagram.

Pay off Diagram for Constant Proportion Portfolio Insurance Policy



3.5.7 Comparative Evaluation: The pay off associated with buy and hold policy constant mix policy and constant proportion portfolio insurance policy are represented by straight line, concave and convex curve. The graph shows these pay off.

From the graph if the stock market move only in one direction the best policy is CPPI policy and the worst policy is constant mix policy in between lies buy and hold policy.



Pay off Associated with Various Rebalancing Policies

If the stock market reverses itself frequently rather than move in the same direction, constant mix policy seems to be superior to other policies. Consider a payoff from initial

investment of 100000 when the market moves from 100 to 80 and back to 100 under three policies:

- (a) Buy and hold policy under which the initial stock bond mix is 50:50.
- (b) Constant mix policy under which the stock bond mix is 50:50
- (c) A CPPI policy which takes to form investment in stock = 2 (Portfolio value – 75000 i.e. floor value)

The portfolio compositions and their values for the three policies are tabulated as follows.

Portfolio Composition and Payoff for the Three Policies Market Level 100

Portfolio			
	Stock	Bond	Total
Buy and hold policy	50000	50000	100000
Constant mix policy	50000	50000	100000
CPPI policy	50000	50000	100000

Market level falls to 80

Portfolio Before rebalancing				Portfolio After rebalancing		
	Stock	Bonds	Total	Stock	Bond	Total
Buy-Hold	40000	50000	90000	40000	50000	90000
Constant-mix	40000	50000	90000	45000	45000	90000
CPPI	40000	50000	90000	30000	60000	90000

Portfolio Before rebalancing				Portfolio After rebalancing		
	Stock	Bonds	Total	Stock	Bond	Total
Buy & Hold	50000	50000	100000	50000	50000	100000
Constant mix	56250	45000	101250	50625	50625	101250
CPPI	36000	60000	96000	42000	54000	96000

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The performance feature of the three policies may be summed up as follows:

(a) Buy and Hold Policy

- (i) Gives rise to a straight line pay off.
- (ii) Provides a definite downside protection.
- (iii) Performance between Constant mix policy and CPPI policy.

(b) Constant Mix Policy

- (i) Gives rise to concave pay off drive.
- (ii) Doesn't provide much downward protection and tends to do relatively poor in the up market.
- (iii) Tends to do very well in flat but fluctuating market.

(c) CPPI Policy

- (i) Gives rise to a convex pay off drive.
- (ii) Provides good downside protection and performance well in up market.
- (iii) Tends to do very poorly in flat but in fluctuating market.

4. EQUITY STYLE MANAGEMENT

Pioneered by Nobel laureate William Sharpe, equity style management is derived from a correlation analysis of various equity style categories such as value, growth, small cap, large cap and foreign stocks.

4.1 CATEGORIES OF EQUITY STYLES

Stocks can be assigned to different market sectors, e.g. financials, consumer goods, consumer services, energy, healthcare, technology, etc. Another form of classification is based on the respective corporation's market capitalization. A distinction is made between Small Cap, Mid Cap and Large Cap companies according to the market value of the corporation's capital stock. Other terms used to differentiate stocks are "Value" and "Growth". Value stocks have high book value to market capitalization ratios; growth stocks have low book value to market capitalization ratios. The performance of individual groups of stocks is tracked in the form of indices. The most important and best known international indices are the S&P 500, the Nikkei 225, the Euro Stoxx 50 and the FTSE 100. There are also indices which track the performance of stocks based on specific sectors or market capitalization.

4.2 CHARACTERISTICS OF INVESTMENT FUNDS PERFORMANCE

Investment funds gather money from different investors and, depending on the fund's terms of reference, invest them in specific securities (e.g. in equities or fixed income

securities, in the home market or internationally) or in real estate. Investment funds are professionally managed, so the portfolio is under constant review and the various markets are analyzed. The portfolio is adjusted according to the respective market situation (tactical asset allocation). Investment funds are able to practice the diversification described in portfolio theory very well since they have the necessary capital and are therefore able to invest in a range of asset classes. The resultant risk spreading reduces the overall risk of this kind of investment. Funds also make it possible to invest in markets which require considerable market expertise, where asset values are highly volatile, or to which small investors do not have access owing to market restrictions. Although funds have a better risk profile, the potential return is still exposed to the same risks as a direct investment in individual asset classes. The advantage lies in the fact that the risk is diversified.

Exchange traded funds (ETFs) are another type of funds. ETFs can be traded continuously on a stock exchange and are mostly index funds or actively managed no-load funds.

The following describes the different variants in terms of investment focus:

The first distinguishing feature is the composition of the fund's assets in terms of investment instruments. Standard equity funds invest in stocks, and mostly in stocks which are regarded as "blue chips" owing to their generally accepted quality. The fund's assets are widely spread and are not confined to specific sectors. Specialized equity funds concentrate on specific segments of the equity market, for instance sector funds which invest in stocks in specific industries or business sectors, small cap funds which hold small and mid-sized companies (second-tier stocks) in their portfolios, or stock index funds which track specific stock indices. Standard bond funds invest mostly in fixed income securities with different coupon rates and maturities, and almost entirely in issuers of good or very good credit quality. Specialized bond funds concentrate, like specialized equity funds, on specific segments of the fixed income market, for instance low-coupon bond funds (bonds with low interest rates), high-yield funds (high-yielding bonds of mixed credit quality), junk bond funds (high-yielding bonds of low credit quality) and short bond funds (securities with short periods to maturity).

Hybrid funds are mixed funds which use both equity and fixed income market instruments. There are also funds which concentrate their investments on specific markets, instruments or combinations thereof (speciality funds). Examples are warrants funds and futures funds. These speciality funds might also pursue specific investment styles such as "value" or "growth" strategies.

The following types of fund can be distinguished on the basis of their geographical investment horizon: country funds which only invest in financial assets of issuers based in one specific country; regional funds which only consist of assets of the given region (e.g. Europe, North America or Asia-Pacific); international funds which invest in the capital

markets worldwide and emerging markets funds which invest in one or more emerging market countries.

4.3 DIFFERENT STYLES OF FUNDS

Fund management can be categorized under two kinds of investment styles - Active and Passive Investing. The vast majority of funds (or schemes) available in India follow an “active” investment approach, wherein fund managers of “active” funds spend a great deal of time on researching individual companies, gathering extensive data about financial performance, business strategies and management characteristics. In other words, “active” fund managers try to identify and invest in stocks of those companies that they think will produce better returns and beat the overall market (or Index).

An alternative approach towards fund management exists: that of a fund which is *passively* managed. Such funds are called index funds. An Index fund is a mutual fund scheme that invests in the securities of the target Index in the same proportion or weightage. Though it is designed to provide returns that closely track the benchmark Index, an Index Fund carries all the risks normally associated with the type of asset the fund holds. So, when the overall stock market rises/falls, you can expect the price of shares in the index fund to rise/fall, too. In short, an index fund does not mitigate market risks. Indexing merely ensures that your returns will not stray far from the returns on the Index that the fund mimics. In other words, an index fund is a fund whose daily returns are the same as the daily returns obtained from an index. Thus, it is passively managed in the sense that an index fund manager invests in a portfolio which is exactly the same as the portfolio which makes up an index. For instance, the NSE-50 index (Nifty) is a market index which is made up of 50 companies. A Nifty index fund has all its money invested in the Nifty fifty companies, held in the same weights of the companies which are held in the index.

4.4 USE OF DERIVATIVES IN EQUITY PORTFOLIO MANAGEMENT

The risk of equity portfolios can be modified by using futures and options. Selling futures reduces the risk of the negative portfolio value. Also offsets positive portfolio value changes. The nature of options means that they do not have exact offsetting effects. Positive portfolio price effects remain largely intact, but the cost of insuring against negative moves increases by the option premium.

In order to appropriately hedge a portfolio, the appropriate number of contracts must be sold. The appropriate number depends on the value of the portfolio, the value of one futures contract, and the portfolio beta (the Index has a beta of 1).

$$\text{Number of Contracts} = (\text{Portfolio Value} / \text{Contract Value}) \times \text{Portfolio Beta}$$

The use of futures in asset allocation allows changing the portfolio allocation quickly to adjust to forecasts at lower transaction costs than standard trading. Futures can help

maintain an overall balance (desired asset allocation) in a portfolio. Futures can be used to gain exposure to international markets. Currency exposure can be managed using currency futures and options.

Futures and options can also help to control cash inflows- purchase index futures or options when inflows arrive before individual security investments can be made efficiently and cash outflows- sell previously purchased futures contracts rather than individual securities to meet large expected cash outflow; less disruptive to portfolio management from the portfolio.

4.5 TAX EFFICIENT STRATEGIES FOR TAXABLE PORTFOLIOS

Active portfolio managers especially need to consider taxes when deciding whether to sell or hold a stock whose value has increased. If a security is sold at a profit, capital gains are paid and less is left in the portfolio to reinvest. A new security (the reinvestment security) needs to have a superior return sufficient to make up for these taxes. The size of the necessary return depends on the expected holding period and the cost basis (and amount of the capital gain) of the original security.

Some of the possible tax-efficient strategies for taxable portfolios are:

- Employ a buy-and-hold strategy since unrealized capital gains are not taxed.
- Loss harvesting, using tax losses to offset capital gains on other investments.
- Use options to help convert short-term capital gains into a long-term gain (with more favorable tax treatment).
- Tax-lot accounting for shares, specifying those with the highest cost basis for sale.
- For some investors, simply focus on growth stocks that will provide long-term gains rather than income from dividends.

4.6 ASSET ALLOCATION STRATEGIES

Many portfolios containing equities also contain other asset categories, so the management factors are not limited to equities. There are four asset allocation strategies:

(a) Integrated Asset Allocation: Under this strategy, capital market conditions and investor objectives and constraints are examined and the allocation that best serves the investor's needs while incorporating the capital market forecast is determined.

(b) Strategic Asset Allocation: Under this strategy, optimal portfolio mixes based on returns, risk, and co-variances is generated using historical information and adjusted periodically to restore target allocation within the context of the investor's objectives and constraints.

(c) Tactical Asset Allocation: Under this strategy, investor's risk tolerance is assumed constant and the asset allocation is changed based on expectations about capital market conditions.

(d) Insured Asset Allocation: Under this strategy, risk exposure for changing portfolio values (wealth) is adjusted; more value means more ability to take risk.

4.7 SOME INDIAN EXAMPLES

Let us discuss portfolio management styles of some Indian equity funds:

(a) HDFC Equity Fund (HEF): It is an open-ended diversified equity fund from HDFC Mutual Fund. HEF is a high risk – high return investment proposition. The fund's portfolio management style epitomises its high risk nature. HEF's portfolio is characterised by concentrated stock and sectoral holdings. Also the fund invests in stocks of both the large and mid cap varieties.

(b) Franklin India Bluechip Fund (FIBF): It is among the leading diversified large cap equity funds in the country. FIBF is managed aggressively (concentrated stock and sector allocations), although the aggression has toned down over the years. From being a fund that rarely had more than 20 stocks in its portfolio, it now maintains a portfolio of about 30 stocks.

(c) HDFC Top 200 Fund (HTF): It is among the better-managed diversified equity funds in India today. HTF pursues an index-plus investment strategy. It was among the earliest funds to adopt this style of fund management. According to this style, about 60% of HTF's stock picks are sourced from the BSE 200 (its benchmark index); the balance 40% of assets is invested in stocks outside the BSE 200.

5. PRINCIPLES AND MANAGEMENT OF HEDGE FUNDS

Hedge Fund is an aggressively managed portfolio of investments that uses advanced investment strategies such as leverage, long, short and derivative positions in both domestic and international markets with the goal of generating high returns (either in an absolute sense or over a specified market benchmark).

Legally, hedge funds are most often set up as private investment partnerships that are open to a limited number of investors and require a very large initial minimum investment. Investments in hedge funds are illiquid as they often require investors to keep their money in the fund for a minimum period of at least one year.

For the most part, hedge funds (unlike mutual funds) are unregulated because they cater to sophisticated investors. In the U.S., laws require that the majority of investors in the fund be accredited. That is, they must earn a minimum amount of money annually and have a net worth of over \$1 million, along with a significant amount of investment knowledge. You can think of hedge funds as mutual funds for the super-rich. They are

similar to mutual funds in that investments are pooled and professionally managed, but differ in that the fund has far more flexibility in its investment strategies.

The popular misconception regarding hedge funds is that all hedge funds are volatile- that they all use global macro strategies and place large directional bets on stocks, currencies, bonds, commodities, and gold, while using lots of leverage. In reality, less than 5% of hedge funds are global macro funds like Quantum, Tiger, and Strome. Most hedge funds use derivatives only for hedging or don't use derivatives at all, and many use no leverage.

It is important to note that hedging is actually the practice of attempting to reduce risk, but the goal of most hedge funds is to maximize return on investment. The name is mostly historical, as the first hedge funds tried to hedge against the downside risk of a bear market with their ability to short the market (mutual funds generally cannot enter into short positions as one of their primary goals). Nowadays, hedge funds use dozens of different strategies, so it isn't accurate to say that hedge funds just "hedge risk". In fact, because hedge fund managers make speculative investments, these funds can carry more risk than the overall market. A hedge fund is a fund that can take both long and short positions, use arbitrage, buy and sell undervalued securities, trade options or bonds, and invest in almost any opportunity in any market where it foresees impressive gains at reduced risk. Hedge fund strategies vary enormously - many hedge against downturns in the markets - especially important today with volatility and anticipation of corrections in overheated stock markets. The primary aim of most hedge funds is to reduce volatility and risk while attempting to preserve capital and deliver positive returns under all market conditions.

There are approximately 14 distinct investment strategies used by hedge funds, each offering different degrees of risk and return. A macro hedge fund, for example, invests in stock and bond markets and other investment opportunities, such as currencies, in hopes of profiting on significant shifts in such things as global interest rates and countries' economic policies. A macro hedge fund is more volatile but potentially faster growing than a distressed-securities hedge fund that buys the equity or debt of companies about to enter or exit financial distress. An equity hedge fund may be global or country specific, hedging against downturns in equity markets by shorting overvalued stocks or stock indexes. A relative value hedge fund takes advantage of price or spread inefficiencies. Knowing and understanding the characteristics of the many different hedge fund strategies is essential to capitalizing on their variety of investment opportunities.

It is important to understand the differences between the various hedge fund strategies because all hedge funds are not the same - investment returns, volatility, and risk vary enormously among the different hedge fund strategies. Some strategies which are not correlated to equity markets are able to deliver consistent returns with extremely low risk of loss, while others may be as or more volatile than mutual funds. A successful fund of funds recognizes these differences and blends various strategies and asset classes

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together to create more stable long-term investment returns than any of the individual funds.

- (a) Hedge fund strategies vary enormously – many, but not all, hedge against market downturns – especially important today with volatility and anticipation of corrections in overheated stock markets.
- (b) The primary aim of most hedge funds is to reduce volatility and risk while attempting to preserve capital and deliver positive (absolute) returns under all market conditions.
- (c) The popular misconception is that all hedge funds are volatile - that they all use global macro strategies and place large directional bets on stocks, currencies, bonds, commodities or gold, while using lots of leverage. In reality, less than 5% of hedge funds are global macro funds. Most hedge funds use derivatives only for hedging or don't use derivatives at all, and many use no leverage.

5.1 MAIN FEATURES OF HEDGE FUNDS

The key characteristics of hedge funds can be stated as follows:

- (a) Hedge funds utilize a variety of financial instruments to reduce risk, enhance returns and minimize the correlation with equity and bond markets. Many hedge funds are flexible in their investment options (can use short selling, leverage, derivatives such as puts, calls, options, futures, etc.).
- (b) Hedge funds vary enormously in terms of investment returns, volatility and risk. Many, but not all, hedge fund strategies tend to hedge against downturns in the markets being traded.
- (c) Many hedge funds have the ability to deliver non-market correlated returns.
- (d) Many hedge funds have as an objective consistency of returns and capital preservation rather than magnitude of returns.
- (e) Most hedge funds are managed by experienced investment professionals who are generally disciplined and diligent.
- (f) Pension funds, endowments, insurance companies, private banks and high net worth individuals and families invest in hedge funds to minimize overall portfolio volatility and enhance returns.
- (g) Most hedge fund managers are highly specialized and trade only within their area of expertise and competitive advantage.
- (h) Hedge funds benefit by heavily weighting hedge fund managers' remuneration towards performance incentives, thus attracting the best brains in the investment business. In addition, hedge fund managers usually have their own money invested in their fund.

5.2 HEDGE FUND INDUSTRY SCENARIO OF THE WORLD

The hedge funds industry around the world is estimated to be \$300-\$400 billion and is growing at about 20% per year with between 4,000 and 5,000 active hedge funds. It includes a variety of investment strategies, some of which use leverage and derivatives while others are more conservative and employ little or no leverage. Many hedge fund strategies seek to reduce market risk specifically by shorting equities or through the use of derivatives.

Most hedge funds are highly specialized, relying on the specific expertise of the manager or management team. Performance of many hedge fund strategies, particularly relative value strategies, is not dependent on the direction of the bond or equity markets - unlike conventional equity or mutual funds (unit trusts), which are generally 100% exposed to market risk. Many hedge fund strategies, particularly arbitrage strategies, are limited as to how much capital they can successfully employ before returns diminish. As a result, many successful hedge fund managers limit the amount of capital they will accept. Hedge fund managers are generally highly professional, disciplined and diligent.

The returns of hedge funds over a sustained period of time have outperformed standard equity and bond indexes with less volatility and less risk of loss than equities. Beyond the averages, there are some truly outstanding performers. Investing in hedge funds tends to be favored by more sophisticated investors, including many Swiss and other private banks that have lived through, and understand the consequences of, major stock market corrections. An increasing number of endowments and pension funds allocate assets to hedge funds.

5.3 HEDGING STRATEGIES

Wide ranges of hedging strategies are available to hedge funds. For example:

- (i) *Selling Short*: Selling shares without owning them, hoping to buy them back at a future date at a lower price in the expectation that their price will drop.
- (ii) *Using Arbitrage*: Seeking to exploit pricing inefficiencies between related securities - for example, can be long convertible bonds and short the underlying issuer's equity.
- (iii) *Trading Options or Derivatives*: Contracts whose values are based on the performance of any underlying financial asset, index or other investment.
- (iv) *Investing in Anticipation of a Specific Event*: Merger transaction, hostile takeover, spin-off, exiting of bankruptcy proceedings, etc.
- (v) *Investing in Deeply Discounted Securities*: Of companies about to enter or exit financial distress or bankruptcy, often below liquidation value.
- (vi) Many of the strategies used by hedge funds benefit from being non-correlated to the direction of equity markets.

5.4 BENEFITS OF HEDGE FUNDS

There are many advantages of hedge funds. Some of the important advantages are:

- (a) Many hedge fund strategies have the ability to generate positive returns in both rising and falling equity and bond markets.
- (b) Inclusion of hedge funds in a balanced portfolio reduces overall portfolio risk and volatility and increases returns.
- (c) Huge variety of hedge fund investment styles – many uncorrelated with each other – provides investors with a wide choice of hedge fund strategies to meet their investment objectives. Academic research proves hedge funds have higher returns and lower overall risk than traditional investment funds.
- (d) Hedge funds provide an ideal long-term investment solution, eliminating the need to correctly time entry and exit from markets.
- (e) Adding hedge funds to an investment portfolio provides diversification not otherwise available in traditional investing.

5.5 DIFFERENT STYLES OF HEDGE FUNDS

The predictability of future results shows a strong correlation with the volatility of each strategy. Future performance of strategies with high volatility is far less predictable than future performance from strategies experiencing low or moderate volatility.

(a) Aggressive Growth: Invests in equities; expected to experience acceleration in growth of earnings per share; generally high P/E ratios, low or no dividends; often smaller and micro cap stocks which are expected to experience rapid growth. Includes sector specialist funds such as technology, banking, or biotechnology. Hedges by shorting equities where earnings disappointment is expected or by shorting stock indexes. Tends to be "long-biased." Expected volatility is high.

(b) Distressed Securities: Buys equity, debt, or trade claims at deep discounts of companies in or facing bankruptcy or reorganization. Profits from the market's lack of understanding of the true value of the deeply discounted securities and because the majority of institutional investors cannot own below investment grade securities. (This selling pressure creates the deep discount.) Results generally not dependent on the direction of the markets. Expected volatility ranges from Low – Moderate.

(c) Emerging Markets: Invests in equity or debt of emerging (less mature) markets that tend to have higher inflation and volatile growth. Short selling is not permitted in many emerging markets, and, therefore, effective hedging is often not available. Expected volatility is very high.

(d) Funds of Hedge Funds: Mix and match hedge funds and other pooled investment vehicles. This blending of different strategies and asset classes aims to provide a more stable long-term investment return than any of the individual funds. Returns, risk, and volatility can be controlled by the mix of underlying strategies and funds. Capital preservation is generally an important consideration. Volatility depends on the mix and ratio of strategies employed. Expected volatility range is Low - Moderate – High.

(e) Income: Invests with primary focus on yield or current income rather than solely on capital gains. May utilize leverage to buy bonds and sometimes fixed income derivatives in order to profit from principal appreciation and interest income. Expected volatility is low.

(f) Macro: Aims to profit from changes in global economies, typically brought about by shifts in government policy that impact interest rates, in turn affecting currency, stock, and bond markets. Participates in all major markets - equities, bonds, currencies and commodities - though not always at the same time. Uses leverage and derivatives to accentuate the impact of market moves. Utilizes hedging, but the leveraged directional investments tend to make the largest impact on performance. Expected volatility is very high.

(g) Market Neutral: Arbitrage: Attempts to hedge out most market risk by taking offsetting positions, often in different securities of the same issuer. For example, can be long convertible bonds and short the underlying issuers' equity. May also use futures to hedge out interest rate risk. Focuses on obtaining returns with low or no correlation to both the equity and bond markets. These relative value strategies include fixed income arbitrage, mortgage backed securities, capital structure arbitrage, and closed-end fund arbitrage. Expected volatility is low.

(h) Market Neutral: Securities Hedging: Invests equally in long and short equity portfolios generally in the same sectors of the market. Market risk is greatly reduced, but effective stock analysis and stock picking is essential to obtaining meaningful results. Leverage may be used to enhance returns. Usually low or no correlation to the market. Sometimes uses market index futures to hedge out systematic (market) risk. Relative benchmark index usually T-bills. Expected volatility is low.

(i) Market Timing: Allocates assets among different asset classes depending on the manager's view of the economic or market outlook. Portfolio emphasis may swing widely between asset classes. Unpredictability of market movements and the difficulty of timing entry and exit from markets add to the volatility of this strategy. Expected volatility is high.

(j) Opportunistic: Investment theme changes from strategy to strategy as opportunities arise to profit from events such as IPOs, sudden price changes often caused by an interim earnings disappointment, hostile bids, and other event-driven opportunities. May utilize several of these investing styles at a given time and is not restricted to any particular investment approach or asset class. Expected volatility is variable.

(k) Multi Strategy: Investment approach is diversified by employing various strategies simultaneously to realize short- and long-term gains. Other strategies may include systems trading such as trend following and various diversified technical strategies. This style of investing allows the manager to overweight or underweight different strategies to best capitalize on current investment opportunities. Expected volatility is variable.

(l) Short Selling: Sells securities short in anticipation of being able to re-purchase them at a future date at a lower price due to the manager's assessment of the overvaluation of the securities, or the market, or in anticipation of earnings disappointments often due to accounting irregularities, new competition, change of management, etc. Often used as a hedge to offset long-only portfolios and by those who feel the market is approaching a bearish cycle. Risk is high. Expected volatility is very high.

(m) Special Situations: Invests in event-driven situations such as mergers, hostile takeovers, reorganizations, or leveraged buyouts. May involve simultaneous purchase of stock in companies being acquired, and the sale of stock in its acquirer, hoping to profit from the spread between the current market price and the ultimate purchase price of the company. May also utilize derivatives to leverage returns and to hedge out interest rate and/or market risk. Results generally not dependent on direction of market. Expected volatility is moderate.

(n) Value: Invests in securities perceived to be selling at deep discounts to their intrinsic or potential worth. Such securities may be out of favor or under followed by analysts. Long-term holding, patience, and strong discipline are often required until the ultimate value is recognized by the market. Expected volatility is Low – Moderate.

5.6 DIFFERENCE BETWEEN HEDGE FUNDS AND MUTUAL FUNDS

Hedge funds are like mutual funds in two respects: (i) they are pooled investment vehicles (i.e. several investors entrust their money to a manager) and (ii) they invest in publicly traded securities. But there are important differences between a hedge fund and a mutual fund. These stem from and are best understood in light of the hedge fund's charter: investors give hedge funds the freedom to pursue absolute return strategies.

Mutual Funds Seek Relative Returns: Most mutual funds invest in a predefined style, such as "small cap value", or into a particular sector, such as the Internet sector. To measure performance, the mutual fund's returns are compared to a style-specific index or benchmark. For example, if you buy into a "small cap value" fund, the managers of that fund may try to outperform the Nifty Small Cap Index. Less active managers might construct the portfolio by following the index and then applying stock-picking skills to increase (over-weight) favoured stocks and decrease (under-weight) less appealing stocks.

A mutual fund's goal is to beat the index or "beat the bogey", even if only modestly. If the index is down 10% while the mutual fund is down only 7%, the fund's performance would

be called a success. On the passive-active spectrum, on which pure index investing is the passive extreme, mutual funds lie somewhere in the middle as they semi-actively aim to generate returns that are favourable compared to a benchmark.

Hedge Funds Actively Seek Absolute Returns : Hedge funds lie at the active end of the investing spectrum as they seek positive absolute returns, regardless of the performance of an index or sector benchmark. Unlike mutual funds, which are "long-only" (make only buy-sell decisions), a hedge fund engages in more aggressive strategies and positions, such as short selling, trading in derivative instruments like options and using leverage (borrowing) to enhance the risk/reward profile of their bets.

This activeness of hedge funds explains their popularity in bear markets. In a bull market, hedge funds may not perform as well as mutual funds, but in a bear market - taken as a group or asset class - they should do better than mutual funds because they hold short positions and hedges. The absolute return goals of hedge funds vary, but a goal might be stated as something like "6% to 9% annualized return regardless of the market conditions".

Investors, however, need to understand that the hedge-fund promise of pursuing absolute returns means hedge funds are "liberated" with respect to registration, investment positions, liquidity and fee structure. First, hedge funds in general are not registered with the authorities like in USA with SEC. They have been able to avoid registration by limiting the number of investors and requiring that their investors be accredited, which means they meet an income or net worth standard. Furthermore, hedge funds are prohibited from soliciting or advertising to a general audience, a prohibition that lends to their mystique.

In hedge funds, liquidity is a key concern for investors. Liquidity provisions vary, but invested funds may be difficult to withdraw "at will". For example, many funds have a lock-out period, which is an initial period of time during which investors cannot remove their money.

Lastly, hedge funds are more expensive even though a portion of the fees are performance-based. Typically, they charge an annual fee equal to 1% of assets managed (sometimes up to 2%), plus they receive a share - usually 20% - of the investment gains. The managers of many funds, however, invest their own money along with the other investors of the fund and, as such, may be said to "eat their own cooking".

5.7 BROAD CATEGORIES OF HEDGE FUNDS

Most hedge funds are entrepreneurial organizations that employ proprietary or well-guarded strategies. The three broad hedge fund categories are based on the types of strategies they use:

(a) Arbitrage Strategies (Relative Value): Arbitrage is the exploitation of observable price inefficiency and, as such, pure arbitrage is considered risk less. Consider a very

simple example. Say ABV stock currently trades at Rs.910 and a single stock futures contract due in six months is priced at Rs.914. The futures contract is a promise to buy or sell the stock at a predetermined price. So by purchasing the stock and simultaneously selling the futures contract, you can, without taking on any risk, lock in an Rs.4 gain before transaction and borrowing costs. In practice, arbitrage is more complicated, but three trends in investing practices have opened up the possibility of all sorts of arbitrage strategies: the use of (1) derivative instruments, (2) trading software, and (3) various trading exchanges (for example, electronic communication networks and foreign exchanges make it possible to take advantage of "exchange arbitrage", the arbitraging of prices among different exchanges).

Only a few hedge funds are pure arbitrageurs, but when they are, historical studies often prove they are a good source of low-risk reliably-moderate returns. But, because observable price inefficiencies tend to be quite small, pure arbitrage requires large, usually leveraged investments and high turnover. Further, arbitrage is perishable and self-defeating: if a strategy is too successful, it gets duplicated and gradually disappears.

Most so-called arbitrage strategies are better labelled "relative value". These strategies do try to capitalize on price differences, but they are not risk free. For example, convertible arbitrage entails buying a corporate convertible bond, which can be converted into common shares, while simultaneously selling short the common stock of the same company that issued the bond. This strategy tries to exploit the relative prices of the convertible bond and the stock: the arbitrageur of this strategy would think the bond is a little cheap and the stock is a little expensive. The idea is to make money from the bond's yield if the stock goes up but also make money from the short sale if the stock goes down. However, as the convertible bond and the stock can move independently, the arbitrageur can lose on both the bond and the stock, which means the position carries risk.

(b) Event-Driven Strategies: Event-driven strategies take advantage of transaction announcements and other one-time events. One example is merger arbitrage, which is used in the event of an acquisition announcement and involves buying the stock of the target company and hedging the purchase by selling short the stock of the acquiring company. Usually at announcement, the purchase price that the acquiring company will pay to buy its target exceeds the current trading price of the target company. The merger arbitrageur bets the acquisition will happen and cause the target company's price to converge (rise) to the purchase price that the acquiring company pays. This also is not pure arbitrage. If the market happens to frown on the deal, the acquisition may unravel and send the stock of the acquirer up (in relief) and the target company's stock down (wiping out the temporary bump) which would cause a loss for the position.

There are various types of event-driven strategies. One other example is "distressed securities", which involves investing in companies that are re-organizing or have been unfairly beaten down. Another interesting type of event-driven fund is the activist fund,

which is predatory in nature. This type takes sizeable positions in small, flawed companies and then uses its ownership to force management changes or a restructuring of the balance sheet.

(c) Directional or Tactical Strategies: The largest group of hedge funds uses directional or tactical strategies. Macro funds are global, making "top-down" bets on currencies, interest rates, commodities or foreign economies. Because they are for "big picture" investors, macro funds often do not analyze individual companies.

Some other examples of directional or tactical strategies are:

(i) Long/short strategies combine purchases (long positions) with short sales. For example, a long/short manager might purchase a portfolio of core stocks that occupy the S&P 500 and hedge by selling (shorting) S&P 500 Index futures. If the S&P 500 goes down, the short position will offset the losses in the core portfolio, limiting overall losses.

(ii) Market neutral strategies are a specific type of long/short whose goal is to negate the impact and risk of general market movements, trying to isolate the pure returns of individual stocks. This type of strategy is a good example of how hedge funds can aim for positive, absolute returns even in a bear market. For example, a market neutral manager might purchase Birla company's and simultaneously short Tata company's, betting that the former will outperform the latter. The market could go down and both stocks could go down along with the market, but as long as Birla's outperforms Tata's, the short sale on Tata company's will produce a net profit for the position.

(iii) Dedicated short strategies specialize in the short sale of over-valued securities. Because losses on short-only positions are theoretically unlimited (because the stock can rise indefinitely), these strategies are particularly risky. Some of these dedicated short funds are among the first to foresee corporate collapses - the managers of these funds can be particularly skilled at scrutinizing company fundamentals and financial statements in search of red flags.

5.7 REASONS FOR INVESTING IN HEDGE FUNDS

There are two basic reasons for investing in a hedge fund: to seek higher net returns (net of management and performance fees) and/or to seek diversification.

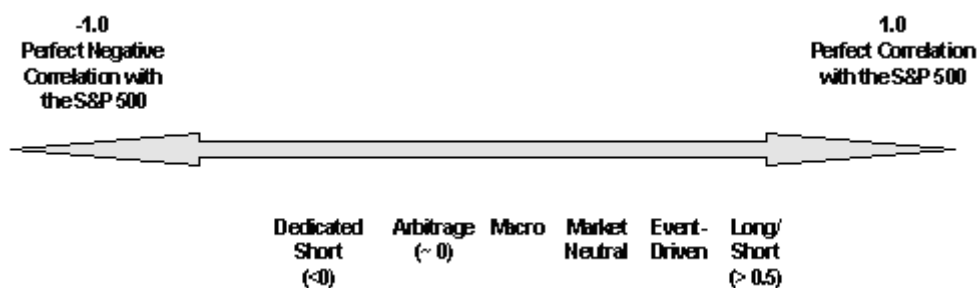
(a) Potential for Higher Returns, Especially in a Bear Market: Higher returns are hardly guaranteed. As discussed earlier, most hedge funds invest in the same securities available to mutual funds and individual investors. You can therefore only reasonably expect higher returns if you select a superior manager or pick a timely strategy. Many experts argue that selecting a talented manager is the only thing that really matters. This helps to explain why hedge fund strategies are not scalable, meaning bigger is not better. With mutual funds, an investment process can be replicated and taught to new managers,

7.62 Strategic Financial Management

but many hedge funds are built around individual "stars", and genius is difficult to clone. For this reason, some of the better funds are likely to be small.

A timely strategy is also critical. The often cited statistics in international arena from CSFB/Tremont in regard to hedge fund performance during the 1990s are revealing. From January 1994 to September 2000 - a raging bull market by any definition - the passive S&P 500 index outperformed every major hedge fund strategy by a whopping 6% in annualized return. But particular strategies performed very differently. For example, dedicated short strategies suffered badly, but market neutral strategies outperformed the S&P 500 index in risk-adjusted terms (i.e. underperformed in annualized return but incurred less than one-fourth the risk). If your market outlook is bullish, you will need a specific reason to expect a hedge fund to beat the index. Conversely, if your outlook is bearish, hedge funds should be an attractive asset class compared to buy-and-hold or long-only mutual funds.

(b) Diversification Benefits: Many institutions invest in hedge funds for the diversification benefits. If you have a portfolio of investments, adding uncorrelated (and positive-returning) assets will reduce total portfolio risk. Hedge funds - because they employ derivatives, short sales or non-equity investments - tend to be uncorrelated with broad stock market indices. But again, correlation varies by strategy. Historical correlation data (e.g. over the 1990s) remains somewhat consistent and here is a reasonable hierarchy, as available from international scenario:



5.8 DEMERITS OF HEDGE FUNDS - FAT TAILS ARE THE PROBLEM

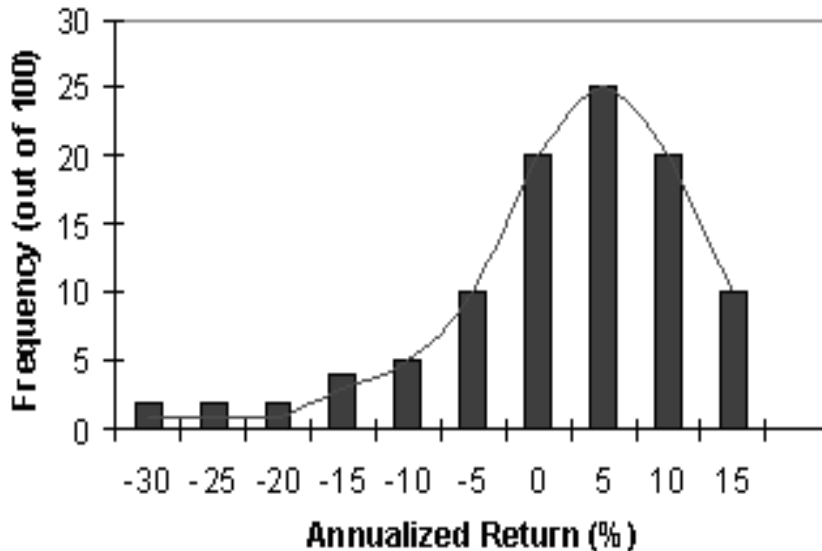
Hedge fund investors are exposed to multiple risks, and each strategy has its own unique risks. For example, long/short funds are exposed to the short-squeeze.

The traditional measure of risk is volatility, that is, the annualized standard deviation of returns. Surprisingly, most academic studies demonstrate that hedge funds, on average, are less volatile than the market. For example, over the bull market period we referred to earlier, volatility of the S&P 500 was about 14% while volatility of the aggregated hedge funds was only about 10%. That is, about two-thirds of the time, we might have expected returns to be within 10% of the average return. In risk-adjusted terms, as measured by the

Sharpe ratio (unit of excess return per unit of risk), some strategies outperformed the S&P 500 index over the bull market period mentioned earlier.

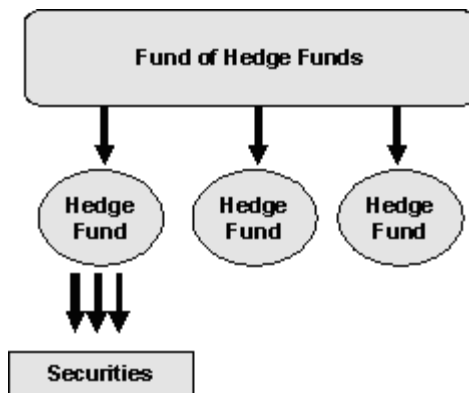
The problem is that hedge fund returns do not follow the symmetrical return paths implied by traditional volatility. Instead, hedge fund returns tend to be skewed. Specifically, they tend to be negatively skewed, which means they bear the dreaded "fat tails", which are mostly characterized by positive returns but a few cases of extreme losses. For this reason, measures of downside risk can be more useful than volatility or Sharpe ratio. Downside risk measures, such as value at risk (VaR), focus only on the left side of the return distribution curve where losses occur. They answer questions such as, "What are the odds that I lose 15% of the principal in one year?"

A Fat Tail Mean Small Odds of a Large Loss



5.9 FUNDS OF HEDGE FUNDS

Because investing in a single hedge fund requires time-consuming due diligence and concentrates risk, funds of hedge funds have become popular. These are pooled funds that allocate their capital among several hedge funds, usually in the neighborhood of 15 to 25 different hedge funds. Unlike the underlying hedge funds, these vehicles are often registered with the regulatory authorities like SEC in US and promoted to individual investors. Sometimes called a "retail" fund of funds, the net worth and income tests may be lower than usual.



The advantages of funds of hedge funds include automatic diversification, monitoring efficiency and selection expertise. Because these funds are invested in a minimum of around eight funds, the failure or underperformance of one hedge fund will not ruin the whole. As the funds of funds are supposed to monitor and conduct due diligence on their holdings, their investors should in theory be exposed only to reputable hedge funds. Finally, these funds of hedge funds are often good at sourcing talented or undiscovered managers who may be "under the radar" of the broader investment community. In fact, the business model of the fund of funds hinges on identifying talented managers and pruning the portfolio of underperforming managers.

The biggest disadvantage is cost, because these funds create a double-fee structure. Typically, you pay a management fee (and maybe even a performance fee) to the fund manager in addition to fees normally paid to the underlying hedge funds. Arrangements vary, but you might pay a 1% management fee to both the fund of funds and the underlying hedge funds. In regards to performance fees, the underlying hedge funds may charge 20% of their profits, and it is not unusual for the fund of funds to charge an additional 10%. Under this typical arrangement, you would pay 2% annually plus 30% of the gains. This makes cost a serious issue, even though the 2% management fee by itself is only about 50 basis points higher than the average small cap mutual fund (i.e. about 1.5%).

Another important and underestimated risk is the potential for over-diversification. A fund of hedge funds needs to coordinate its holdings or it will not add value: if it is not careful, it may inadvertently collect a group of hedge funds that duplicates its various holdings or - even worse - ends up constituting a representative sample of the entire market. Too many single hedge fund holdings (with the aim of diversification) are likely to erode the benefits of active management, while incurring the double-fee structure in the meantime. Various studies have been conducted, but the "sweet spot" seems to be around eight to 15 hedge funds.

6. INTERNATIONAL PORTFOLIO MANAGEMENT

The objective of portfolio investment management is to consider an optimal portfolio where the risk-return trade off is optimal. The return may be maximum at a certain level of risk or the risk may be minimum at a certain level of return. It is therefore necessary to determine whether optimization of international portfolio can be achieved by striking a balance between risk and return.

6.1 EXPECTED RETURNS FROM A SECURITY

For international investment, the estimation of expected returns takes into consideration the changes in exchange rate too so that the return from a security abroad in terms of home-country currency takes the following form:

$$1 + R_{HC} = [1 + (S_1 - S_0 + I) / S_0] \times 1 + e$$

Where,

S_0 = Home country currency value of security during proceeding time period t_0

S_1 = Home country currency value of security during succeeding time period t_1

I = Income from interest and dividend

e = Change in exchange rate

Illustration 11: An Indian investor invests in a bond in America

If the price of the bond in the beginning of the period is \$ 100 and it is \$ 105 at the end of the period. The coupon interest during the period is \$ 7. The US dollar appreciates during this period by 3%. Find the return on investment in terms of home country currency.

Solution

$$\begin{aligned} R_{HC} &= [1 + (105 - 100 + 7)/100] (1 + 0.03) - 1 \\ &= (1.12) (1.03) - 1 \\ &= 1.1536 - 1 = .1536 \\ &= 15.36\% \end{aligned}$$

6.2 PORTFOLIO RETURN

Portfolio return is the weighted average of the expected return from different securities comprising the portfolio. The portfolio for a two security portfolio will be:

$$R_P = R_A W_A + R_B W_B$$

Where,

R_P = Portfolio Return

R_A and R_B = Portfolio Returns for securities A and B

W_A and W_B = Weighted average of the securities comprising the portfolio.

6.3 REDUCTION OF RISK THROUGH DIVERSIFICATION

The investor can reduce the portfolio risk through diversification. Diversification is simultaneous investment in other securities within or outside the home country. Risk may be reduced by diversification if the co-variance/correlation between the existing portfolio and the new portfolio is negative i.e. returns in one basket are increasing while in the other they are falling. On the other hand, if it is positive it will signify that returns in one set are increasing while in the other also they are increasing leading to the level of risk being raised through diversification. Thus diversification becomes a futile exercise. With covariance being > 0 , the returns from two sets of investment are not correlated or are positively correlated.

Covariance between two sets of returns A_1 , and A_2 is given by:

$$\text{Cov}(A_1, A_2) = P_1(A_1 - \bar{A}) (A_2 - \bar{A}) + P_2 (A_1 - \bar{A}) (A_2 - \bar{A})$$

$$\text{Correlation Coefficient } \rho_{12} = \frac{\text{Cov}(A_1, A_2)}{\sigma_1 \sigma_2}$$

Covariance is sensitive to different sets of measurement and takes any value while Correlation Coefficient removes the sensitivity and lies between -1 and + 1

The Portfolio Risk of both the existing and new portfolio in terms of standard deviation is obtained from:

$$\sigma_p = \left[w_1^2 \text{Var } A_1 + w_2^2 \text{Var } A_2 + 2(w_1)(w_2)\text{Cov}(A_1, A_2) \right]^{\frac{1}{2}}$$

Where,

w_1, w_2 represent the weights of the different sets of portfolio in the total investment.

Illustration 12: An Indian investor invests in American and British securities in the proportion of 75% and 25%. The expected return is 15% from the former and 12% from the latter. The risk manifesting in variance is 15% in US securities and 18% in UK securities. Correlation is 0.6. Determine the Portfolio Return and Portfolio risk.

SOLUTION

Portfolio Return

$$0.75 \times 0.15 + 0.25 \times 0.12 = 0.1425 = 14.25\%$$

Portfolio Risk

$$(0.75)^2 (0.15)^2 + (0.25)^2 (0.18)^2 + 2(0.75)(0.25)(0.15)(0.18)(0.6) \\ = \sqrt{0.020756} = 0.1441 = 14.41\%$$

6.4 TYPES OF RISKS

A portfolio of asset possesses two types of risk:

- (a) Unsystematic risk that can be diversified out, and
- (b) Systematic risk that cannot be diversified out through investment in domestic securities.

As unsystematic risk is specific to the firm, investment in other securities simultaneously can lower such risk. Systematic risk being macro-economic risk depends on the economy at large and is the same for all securities in the field. So it is regarded as market risk too. As it cannot be reduced through diversification in the home market, systematic risk can be reduced through foreign investment on the presumption that macro-economic factors vary in different countries.

Systematic risk of a portfolio of assets is measured by comparing its returns over time with those of market portfolio in contrast with the total risk of the market portfolio. It is

$$\beta = \frac{\text{Cov}(A_1, A_m)}{\sigma_m^2}$$

obtained from where A_m is the return on the market portfolio

and σ_m^2 is the total risk of the market portfolio. When $\beta > 1$, assets adding to the portfolio, systematic risk have high covariance with market returns; when $\beta < 1$ assets reducing portfolio systematic risk have low covariance; when $\beta = 1$ assets are neither increasing nor reducing the portfolio systematic risk. However systematic risk can be eliminated in a big way by investment in risk free securities. Though government securities are risk free in nature, they are not completely so. An investor will invest in the market portfolio if he gets a higher return than that from a risk free investment. The size of Beta determines the result. A higher Beta value indicates that risk premium and required rate of return will be larger. According to CAPM, total expected return of a security is the sum of risk less return and its risk premium. It is given by:

$$A_1 = A_F + \beta_1(A_M - A_F)$$

When the capital market is in equilibrium, the above equation becomes the Security Market Line (SML)

Optimization of portfolio means selection of a particular portfolio that takes minimum risk with a given return or maximum return with a given risk. Consider four portfolio X, Y, Z, W, having same amount of investment. Return from portfolio X, Y, Z are 10% while risk in X differs from 1% to 1.5% in Y, 2% in Z. For portfolio W, risk is 2.0% while rate of return is

13%. Among the three portfolios X, Y, Z; X is the efficient portfolio since it carries least risk with same rate of return. W is too an efficient portfolio as with the same rate of risk as Z it gives a higher return. The line passing through X and W is referred to as the line of Efficient Frontier – Locus of Efficient portfolios, U has a greater return than all other portfolios and carries lower risk than other portfolios but is unassailable for the level of investment available with the investor. Other portfolios are not regarded as efficient portfolios since their risk is larger or their return lower. With a given efficient frontier, investor chooses the optional portfolio among them on the basis of the Security Market Line constituting various portfolios of risk less and risky securities. The optimal portfolio lies at the tangency point between Security Market Line and Line of Efficient Frontier. Portfolio W is the optimal portfolio representing the largest of expected return to risk ratio.

6.5 BENEFITS OF INTERNATIONAL PORTFOLIO

International Diversification of portfolio of assets helps to obtain higher risk adjusted returns i.e. reduce risk and raise return through international investment. Some of the benefits are listed as under:

(a) Reduce Risk: International investment aids to diversify risk. The different sectors in an individual economy in some way or the other are interrelated and as a whole subject to the same impact of the entire domestic policy. The returns on investment in a domestic economy depend on the prospects of domestic activity together with the uncertainty attached thereto. The gains from diversification within a country are therefore very much limited.

Though macro economic factors of different countries vary widely and do not follow the same phases of business cycles, different countries have securities of different industries in their market portfolio leading to correlation of expected returns from investment in different countries being lower than in a single country. Thus foreign investment provides diversification benefits which a domestic investment does not.

(b) Raise Return through better Risk – Return Trade off: International Investment aids to raise the return with a given risk and/or aids to lower the risk with a given rate of return. This is possible due to profitable investment opportunities being available in an enlarged situation and at the same time inter country dissimilarities reduce the quantum of risk. With a gradual increase in foreign portfolio returns from investment also increases till the ratio of foreign portfolio reaches 60% of the total portfolio.

Self-examination Questions

1. Explain briefly the two basic principles of effective portfolio management.
2. “Higher the return, higher will be the risk”. In this context discuss the various risks associated with portfolio planning.

3. (a) What sort of investor normally views the variance (or Standard Deviation) of an individual security's return as the security's proper measure of risk?
 (b) What sort of investor rationally views the beta of a security as the security's proper measure of risk? In answering the question, explain the concept of beta.
4. Write short note on:
 - (a) Objectives of portfolio management
 - (b) Factors affecting investment decisions in portfolio management
 - (c) Capital Asset Pricing Model.
5. M/s V Steels Ltd. is planning for a diversification project in Automobile Sector. Its current equity beta is 1.2, whereas the automobile sector has 1.6. Gearing of automobile sector is 30% debts, 70% equity. If expected market return is 25%, risk free debt is 10% and taxation rate is taken as 30% and also that corporate debt is assumed to be risk free, compute suitable discount rate under the following situations.
 - (i) Project financed by equity only.
 - (ii) By 30% debt and 70% equity.
 - (iii) By 40% debt and 60% equity.
6. XYZ is at present engaged in production of sport shoes and has a debt equity ratio of .80. Its present cost of debt funds is 14% and it has a marginal tax rate of 60 per cent. The company is proposing to diversify to a new field of adhesives which is considerably different from the present line of operations. XYZ Ltd. is not well conversant with the new field. The company is not aware of risk involved in area of adhesives but there exists another company PQR, which is a representative company in adhesives. PQR is also a public limited company whose shares are traded in the market. PQR has a debt to equity ratio of .25, a beta of 1.15 and an effective tax rate of 40 per cent.
 - (a) Calculate what systematic risk is involved for XYZ Ltd. if the company enters into the business of adhesives. You may assume CAPM holds and XYZ employs same amount of leverage.
 - (b) In case risk free rate at present is 10 per cent and expected return on market portfolio is 15% what return XYZ Ltd. should require for the new business if it uses a CAPM approach.
7. Two companies are identical in all respects except capital structure. One company AB Ltd. has a debt equity ratio of 1 : 4 and its equity has a β (beta) value of 1.1. The other company XY Ltd. has a debt equity ratio of 3 : 4. Income Tax is 30%. Estimate β (beta) value of XY Ltd. given the above.
8. If the risk free rate of interest (R_f) is 10%, portfolio betas are (i) 0.2 and (ii) 0.5 and the expected return of market portfolio $E(R_M)$ is 15%, then the expected return of the portfolio $E(R_p)$ is clearly a linear function of Beta.

7.70 Strategic Financial Management

9. An investor is seeking the price to pay for a security, whose standard deviation is 3.00 per cent. The correlation coefficient for the security with the market is 0.8 and the market standard deviation is 2.2 per cent. The return from government securities is 5.2 per cent and from the market portfolio is 9.8 per cent. The investor knows that, by calculating the required return, he can then determine the price to pay for the security. What is the required return on the security?
10. As an investment manager you are given the following information :

	<i>Investment in equity shares of</i>	<i>Initial price</i>	<i>Dividends</i>	<i>Market price at the end of the year</i>	<i>Beta risk factor</i>
		Rs.	Rs.	Rs.	
A.	Cement Ltd.	25	2	50	0.8
	Steel Ltd.	35	2	60	0.7
	Liquor Ltd.	45	2	135	0.5
B.	Government of India Bonds	1,000	140	1,005	0.99

Risk free return may be taken at 14%

You are required to calculate :

- Expected rate of returns of portfolio in each using Capital Asset Pricing Model (CAPM).
 - Average return of portfolio.
11. Following is the data regarding six securities :

	A	B	C	D	E	F
Return (%)	8	8	12	4	9	8
Risk (%)	4	5	12	4	5	6

(Standard Deviation)

- Which of the securities will be selected ?
 - Assuming perfect correlation, analyse whether it is preferable to invest 75% in security A and 25% in security C.
12. The Beta Coefficient of Target Ltd. is 1.4. The company has been maintaining 8% rate of growth in dividends and earnings. The last dividend paid was Rs. 4 per share. Return on Government securities is 10%. Return on market portfolio is 15%. The current market price of one share of Target Ltd. is Rs. 36.
- What will be the equilibrium price per share of Target Ltd.?
 - Would you advise purchasing the share?

FINANCIAL SERVICES IN INDIA

1.0 INVESTMENT BANKING

What is an Investment Bank?

It is neither. Investment banking, or Ibanking, as it is often called. It is the term used to describe the business of raising capital for companies.

Capital essentially means money. Companies need cash in order to grow and expand their businesses; Investment banks sell securities to public investors in order to raise the cash. These securities can come in the form of stocks or bonds.

1.1 THE PLAYERS

The biggest investment banks in global scenario include Goldman Sachs, Merrill Lynch, Morgan Stanley Dean Witter, Salomon Smith Barney, Donaldson, Lufkin & Jenrette, J.P. Morgan and Lehman Brothers, among others.

1.2 THE GAME

Generally, the breakdown of an investment bank includes the following areas:

1.3 CORPORATE FINANCE

The bread and butter of a traditional investment bank, corporate finance generally performs two different functions: 1) Mergers and acquisitions advisory and 2) Underwriting. On the mergers and acquisitions (M&A) advising side of corporate finance, bankers assist in negotiating and structuring a merger between two companies. If, for example, a company wants to buy another firm, then an investment bank will help finalize the purchase price, structure the deal, and generally ensure a smooth transaction. The underwriting function within corporate finance involves shepherding the process of raising capital for a company. In the investment banking world, capital can be raised by selling either stocks or bonds to investors.

1.4 SALES

Sales are another core component of any investment bank. Salespeople take the form of: 1) the classic retail broker, 2) the institutional salesperson, or 3) the private client service representative. Brokers develop relationships with individual investors and sell stocks and stock advice to them. Institutional salespeople develop business relationships with large institutional investors. Institutional investors are those who manage large groups of assets, for example pension funds or mutual funds. Private Client Service (PCS) representatives lie somewhere between retail brokers and institutional salespeople, providing brokerage and money management services for extremely wealthy individuals. Salespeople make money through commissions on trades made through their firms.

1.5 TRADING

Traders also provide a vital role for the investment bank. Traders facilitate the buying and selling of stock, bonds, or other securities such as currencies, either by carrying an inventory of securities for sale or by executing a given trade for a client. Traders deal with transactions large and small and provide liquidity (the ability to buy and sell securities) for the market. (This is often called making a market.) Traders make money by purchasing securities and selling them at a slightly higher price. This price differential is called the "bid-ask spread."

1.6 RESEARCH

Research analysts study stocks and bonds and make recommendations on whether to buy, sell, or hold those securities. Stock analysts (known as equity analysts) typically focus on one industry and will cover up to 20 companies' stocks at any given time. Some research analysts work on the fixed income side and will cover a particular segment, such as high yield bonds or Govt. Treasury bonds. Salespeople within the I-bank utilize research published by analysts to convince their clients to buy or sell securities through their firm. Corporate finance bankers rely on research analysts to be experts in the industry in which they are working. Reputable research analysts can generate substantial corporate finance business as well as substantial trading activity, and thus are an integral part of any investment bank.

1.7 SYNDICATE

The hub of the investment banking wheel, syndicate provides a vital link between salespeople and corporate finance. Syndicate exists to facilitate the placing of securities in a public offering, a knock-down drag-out affair between and among buyers of offerings and the investment banks managing the process. In a corporate or municipal debt deal, syndicate also determines the allocation of bonds. The breakdown of these fundamental areas differs slightly from firm to firm, but typically an investment bank will have the these

areas:

The functions of all of these areas will be discussed in much more detail later in the book. In this overview section, we will cover the nuts and bolts of the business, providing an overview of the stock and bond markets, and how an I-bank operates within them.

1.8 COMMERCIAL BANKING VS. INVESTMENT BANKING

Before describing how an investment bank operates, let's define traditional commercial banking. Commercial and investment banking share many aspects, but also have many fundamental differences. After a quick overview of commercial banking, we will build up to a full discussion of what I-banking entails.

While regulation has changed the businesses in which commercial and investment banks may now participate, the core aspects of these different businesses remain intact. In other words, the difference between how a typical investment bank and a typical commercial bank operate is simple: A commercial bank takes deposits for current and savings accounts from consumers while an investment bank does not. We'll begin examining what this means by taking a look at what commercial banks do.

1.8.1 Commercial banks

A commercial bank may legally take deposits for current and savings accounts from consumers. Commercial banks must follow a myriad of regulations. The typical commercial banking process is fairly straightforward. You deposit money into your bank, and the bank loans that money to consumers and companies in need of capital (cash). You borrow to buy a house, finance a car, or finance an addition to your home. Companies borrow to finance the growth of their company or meet immediate cash needs. Companies that borrow from commercial banks can range in size from the dry cleaner on the corner to a multinational conglomerate.

1.8.2 Private contracts

Importantly, loans from commercial banks are structured as private legally binding contracts between two parties - the bank and you (or the bank and a company). Banks work with their clients to individually determine the terms of the loans, including the time to maturity and the interest rate charged. Your individual credit history (or credit risk profile) determines the amount you can borrow and how much interest you are charged. Perhaps you need to borrow Rs.10,00,000 over 15 years to finance the purchase of your home, or maybe you need Rs.3,00,000 over five years to finance the purchase of a car. May be for the first home loan, you and the bank will agree that you pay an interest rate of 7.5 percent; perhaps for the car loan, the interest rate will be 11 percent. The same process applies to loans to companies as well - the rates are determined through a negotiation between the bank and the company.

8.4 Strategic Financial Management

Commercial banks thus collect funds and loan them to its customers for taking advantage of the large spread between their cost of funds (1 percent, for example) and their return on funds loaned (ranging from 5 to 14 percent).

1.8.3 Investment banks

An investment bank operates differently. An investment bank does not have an inventory of cash deposits to lend as a commercial bank does. In essence, an investment bank acts as an intermediary, and matches sellers of stocks and bonds with buyers of stocks and bonds. Note, however, that companies use investment banks toward the same end as they use commercial banks. If a company needs capital, it may get a loan from a bank, or it may ask an investment bank to sell equity or debt (stocks or bonds). Because commercial banks already have funds available from their depositors and an investment bank does not, an I-bank must spend considerable time finding investors in order to obtain capital for its client.

1.8.4 Public securities

Investment banks typically sell public securities (as opposed to private loan agreements). Technically, securities such as Microsoft stock or Tata Steel AAA bonds, represent government-approved stocks or bonds that are traded either on a public exchange or through an approved dealer. The dealer is the investment bank.

Let's look at an example to illustrate the difference between private debt and bonds. Suppose ITC needs capital, and estimates its need to be Rs.20 million. ITC could obtain a commercial bank loan from State Bank of India for the entire Rs.20 million, and pay interest on that loan just like you would pay on a Rs.2,000 loan from Bank of Baroda. Alternately, it could sell bonds publicly using an investment bank such as Merrill Lynch. The Rs.20 million bond issue raised by Merrill would be broken into many bonds and then sold to the public. (For example, the issue could be broken into 20,000 bonds, each worth Rs.1,000.) Once sold, the company receives its Rs.20 million and investors receive bonds worth a total of the same amount.

Over time, the investors in the bond offering receive coupon payments (the interest), and ultimately the principal (the original Rs.1,000) at the end of the life of the loan, when ITC buys back the bonds (retires the bonds). Thus, we see that in a bond offering, while the money is still loaned to ITC, it is actually loaned by numerous investors, rather than a bank.

Because the investment bank involved in the offering does not own the bonds but merely placed them with investors at the outset, it earns no interest - the bondholders earn this interest in the form of regular coupon payments. The investment bank makes money by charging the client (in this case, ITC) a small percentage of the transaction upon its completion. Investment banks call this upfront fee the "underwriting discount." In contrast,

a commercial bank making a loan actually receives the interest and simultaneously owns the debt.

1.9 DETAILS OF SOME FUNCTIONS OF AN INVESTMENT BANK

1.9.1 Issue of IPO

Investment banks underwrite stock offerings just as they do bond offerings. In the stock offering process, companies sell a portion of the equity (or ownership) of itself to the investing public. The very first time a company chooses to sell equity, this offering of equity is transacted through a process called an initial public offering of stock (commonly known as an IPO). Through the IPO process, stock in a company is created and sold to the public. After the deal, stock sold in the India is traded on a stock exchange such as the NSE or BSE.

The equity underwriting process is another major way in which investment banking differs from commercial banking. Commercial banks were able to legally underwrite debt, and some of the largest commercial banks have developed substantial expertise in underwriting public bond deals. So, not only do these banks make loans utilizing their deposits, they also underwrite bonds through a corporate finance department. When it comes to underwriting bond offerings, commercial banks have long competed for this business directly with investment banks. However, only the biggest tier of commercial banks is able to do so, mostly because the size of most public bond issues is large and competition for such deals is quite fierce.

From an investment banking perspective, the IPO process consists of these three major phases: hiring the managers, due diligence, and marketing.

1.9.2 Hiring the Managers.

The first step for a company wishing to go public is to hire managers for its offering. This choosing of an investment bank is often referred to as a "beauty contest." Typically, this process involves meeting with and interviewing investment bankers from different firms, discussing the firm's reasons for going public, and ultimately nailing down a valuation. In making a valuation, I-bankers, through a mix of art and science, pitch to the company wishing to go public what they believe the firm is worth, and therefore how much stock it can realistically sell. Perhaps understandably, companies often choose the bank that provides the highest valuation during this beauty contest phase instead of the best-qualified manager.

Almost all IPO candidates select two or more investment banks to manage the IPO process.

1.9.3 Due Diligence and Drafting.

Once managers are selected, the second phase of the process begins. For investment bankers on the deal, this phase involves understanding the company's business as well as possible scenarios (called due diligence), and then filing the legal documents as required by the SEs. Lawyers, accountants, I-bankers, and of course company management must all toil for countless hours to complete the filing in a timely manner.

1.9.4 Marketing

The third phase of an IPO is the marketing phase. Once the approval comes on the prospectus, the company embarks on a roadshow to sell the deal. A roadshow involves flying the company's management coast to coast visit institutional investors potentially interested in buying shares in the offering. Typical road shows last from two to three weeks, and involve meeting literally hundreds of investors, who listen to the company's canned presentation, and then ask scrutinizing questions.

Often, money managers decide whether or not to invest thousands of rupees in a company within just a few minutes of a presentation. The marketing phase ends abruptly with the placement of the stock, which results in a new security trading in the market.

1.9.5 Follow-on offering of stock

A company that is already publicly traded will sometimes sell stock to the public again. This type of offering is called a follow-on offering, or a secondary offering. One reason for a follow-on offering is the same as a major reason for the initial offering: a company may be growing rapidly, either by making acquisitions or by internal growth, and may simply require additional capital. Another reason that a company would issue a follow-on offering is similar to the cashing out scenario in the IPO.

1.9.6 Issue of Debt

When a company requires capital, it sometimes chooses to issue public debt instead of equity. Almost always, however, a firm undergoing a public bond deal will already have stock trading in the market. (It is very rare for a private company to issue bonds before its IPO.) The reasons for issuing bonds rather than stock are various. Perhaps the stock price of the issuer is down, and thus a bond issue is a better alternative. Or perhaps the firm does not wish to dilute its existing shareholders by issuing more equity. These are both valid reasons for issuing bonds rather than equity.

Sometimes in down markets, investor appetite for public offerings dwindles to the point where an equity deal just could not get done (investors would not buy the issue).

The bond offering process resembles the IPO process. The primary difference lies in: (1) the focus of the prospectus (a prospectus for a bond offering will emphasize the

company's stability and steady cash flow, whereas a stock prospectus will usually play up the company's growth and expansion opportunities), and (2) the importance of the bond's credit rating (the company will want to obtain a favorable credit rating from a debt rating agency like CRISIL, with the help of the credit department of the investment bank issuing the bond; the bank's credit department will negotiate with the rating agencies to obtain the best possible rating). The better the credit rating - and therefore, the safer the bonds - the lower the interest rate the company must pay on the bonds to entice investors debt rating should be high.

1.10 M&A

M&A advisors come directly from the corporate finance departments of investment banks. Unlike public offerings, merger transactions do not directly involve salespeople, traders or research analysts. In particular, M&A advisory falls onto the laps of M&A specialists and fits into one of either two buckets: seller representation or buyer representation (also called target representation and acquirer representation).

1.10.1 Representing the target

An I-bank that represents a potential seller has a much greater likelihood of completing a transaction (and therefore being paid) than an I-bank that represents a potential acquirer. Also known as sell-side work, this type of advisory assignment is generated by a company that approaches an investment bank and asks the bank to find a buyer of either the entire company or a division. Often, sell-side representation comes when a company asks an investment bank to help it sell a division, plant or subsidiary operation.

Generally speaking, the work involved in finding a buyer includes writing a Selling Memorandum and then contacting potential strategic or financial buyers of the client. If the client hopes to sell a semiconductor plant, for instance, the I-bankers will contact firms in that industry, as well as buyout firms that focus on purchasing technology or high-tech manufacturing operations.

1.10.2 Representing the acquirer

In advising sellers, the I-bank's work is complete once another party purchases the business up for sale, i.e., once another party buys your client's company or division or assets. Buy-side work is an entirely different animal. The advisory work itself is straightforward: the investment bank contacts the firm their client who wishes to purchase, attempts to structure a palatable offer for all parties, and make the deal a reality. However, most of these proposals do not work out; few firms or owners are willing to readily sell their business. And because the I-banks primarily collect fees based on completed transactions, their work often goes unpaid.

Consequently, when advising clients looking to buy a business, an I-bank's work often drags on for months. Often a firm will pay a non-refundable retainer fee to hire a bank and

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say, "Find us a target company to buy." These acquisition searches can last for months and produce nothing except associate and analyst fatigue as they repeatedly build merger models and work all-nighters.

Deals that do get done, though, are a boon for the I-bank representing the buyer because of their enormous profitability.

1.11 PRIVATE PLACEMENTS

A private placement, which involves the selling of debt or equity to private investors, resembles both a public offering and a merger. A private placement differs little from a public offering aside from the fact that a private placement involves a firm selling stock or equity to private investors rather than to public investors. Also, a typical private placement deal is smaller than a public transaction. Despite these differences, the primary reason for a private placement - to raise capital - is fundamentally the same as a public offering. Often, firms wishing to go public may be advised by investment bankers to first do a private placement, as they need to gain critical mass or size to justify an IPO.

They are usually the province of small companies aiming ultimately to go public. The process of raising private equity or debt changes only slightly from a public deal. One difference is that private placements do not require any securities to be registered with the SEs, nor do they involve a roadshow. In place of the prospectus, I-banks draft a detailed Private Placement Memorandum (PPM) which divulges information similar to a prospectus. Instead of a roadshow, companies looking to sell private stock or debt will host potential investors as interest arises, and give presentations detailing how they will be the greatest thing since sliced bread.

The investment banker's work involved in a private placement is quite similar to sell-side M&A representation. The bankers attempt to find a buyer by writing the PPM and then contacting potential strategic or financial buyers of the client.

Because private placements involve selling equity and debt to a single buyer, the investor and the seller (the company) typically negotiate the terms of the deal. Investment bankers function as negotiators for the company, helping to convince the investor of the value of the firm. Fees involved in private placements work like those in public offerings. Usually they are a fixed percentage of the size of the transaction.

1.12 FINANCIAL RESTRUCTURINGS

When a company cannot pay its cash obligations - for example, when it cannot meet its bond payments or its payments to other creditors (such as vendors) - it goes bankrupt. In this situation, a company can, of course, choose to simply shut down operations and walk away. On the other hand, it can also restructure and remain in business.

What does it mean to restructure? The process can be thought of as two-fold: financial restructuring and organizational restructuring. Restructuring from a financial viewpoint involves renegotiating payment terms on debt obligations, issuing new debt, and restructuring payables to vendors. Bankers provide guidance to the firm by recommending the sale of assets, the issuing of special securities such as convertible stock and bonds, or even selling the company entirely.

From an organizational viewpoint, a restructuring can involve a change in management, strategy and focus. I-bankers with expertise in "reorgs" can facilitate and ease the transition from bankruptcy to viability. Typical fees in a restructuring depend on whatever retainer fee is paid upfront and what new securities are issued post-bankruptcy. When a bank represents a bankrupt company, the brunt of the work is focused on analyzing and recommending financing alternatives. Thus, the fee structure resembles that of a private placement. How does the work differ from that of a private placement? I-bankers not only work in securing financing, but may assist in building projections for the client (which serve to illustrate to potential financiers what the firm's prospects may be), in renegotiating credit terms with lenders, and in helping to re-establish the business as a going concern.

Because a firm in bankruptcy already has substantial cash flow problems, investment banks often charge minimal monthly retainers, hoping to cash in on the spread from issuing new securities. Like other public offerings, this can be a highly lucrative and steady business.

CREDIT RATING

2.0 WHAT IT IS?

Credit Rating means an assessment made from credit-risk evaluation, translated into a current opinion as on a specific date on the quality of a specific debt security issued or on obligation undertaken by an enterprise in terms of the ability and willingness of the obligator to meet principal and interest payments on the rated debt instrument in a timely manner.

Thus Credit Rating is:

- 1) An expression of opinion of a rating agency.
- 2) The opinion is in regard to a debt instrument.
- 3) The opinion is as on a specific date.
- 4) The opinion is dependent on risk evaluation.
- 5) The opinion depends on the probability of interest and principal obligations being met timely.

Such opinions are relevant to investors due to the increase in the number of issues and in the presence of newer financial products viz. asset backed securities and credit derivatives.

Credit Rating does not in any way linked with :

- 1) Performance Evaluation of the rated entity unless called for.
- 2) Investment Recommendation by the rating agency to invest or not in the instrument to be rated.
- 3) Legal Compliance by the issuer-entity through audit.
- 4) Opinion on the holding company, subsidiaries or associates of the issuer entity.

2.1 CREDIT RATING AGENCIES IN INDIA

Around 1990, Credit Rating Agencies started to be set up in India, Among them the most important ones are:

- 1) **Credit Rating Information Services of India Ltd. (CRISIL)** – Launched in the pre-reforms era, CRISIL has grown in size and strength over the years to become one of the top five globally rated agencies. It has a tie up with Standard and Poor's (S & P) of USA holding 10% stake in CRISIL. It has also set up CRIS – RISC a subsidiary for providing information and related services over the internet and runs an online news and information service. CRISIL's record of ratings covers 1800 companies and over 3600 specific instruments.

- 2) **Investment Information and Credit Rating Agency (ICRA)** – It began its operations in 1991. Its major shareholders are leading financial institutions and banks. Moody's Investor Services through their Indian subsidiary, Moody's Investment Company India (P) Ltd. is the single largest shareholder. ICRA covers over 2500 instruments.
- 3) **Credit Analysis and Research Ltd. (CARE)** – It was established in 1993. UTI, IDBI and Canara Bank are the major promoters. CARE has over 2500 instruments under its belt and occupies a pivotal position as a rating entity.
- 4) **Fitch Ratings India (P) Ltd.** – The Fitch Group, an internationally recognized statistical rating agency has established its base in India through Fitch Rating India (P) Ltd. as a 100% subsidiary of the parent organization. Its credit rating apply to a variety of corporates / issues and is not limited to governments, structured financial arrangements and debt instruments.

All the four agencies are recognized by SEBI.

2.2 CREDIT RATING PROCESS :

- 1) **Request from issuer and analysis** – A company approaches a rating agency for rating a specific security. A team of analysts interact with the company's management and gathers necessary information. Areas covered are : historical performance, competitive position, business risk profile, business strategies, financial policies and short/long term outlook of performance. The team of analysts makes an assessment of the issuer's prospects in the light of information available from management. Also factors such as industry in which the issuer operates, its competitors and markets are taken into consideration.
- 2) **Rating Committee** – On the basis of information obtained and assessment made the team of analysts present a report to the Rating Committee. The issuer is not allowed to participate in this process as it is an internal evaluation of the rating agency. The nature of credit evaluation depends on the type of information provided by the issuer.
- 3) **Communication to management and appeal** – The Rating decision is communicated to the issuer and then supporting the rating is shared with the issuer. If the issuer disagrees, an opportunity of being heard is given to him. Issuers appealing against a rating decision are asked to submit relevant material information. The Rating Committee reviews the decision although such a review may not alter the rating. The issuer may reject a rating and the rating score need not be disclosed to the public.
- 4) **Pronouncement of the rating** – If the rating decision is accepted by the issuer, the rating agency makes a public announcement of it.

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- 5) **Monitoring of the assigned rating** – The rating agencies monitor the on-going performance of the issuer and the economic environment in which it operates. All ratings are placed under constant watch. In cases where no change in rating is required, the rating agencies carry out an annual review with the issuer for updating of the information provided.
- 6) **Rating Watch** – Based on the constant scrutiny carried out by the agency it may place a rated instrument on Rating Watch. The rating may change for the better or for the worse. Rating Watch is followed by a full scale review for confirming or changing the original rating. If a corporate which has issued a 5 year 8% debenture merges with another corporate or acquires another corporate, it may lead to the listing of the specified debenture rating under this policy.
- 7) **Confidentiality of information** – As the information provided by the issuers is very sensitive in nature; the rating agencies are required to keep them strictly confidential and cannot use such information for any other purpose.
- 8) **Rating Credibility** – The rating agencies follow a thorough and transparent evaluation so as to lend credibility to their findings. The policies followed are
 - a) Clear and Specific ideas for a rating score.
 - b) Rationale and Sensitiveness behind the ratings being made public.
 - c) Publication of the limitations of rating, adequacy of information and validity of the rating score.
 - d) Limiting dependence on information from third parties viz auditors, trustees, consultants, experts.
 - e) Not carrying out a rating exercise on an unsolicited basis.
 - f) Withdrawing the ratings after expiration of the tenure and following a strict policy of not disclosing the rejected ratings except when required.
- 9) **Rating Coverage** – Ratings are not limited to specific instruments. They also include public utilities; financial institutions; transport; infrastructure and energy projects; Special Purpose Vehicles; domestic subsidiaries of foreign entities. Structured ratings are given to MNCs based on guarantees or Letters of Comfort and Standby Letters of Credit issued by the banks. The rating agencies have also launched Corporate Governance Ratings with emphasis on quality of disclosure standards and the extent to which regulatory obligations have been complied with.
- 10) **Rating Scores** – A comparative summary of Rating Score used by four rating agencies in India is given below.

Sample of Rating Scores

Debentures	CRISIL	ICRA	CARE	FITCH
Highest Safety	AAA	LAAA	CARE AAA (L)	AAA (ind)
High Safety	AA	LAA	CARE AA (L)	AA (ind)
Adequate Safety	A	LA	CARE A (L)	A (ind)
Moderate Safety	BBB	LB	CARE BBB (L)	BBB (ind)
Inadequate Safety	BB	LBB	CARE BB (L)	BB (ind)
High Risk	B	LB	CARE B (L)	B (ind)
Substantial Risk	C	LC	CARE C (L)	C (ind)
Default	D	LD	CARE D (L)	C (ind)
<u>Fixed Deposits</u>				
Highest Safety	FAAA	MAAA	CARE AAA	TAAA
High Safety	FAA	MAA	CARE AA	TAA
Adequate Safety	FA	MA	CARE A	TA

2.3 USES OF CREDIT RATING

For users – (i) Aids in investment decisions.

(ii) Helps in fulfilling regulatory obligations.

(iii) Provides analysts in Mutual Funds to use credit ratings as one of the valuable inputs to their independent evaluation system.

For issuers – (i) Requirement of meeting regulatory obligations as per SEBI guidelines.

(ii) Recognition given by prospective investors of providing value to the ratings which helps them to raise debt / equity capital.

The rating process gives a viable market driven system which helps individuals to invest in financial instruments which are productive assets.

2.4 LIMITATIONS OF CREDIT RATING

- 1) **Rating Changes** – Ratings given to instruments can change over a period of time. They have to be kept under rating watch. Downgrading of an instrument may not be timely enough to keep investors educated over such matters.

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- 2) **Industry Specific rather than Company Specific** – Downgrades are linked to industry rather than company performance. Agencies give importance to macro aspects and not to micro ones; over-react to existing conditions which come from optimistic / pessimistic views arising out of up / down turns.
- 3) **Cost Benefit Analysis** – Rating being mandatory, it becomes a must for entities rather than carrying out Cost Benefit Analysis. Rating should be left optional and the corporate should be free to decide that in the event of self rating, nothing has been left out.
- 4) **Conflict of Interest** – The rating agency collects fees from the entity it rates leading to a conflict of interest. Rating market being competitive there is a distant possibility of such conflict entering into the rating system.
- 5) **Corporate Governance Issues** – Special attention is paid to
 - a) Rating agencies getting more of its revenues from a single service or group.
 - b) Rating agencies enjoying a dominant market position engaging in aggressive competitive practices by refusing to rate a collateralized / securitized instrument or compelling an issuer to pay for services rendered.
 - c) Greater transparency in the rating process viz. in the disclosure of assumptions leading to a specific public rating.

2.5 CAMEL MODEL IN CREDIT RATING

CAMEL Stands for Capital, Assets, Management, Earnings and Liquidity. The CAMEL model adopted by the Rating Agencies deserves special attention, it focuses on the following aspects:

- a) **Capital** – Composition of Retained Earnings and External Funds raised; Fixed dividend component for preference shares and fluctuating dividend component for equity shares and adequacy of long term funds adjusted to gearing levels; ability of issuer to raise further borrowings.
- b) **Assets** – Revenue generating capacity of existing / proposed assets, fair values, technological / physical obsolescence, linkage of asset values to turnover, consistency, appropriation of methods of depreciation and adequacy of charge to revenues. Size, ageing and recoverability of monetary assets viz receivables and its linkage with turnover.
- c) **Management** – Extent of involvement of management personnel, team-work, authority, timeliness, effectiveness and appropriateness of decision making along with directing management to achieve corporate goals.

- d) **Earnings** – Absolute levels, trends, stability, adaptability to cyclical fluctuations ability of the entity to service existing and additional debts proposed.
- e) **Liquidity** – Effectiveness of working capital management, corporate policies for stock and creditors, management and the ability of the corporate to meet their commitment in the short run.

These five aspects form the five core bases for estimating credit worthiness of an issuer which leads to the rating of an instrument. Rating agencies determine the pre-dominance of positive / negative aspects under each of these five categories and these are factored in for making the overall rating decision.

CONSUMER FINANCE

With globalization of the economy, there was a spurt of employment opportunities resulting in the increase of salaried persons. There was a cascading effect of a steady increase in demand and supply of durable consumer valuables thereby paving the way for consumer credit.

3.0 WHAT IT IS?

Consumer credit provides short term/medium term loans to finance purchase of goods or services for personal use. There are four important sources of consumer finance viz manufacturers / sellers/dealers, finance companies, banks, credit card companies. In the past, banks provided finance to manufacturing organizations. The consumers borrowed money from the sellers/dealers directly. Finance companies too entered this arena while credit card entitles with the support from banks started operating with substantial success. Both nationalized and private sector banks have started marketing aggressively for a large slice of the market share in this consumer finance segment. Employers also provide loan facilities to salary earners as a part of welfare scheme for their employees. In big concerns, employees organise themselves into co-operative credit societies and funds raised by its members through periodical contributions are used as loan assistance at low rate of interest.

3.1 PURPOSE BEHIND CONSUMER FINANCE

Banks provide consumer finance in the form of personal loans for expenditure on education or to meet shortfalls in family budgets aimed at providing liquidity and cash support. This also applies to cash drawal facility extended by credit card companies. Manufacturers/dealers in consumer durables, finance companies along with credit card companies also provide consumer assistance towards the purchase of goods and services.

3.2 STRUCTURE OF LOANS

In order to attract consumers, lenders provide various loan products containing different features. However, there are three important aspects which are common to all consumer loans.

(1) Loan Amount (2) Interest Charges for the borrowed period (3) Loan Amount together with interest to be repaid by the borrower in a given period by instalments.

In a hire purchase transaction e.g. car loans the legal ownership is retained with the financier whereas in an installment credit e.g. Refrigerators, TVs, ACs, VCDs, Microwaves, Computers, Washing Machines the ownership vests with the buyer subject to unpaid vendor's lien on such goods. The repayment period varies between 36 and 60 months. The motto followed by the finance companies is to entice the consumer with "Buy now and Pay later" instead of "Save now and Buy later"

3.3 BASIS OF CREDIT EVALUATION

While carrying out credit evaluation of a consumer, the finance company gives emphasis on the three C's of lending viz Capacity, Capital and Character. Capacity and Capital focuses on the ability of the borrower to repay. Character, on the other hand, stresses on the willingness of the borrower to repay by following a prescribed schedule. The finance companies have to look into the underlying factors such as

- (a) Present/Future earnings potential of the individual and the amount of surplus available for repayment
- (b) Past track record, social status and reputation of the individual
- (c) Existing level of debts, initial contribution/safety margins a credit seeker can provide by means of tangible security so as to protect the interest of the lenders in the form of third party guarantees.

It is to be noted that consumer loans are costlier than business loans.

3.4 SOME CONCEPTS

Flat Rate – Under such a scheme finance companies structure their hire purchase loans on a flat rate whereby a quoted flat interest rate is applied to the principal amount for the entire period of the contract and the aggregate of principal and interest thus computed has to be repaid in equated instalments in that period. The effective rate IRR computed on the basis of flat rate will be higher than the reducing balance method. Repayments are structured either as payments in advance or payments in arrears.

- (1) **Payment in Arrears** – Effective Interest Rate differs depending on the timing of cash payments. Effective Rate under a loan system where instalments are payable at the

end of each month would be lower than what it would be if the instalments are payable at the beginning of each month.

3.5 REGULATION OF CONSUMER FINANCE

Consumer Finance provided to the automobile sector by Non Bank Finance Companies (NBFCs) are governed by RBI's regulations where registration and maintenance of minimum Net Operating Funds and Capital Adequacy on an ongoing basis are mandatory. For banks engaged in consumer finance, the Banking Regulation Act and RBI Act are required to be adhered to .

Problem 1

Mr Alok wants to buy a car. The invoice price is Rs. 240,000/-. Mr Alok can pay Rs. 28,375 as down payment. A finance company offers him a hire-purchase deal of repayment in 30 months, the flat rate being 6.497%.

Computation of Monthly Instalments.

Cash Cost Rs. 2,40,000

Down payment Rs. 28,375

Finance amount (Cash cost – down payment) Rs.2,11,625

Flat rate 6.497%

Amount of finance charges (6.497% p.a. x 2.5 years

= 16.243%, applied on finance amount) Rs.34,375

Total amount repayable Rs. 2,46,000

Duration 30 months

EMI Rs. 8,200

Computation of Effective Rate

Effective rate Is the IRR of cash flows

Initial outlay Rs. 2,11,625

Amount of annuity Rs. 8,200

Annuity factor for 30 months 25.808

By a reference to annuity tables, we can find that this is 1% per month or closely approximates to 1% for a 30 months period 12% per annum

Effective rate being charged by finance company is therefore 12% p.a., although the apparent rate is only 6.497%

Problem 2

Lenders and Company has come up with a special offer for its customers, for purchase of TVs, Refrigerators. Electronic equipment and other home appliances. A visit to their show room and discussions with sales persons reveal the following :

- The offer is available for a minimum purchase of items for list price of Rs. 18,000
- The purchase price can be paid in 12 equal monthly instalments. The first payment is to be made on the date of purchase and the remaining 11 instalments are payable each of the following months, on the same calendar date of purchase
- If the buyers opt to pay in cash, they can get a steep discount of Rs. 1173 for each lot of purchases worth Rs 18,000/-
 - a. Is there an interest element involved in Zero interest offer?
 - b. If yes, what is the rate?
 - c. Which offer would you prefer?

Compute interest element involved in the offer

Since Lenders and Co are ready to sell the item, with a discount of Rs. 1,173 for each lot of Rs.18,000, the cash price for the goods is equal to Rs.16, 827. The implicit rate in the offer is the rate at which present value of all the instalments equals the cash price of Rs. 16,827

Cash price Rs. 16,827

Outflow if instalment payments are accepted Rs. 18,000

First instalment being paid on day Zero Rs. 1,500

Balance in 11 instalments Rs. 16,500

IRR at which present value of 12 instalments equals Rs. 16827 is 1.25%

0	1,500	1.000	1,500
1-11	1,500	10.218	<u>15,327</u>
			<u>16,827</u>

IRR = $1.25 \text{ p.m} \times 12 = 15 \% \text{ p.a}$

- a. Yes, there is an interest element involved.
- b. Interest element involved in the offer is 15% p.a.
- c. If the customer can borrow from an alternative source at 15%, he should borrow and buy. Otherwise, he should accept the instalment credit

HOUSING FINANCE

4.0 INTRODUCTION

Both volume and growth rate from one period to another in housing loans is viewed upon as one of the important barometers of measuring growth in an economy. Increased activity in housing sector viz. renovation, modernization leads to demand for iron and steel, cement which have a positive effect on various sectors as well. Financial assistance to the housing sector covers loans to building promoters, very much a commercial activity, and to users.

The demand for Housing Finance comes from:

- 1) Salary earners and self employed professionals with their basic need of a roof over their head.
- 2) Non residents having an eye on capital appreciation of the asset or with an eye to their possible resettlement in India for NRIs.

The supply of loans comes from:

- 1) LIC, National Housing Bank in the government sector.
- 2) Private Sector housing companies viz. HDFC, Commercial Banks etc.
- 3) Non Banking Finance Companies, Nidhis and Chit funds, Co-operative and Credit Societies, employers extending staff loans for housing, beside private money lenders.

4.1 REGULATORY FRAMEWORK

Commercial Banks fund their loans from public deposits. In a falling interest rate regime, investors lock their funds for short duration in the hope of a hike in rates in future. In contrast, housing loans are for longer periods resulting in maturity mismatch which in turn leads to interest rate risks. Commercial banks have to monitor both these areas regularly to make sure that risks associated with floating rate deposits (shorter maturities) and fixed rate housing loans are minimized.

The RBI has laid down guidelines for commercial banks undertaking gap analysis both for interest rate and maturity mismatches.

4.2 LOAN STRUCTURE AND INTEREST RATES

- 1) Tenor – Loan structure is 8 years on an average. A longer repayment period of 10, 15 or 20 years is also available to deserving cases.

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- 2) EMI – Considering convenience of recovery, equated monthly repayment is stipulated by lenders.
- 3) Interest Rate – Interest rate applicable for the loan varies with the tenor. The longer the period, the higher is the interest rate.
- 4) Fixed vs. Floating – Under fixed interest rates, the rates remain the same for the entire tenor of the loan. Under floating interest rates, interest rates are periodically revised in line with a reference rate.
- 5) Security – The tangible asset that emerges by use of finance or an alternative asset of adequate value is taken as security. Besides borrower's direct liability supporting guarantees from individuals or entities with net worth compatible with loan amount are also stipulated.
- 6) Low Rates – Interest rates are relatively low because lenders believe that given borrowers affinity and sentimental value attachment to houses, the risk of default is not high.

Problem 1 Fixed Interest rates quoted on housing loans by a nationalized bank for three different maturity periods are as follows. Compute EMI for a loan of Rs. 72,500 for each of the maturities.

Interest rate	10% (3 years)	11% (5 years)	12% (10 years)
	<u>Option I</u>	<u>Option II</u>	<u>Option III</u>
Annual Interest	10%	11%	12%
Loan Period	3 years	5 years	10 years
Interest Rate adjusted on one month basis	0.833	0.916	1.000
Loan Amount	Rs. 72,500	Rs. 72,500	Rs. 72,500
Monthly payments	Annuities	Annuities	Annuities
PVAF for 36/60/120 months	30.99	45.99	69.70
Annuity = $\text{Loan Amount} / \text{PVAF}$	Rs. 2339.46	Rs. 1576.43	Rs. 1040.17

Problem 2 Mr. Stanley Joseph has secured from a housing bank, a six year housing loan of Rs. 12,00,000. The loan was structured as follows:

Loan Amount	---	Rs. 12,00,000
Repayment	---	Six equated annual instalments, payable in arrears.
Reference Base	---	Prime Lending Rate
Reference Rate	---	9% on the date of loan
Interest on Loan	---	1 percentage point over reference rate of 9%
Annual Installment	---	Rs. 2,75,530

Two years after the loan was granted, the prime rate moves down to 8% and the effective rate on the loan automatically stood revised to 9%. What action can the bank take?

Revision in equated Instalments

- 1) Determination of Unpaid principal
- 2) Re-Computation of EMI for revised period at revised rate

Determination of Remaining Principal

Year	Opg. Bal (Rs.)	Interest @10% (Rs.)	Total (Rs.)	Repaid (Rs.)	Clg. Bal (Rs.)
1	12,00,000	1,20,000	13,20,000,	2,75,530	10,44,470
2	10,44,470	1,04,447	11,48,917	2,75,530	8,73,387

Determination of Revised Equated Monthly Instalments

New Amount	Rs. 8,73,387	
New Period	4 years	
New Rate (8% + 1%)	9%	
PVAF	3.240	
Instalment	Rs. 8,73,387 / 3.240	= Rs. 2,69,564

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Problem 3 You have a housing loan with one of India's top housing finance companies. The amount outstanding is Rs. 1,89,540. You have now paid an instalment. Your next instalment falls due a year later. There are five more instalments to go, each being Rs. 50,000. Another housing finance company has offered to take over this loan on a seven year repayment basis. You will be required to pay Rs. 36,408 p.a. with the first instalment falling a year later. The processing fee is 3% of amount taken over. For swapping you will have to pay Rs. 12,000 to the first company. Should you swap the loan?

Present Interest Rate

For a loan of Rs. 1,89,540 annuity being Rs. 50,000 , $PVAF = 3.791$ ($\text{Rs. } 1,89,540 / \text{Rs. } 50,000$). From PVAF table for 5 years, this corresponds to 10%.

New Interest Rate

For a similar loan, annuity being Rs. 36,408 , $PVAF = 5.206$ ($\text{Rs. } 1,89,540 / \text{Rs. } 36,408$). From PVAF table for 7 years, this corresponds to 8%.

Interest Rate is prima facie beneficial.

Additional Charges

(i) Swap Charges	Rs. 12,000
(ii) Processing fee 3% on loan amount	$(\frac{3}{100} \times \text{Rs. } 1,89,540) = \text{Rs. } 5,686$

Considering these two factors, $IRR = 10.947\%$

Interest rate on existing loan is 10% while proposed loan is 10.947%. Proposed loan is more expensive. Do not swap.

5.0 ASSET RESTRUCTURING/MANAGEMENT COMPANY

Mutual Fund management means the management of mutual funds in accordance with an approved mutual fund scheme. Mutual funds raise money by selling investment units of the fund to the public; money received from the sale of investment units is invested in securities or other assets or used to seek a return by any other means. A mutual fund is an investment vehicle suitable for retail investors who have a limited amount of money, lack of experience, knowledge, skill, or time.

A mutual fund management company shall manage its fund with honesty and care to preserve the best interests of its unit holders with professional knowledge and competence.

The management company may set up and offer for sale a mutual fund only when its application to establish the fund has been given approval. Generally, the mutual fund scheme contains key features of the fund such as investment policy, investment

objectives, management fee, relevant expenses, responsibilities of parties involved in managing the fund, and rights of the unit holders.

When investment units are placed on offer for sale, a sales person or underwriter of the company must deliver or distribute a simplified prospectus to interested investors.

The management company shall manage the fund strictly in accordance with the policy and objectives of the fund as specified in the mutual fund proposal and prospectus. The fund shall invest in types of securities or assets, having diversification and investment limits as specified by law.

Any person authorized by the management company can make investment decisions according to the investment policy indicated in the mutual fund scheme. A person assigned by the management company can sell investment units of the mutual fund to the public. The person must be approved and meet the qualifications as specified by the authorities, and shall perform his or her duties as prescribed in sales practices, such as recommending a fund that is suitable for the customer's investment objectives.

Fund Supervisor is the person responsible for looking after the best interests of unit holders. The duties of a fund supervisor include ensuring that the management company manages the fund in accordance with the approved mutual fund scheme, verifying the net asset value (NAV) of the fund, the safekeeping of funds and assets, looking after the fund's settlement process, verifying and keeping all records related to funds and assets, monitoring and keeping track of all rights and benefits of the fund, and filing legal action against the management company on behalf of unit holders. However, the fund supervisor shall not have any direct or indirect relationship with the management company, and shall not have any relationship that may deter its ability to perform its duties independently.

A registrar is a person who supervises and prepares a record of unit holders, and keeps track of all rights and benefits of unit holders such as dividend payments and other benefits. A management company can act as registrar of a fund under its own management

DEPOSITORY SERVICES

6.0 WHAT IT IS ?

The term 'Depository' means a place where something is deposited for safe keeping; a bank in which funds or securities are deposited by others under the terms of specific depository agreement. Depository means one who receives a deposit of money, securities, instruments or other property, a person to whom something is entrusted, a trustee, a person or group entrusted with the preservation or safe keeping of something.

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The depository is an organization where the securities of a shareholder are held in the form of electronic accounts, in the same way as a bank holds money. The depository holds electronic custody of securities and also arranges for transfer of ownership of securities on the settlement dates. This system is known as 'scripless trading system'. Any body eligible to provide depository services must register with SEBI.

A depository is an organization which holds the securities of the investors in the form of electronic book entries in the same way a bank holds money. A depository transfers securities without physically handling securities, the way a bank transfers funds without actually handling money.

6.1 DEPOSITORY SYSTEM

Depository system is concerned with conversion of securities from physical to electronic form, settlement of trades in electronic segment, electronic transfer of ownership of shares and electronic custody of securities. All securities in the depositories are identical in all respects and are thus fungible. The ownership and transfer of securities take place by means of book entries, avoiding the risks associated with paper.

Depository system is not mandatory, it is optional and it is left to the investor to decide whether he wants the securities to be dematerialized. The system results in instant transfer as compared to six to eight weeks time under physical mode. Depository carries out its operations through various functionaries called Business Partners.

6.2 PHYSICAL VIS-À-VIS DEMATERIALISED SHARE TRADING

Physical	Dematerialised
(1) Actual Delivery of Share is to be exchanged	(1) No Actual Delivery of shares is needed
(2) Open Delivery can be kept	(2) Not possible to keep delivery open
(3) Processing time is long	(3) Processing time is less
(4) Stamp Charges @ 0.5% are levied for transfer	(4) No Stamp Charges are required for transfer
(5) For sales transaction, no charges other than brokerage are levied	(5) Sales transactions are also charged
(6) For buy transaction, delivery is to be sent to company for Registration.	(6) No need to send the document to the company for Registration.

6.3 DEPOSITORIES IN INDIA

1. National Securities Depository Limited (NSDL) – NSDL was registered by the SEBI on June 7, 1996 as India's first depository to facilitate trading and settlement of securities in the dematerialized form. The NSDL is promoted by IDBI, UTI and NSE to provide electronic depository facilities for securities traded in the equity and debt markets in the country. NSDL has been setup to cater to the demanding needs of the Indian capital markets. In the first phase of operations NSDL will dematerialize scrips and replace them with electronic entries
2. Central Depository Service (India) limited (CSDL) – CSDL commenced its operations during February 1999. CSDL was promoted by Stock Exchange, Mumbai in association with Bank of Baroda, Bank of India, State Bank of India and HDFC Bank.

6.4 PROS AND CONS OF DEPOSITORY SERVICES

The major benefits accruing to investors and other market players are as follows :

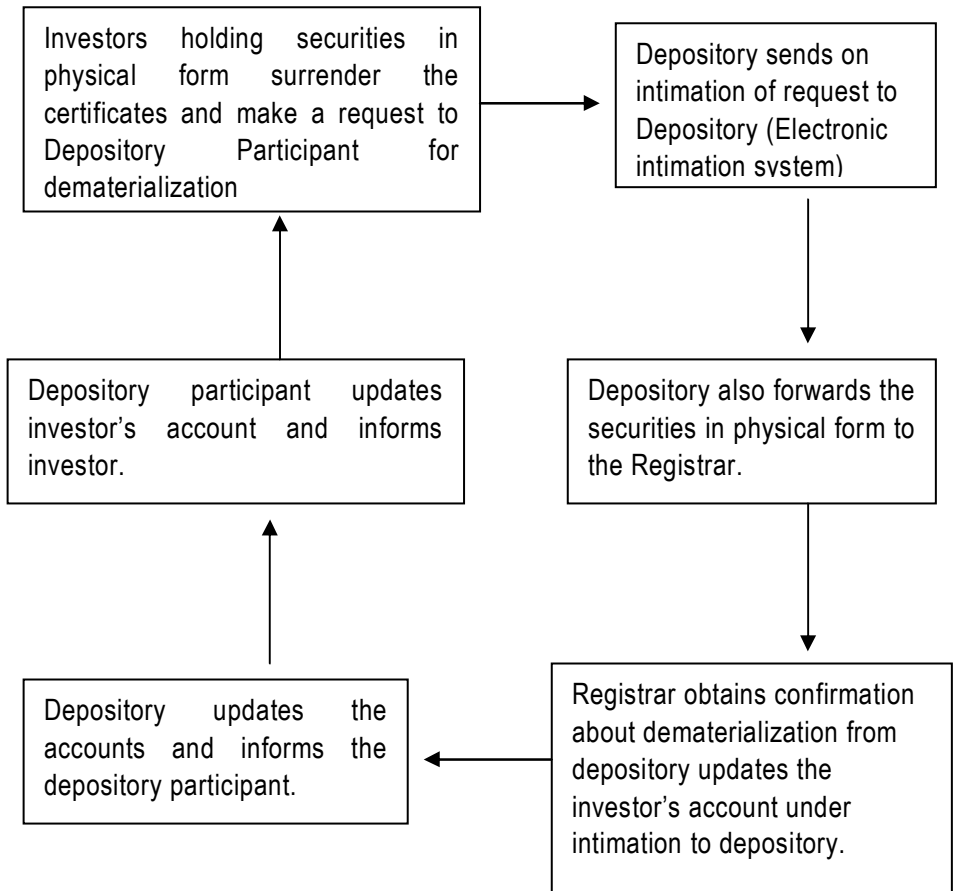
1. Securities are held in a safe and convenient manner
2. Transfer of securities is effected immediately
3. Stamp duty for transfer is eliminated and transaction costs are reduced
4. Paper work is minimized
5. Bad deliveries, fake securities and delays in transfers are eliminated.
6. Routine changes viz. change in address of one person owning securities issued by different companies can be taken care of simultaneously for all securities with little delay.
7. Benefit accruing from issue of bonus shares, consolidation, split or merger is credited without much difficulty.
8. Payment of dividends and interest is expedited by the use of electronic clearing system.
9. Securities held in electronic form can be locked in and frozen from either a sale or purchase for any definite period.
10. Securities held in electronic form can also be pledged for any credit facility. Both the lender (pledge) and the investor- borrower (pledgor) are required to have a depository account. Once the pledgee confirms the request of the investor the depository takes action and the pledge is in place. By a reverse process, the pledge can be released once the pledge confirms receipt of funds.

There are however risks as well

1. Systemic failure – Input control, process control and output control being parts of computerized environment apply equally to the dematerialization process. Unforeseen failures, intentional or otherwise, on the part of the individuals entrusted with protecting data integrity, could lead to chaos.
2. Additional record keeping – In built provisions for rematerialization exist to take care of the needs of individuals who wish to hold securities in physical form. Companies will invariably need to maintain records on a continuous basis for securities held in physical form. Periodical reconciliation between demat segment and physical segment is very much necessary.
3. Cost of Depository Participant (DP) – For transacting business, investors have to deal not only with brokers but also with depository participant which acts as an additional tier in the series of intermediaries. A one time fee is levied by the depository participant which small investors consider to be an avoidable cost.
4. Human Fraud – Dematerialization is not a remedy for all ills. Unlawful transfers by individuals against whom insolvency proceedings are pending or transfers by attorney holders with specific or limited powers are possible.

6.5 FUNCTIONING OF DEPOSITORY SERVICES

To speed up the transfer mechanism of securities from sale, purchase, transmission, SEBI introduced Depository Services also known as Dematerialization of listed securities. It is the process by which certificates held by investors in physical form are converted to an equivalent number of securities in electronic form. The securities are credited to the investor's account maintained through an intermediary called Depository Participant (DP). Shares/Securities once dematerialized lose their independent identities. Separate numbers are allotted for such dematerialized securities. Once a security has been dematerialized it can be at the option of the investor converted back to physical form. This is known as Rematerialization. Organization holding securities of investors in electronic form and which renders services related to transactions in securities is called a Depository. A depository holds securities in an account, transfers securities from one account holder to another without the investors having to handle these in their physical form. The depository is a safe keeper of securities for and on behalf of the investors.



DEBIT CARDS

7.0 DEBIT CARDS - WHAT IS IT ?

Debit cards are also known as cheque cards. Debit cards look like credit cards or ATM (automated teller machine) cards, but operate like cash or a personal cheque. Debit cards are different from credit cards. While a credit card is to “pay later,” a debit card is to “pay now.” When one uses a debit card his money is quickly deducted from his cheque or savings account.

Debit cards are accepted at many locations, including grocery stores, retail stores, gasoline stations, and restaurants. One can use his card anywhere; merchants display his card's brand name or logo. They offer an alternative to carrying a cheque book or cash.

7.1 DIFFERENCE BETWEEN A DEBIT CARD AND A CREDIT CARD

It's the difference between "debit" and "credit." Debit means "subtract." When one uses a debit card, one is subtracting his money from his own bank account. Debit cards allow him spend only what is in his bank account. It is a quick transaction between the merchant and his personal bank account.

Credit is money made available by a bank or other financial institution, like a loan. The amount the issuer allows one to use is determined by his credit history, income, debts, and ability to pay. One may use the credit with the understanding that he will repay the amount, plus interest if he does not pay in full each month. He will receive a monthly statement detailing his charges and payment requirements.

7.2 BENEFITS OF DEBIT CARDS :

- (1) Obtaining a debit card is often easier than obtaining a credit card.
- (2) Using a debit card instead of writing cheques saves one from showing identification or giving his personal information at the time of the transaction.
- (3) Using a debit card frees him from carrying cash or a cheque book.
- (4) Using a debit card means he no longer has to stock up on traveller's cheques or cash when he travels
- (5) Debit cards may be more readily accepted by merchants than cheques, in other states or countries wherever the card brand is accepted.
- (6) The debit card is a quick, "pay now" product, giving one no grace period.
- (7) Using a debit card may mean one has less protection than with a credit card purchase for items which are never delivered, are defective, or misrepresented. But, as with credit cards, one may dispute unauthorized charges or other mistakes within 60 days. One should contact the card issuer if a problem cannot be resolved with the merchant.
- (8) Returning goods or canceling services purchased with a debit card is treated as if the purchase were made with cash or a cheque.

7.3 TWO TYPES OF DEBIT CARDS

1. **"On-line" debit cards:** These cards usually are enhanced ATM (automated teller machine) cards which work the same as they would in an ATM transaction. It is an immediate electronic transfer of money from your bank account to the merchant's bank account. To access one's account at a store terminal, one must punch in his personal identification number (PIN), as he would at an ATM. The system checks his

account to see if it has enough money available to cover the transaction.

2. **“Off-line” debit cards:** These cards usually look like a credit card and resemble a credit card transaction. The merchant’s terminal reads his card, identifies it as a debit rather than a credit card, and creates a debit against his bank account. However, instead of debiting his account immediately, it stores the debit for processing later – usually within 2-3 days.

Most, but not all, transactions are verified to see if there are adequate funds. Instead, of using a PIN number, the customer must sign a receipt, as he or she would with a credit card.

The “on-line and “off-line” distinction may not matter unless:

- His financial institution charges transaction or monthly fees.
- One prefers the security of a PIN-required transaction.
- One prefers that both options not be on one card.

7.4 USE OF DEBIT CARDS

- (1) If the card is lost or stolen, report the loss immediately to the financial institution.
- (2) If one suspects his card is being fraudulently used, report it immediately to his financial institution.
- (3) Hold on to the receipts from debit card transactions. A thief may get name and debit card number from a receipt and order goods by mail or over the telephone. The card does not have to be missing in order for it to be misused.
- (4) If one has a PIN number, memorizing is required. Never keep PIN number with the card. Also, never choose a PIN number that a smart thief could figure out, such as phone number or birthday.
- (5) Never give PIN number to anyone. Keep the PIN private.
- (6) Always know how much money you have in your account. Don’t forget that your debit card may allow you to access money that you have set aside to cover a cheque which has not cleared your bank yet.
- (7) Keep your receipts in one place – for easy retrieval and better oversight of your bank account.

While some issuers give customers separate cards for ATM and on-line transactions and another for off-line uses, others combine the two on one card. If your card handles both off-line and on-line debits and the store accepts both, you will choose the function when you use the card. If you choose “debit” on the merchant’s terminal and “swipe” your card through, the transaction will be done on-line and you will be asked for your PIN. If you

choose “credit” on the terminal and swipe your debit card through, the payment will be off-line and you will be asked to sign the sales slip.

8.0 ONLINE SHARE TRADING

The Securities & Exchange Board of India (SEBI) approved the report on Internet Trading brought out by the SEBI Committee on Internet Based Trading and Services. Internet trading can take place through order routing systems, which will route client orders to exchange trading systems for execution. Thus a client sitting in any part of the country would now be able to trade using the Internet as a medium through brokers' Internet trading systems.

SEBI-registered brokers can introduce Internet based trading after obtaining permission from respective Stock Exchanges.

Internet Trading at NSE

NSE became the first exchange to grant approval to its members for providing Internet based trading services. In line with SEBI directives, NSE has issued circulars detailing the requirements and procedures to be complied with by members desirous of providing Internet based trading and services.

Application for permission:

Members desirous of applying to the Exchange for permission for providing Internet-based trading services are required to do so in a requisite format. An application shall be treated as complete only after a comprehensive and satisfactory demonstration of the software is given to the Exchange.

Members are also required to submit undertakings in addition to the application form. In respect of members who have already submitted an undertaking for CTCL / Internet based trading in the Capital Market segment, such members shall not be required to submit a separate undertaking for CTCL / Internet based trading in the Futures & Options segment

Minimum qualification for personnel:

The employees working on Internet based trading are required to have a minimum educational qualification of a degree and have certification in the NCFM – Derivatives Module of the Exchange. Members are required to confirm the same and submit copies of the NCFM certificates at the time of submission of the application for Internet based trading.

Member-client agreement:

Members shall execute an agreement with such clients who wish to avail the Internet trading facilities offered by the member, spelling out all obligations and rights, minimum service standards to be maintained by the member etc. as per model agreement which shall be prepared by the Exchange for this purpose. As stipulated by SEBI vide their circular dated January 31, 2000, the agreement executed by the member with their clients should not have any clause that is less stringent/contrary to the conditions in the above model agreement.

Charges for Internet trading:

The following fees / charges are payable by members to the Exchange for Internet based trading services on the Futures & Options segment.

- Onetime fee of Rs.3.50 lakhs
- Annual fees of Rs.1 lakh p.a.

The financial year shall be considered as the basis for the yearly period for the recurring charges. The charges (one time charge and recurring charge for the first year) are payable at the time of application for Internet trading. In respect of members making an application before October 1st, the charges for the entire financial year of Rs.1 lakh are payable. In respect of members applying after October 1st the recurring charge for the first year shall be reckoned on a pro-rata basis.

Procedures for granting permission for Internet based trading

The Exchange shall grant permission to members for Internet based trading on a case-by-case basis. Members are fully responsible to procure/develop the software including procurement of computer hardware. The Exchange shall help members to establish the computer to computer link; however the members are fully responsible to implement the solution at their end. Members are solely responsible for all the contracts they enter into with any vendor. The Exchange shall not be liable for any loss, damage or other costs arising in any way out of the failure of the system.

On submission of complete application form, undertaking and charges, the Exchange shall provide the technical specifications (message formats/protocols etc) i.e. APIs for the interface with the Exchange's trading system. A user id on the Exchange's test environment shall be provided to members for the purpose of testing their software.

On completion of development of the software, the member is required to test the software on the NSE trading test environment during a pre-specified time so as to enable the Exchange to monitor the same. The test cases for the final testing shall be provided by the Exchange.

On satisfactory completion of testing on the Exchange test environment, the member is required to give comprehensive demonstration of their website providing the Internet based trading service and the Internet trading software to the Exchange. On finding the website / software to be satisfactory and meeting SEBI / Exchange minimum requirements, the Exchange shall grant permission to the member to commence Internet based trading.

Subsequent to being granted permission, all members are permitted to use only a single user id per VSAT for the purpose of Internet trading on the live environment. Additionally, members shall not be permitted to use the Corporate Manager and Branch Manager user ids' for this purpose.

Testing facility provided by NSE for testing Internet trading software:

The Exchange provides a facility to members for testing their Internet-trading software on the Exchange's testing environment.

8.32 Strategic Financial Management

Members can avail of the testing environment of the Exchange only till the Exchange grants permission to the member. Subsequent to the members being granted permission by the Exchange to commence trading on live environment using their Internet trading software, the test user id(s) given to them on the testing environment shall be disabled.

Members wishing to avail of the test facility subsequent to being granted permission to commence trading on live environment shall be permitted to do so, on a case-to-case basis subject to the following:

1. Members are required to apply for the test facility giving broadly the reason for the requiring the test facility, duration for which test facility is required, nature of the changes to the software, new functionalities proposed etc
2. The member is required to give a comprehensive demonstration of the modified software on completion of testing.

The Exchange shall allot not more than 2 user ids per member on the Exchange test environment. The user ids shall be disabled at the end of the testing period requested by the member.

Internet has made it possible for the people to deal in stocks, execute banking related activities, buy-sell products and so on. A large number of people have started trading online and it has become very popular in a short period of time.

It is against a mere 4% in the year 2004, online trades now accounts for more than 12% of its daily turnover on the National Stock Exchange (NSE). The quality of infrastructure has been developed significantly in the recent past connected by high speed networks, buyers and sellers are gathering in virtual market – places and revolutionizing the way business is conducted.

Advantages of Online Trading:

1. Investors can have the benefit of direct access to stock analysis.
2. They can put their trades as it gives the advantage of real time live rates and real time transactions.
3. They can stream news and research, also get an advantage of viewing various charts and creating their own strategies.
4. It gives the investors a ready access to the market.
5. Trade privacy is a key point which online trading offers. There is an increase in the trust and confidence of investors, both large and small which has resulted in increased online traders.
6. Since trading is totally internet based they get direct access to their trading platform from any place and any computer in the world.
7. Online trading has a great speed transparency at a very low cost.

Self-Examination Questions

- (i) What is Investment Banking? Name few famous investment Bankers of the world.
- (ii) What is Commercial Banking? Outline the differences between the Investment Banking and the Commercial banking?
- (iii) What are the various functions which are performed by an Investment Bank.
- (iv) What is Private placement?
- (v) Write about Financial restructuring. How it is done.
- (vi) What do you mean by Merchant Banking? What are its aim and objectives?
- (vii) What are the various duties and responsibilities to be discharged by a merchant banker?
- (viii) Who regulates merchant bankers in India? Outline the major regulating framework as prescribed by SEBI in respect of Merchant Bankers.
- (ix) Outline slab-wise the number of lead managers to be appointed in an Issue.
- (x) What type of penalties can be imposed on merchant bankers for contravention of SEBI Rules/Regulations and under what circumstances?
- (xi) Write a note on Bankers to an Issue. State whether Brokerage is payable or not on promoter's quota. What are different guidelines as prescribed by SEBI in respect of payment of Brokerage to Bankers of an Issue.
- (xii) What is credit Rating? How many credit rating agencies are at present in India.
- (xiii) What are the advantages and dis-advantages of credit rating of a security?
- (xiv) What is CAMEL model in credit rating?
- (xv) How do you define consumer finance? What intricacies are involved in it? Illustrate with the help of an example.
- (xvi) Is there housing finance boom at present in India? Comment.
- (xvii) What is a depository? What are the functions of a depository? How many depositories have so far been established in India.
- (xviii) Distinguish between a debit and credit card. What precautions are to be taken for safety and security of debit cards?
- (xix) How many types of debit cards can be issued in India? Explain the use of debit cards.
- (xx) What do you mean by online share trading? Explain in details its procedure and the precautions to be taken.

1.0 INTRODUCTION

Mutual Fund is a trust that pools together the resources of investors to make a foray into investments in the capital market thereby making the investor to be a part owner of the assets of the mutual fund. If the value of the mutual fund investments goes up, the return on them increases and vice versa. The net income earned on the funds, along with capital appreciation of the investment, is shared amongst the unit holders in proportion to the units owned by them. Mutual Fund is therefore an indirect vehicle for the investor investing in capital markets.

The total Mutual Fund (MFs) industry assets base grew by 6.48 per cent for October, 2006 to Rs.309828.86 crores. The month saw the launch of 25 new schemes, 22 in the income category and 3 in the growth category.

1.1 MUTUAL BENEFITS

Investing in mutual funds is an expert's job in the present market scenario. A systematic investment in this instrument is bound to give rich dividends in the long-term. That is why over 2 crore investors have faith in mutual funds.

1.2 WHAT IS A MUTUAL FUND

A mutual fund is a trust that pools the savings of a number of investors who share a common financial goal. A mutual fund is the most suitable investment for the cautious investor as it offers an opportunity to invest in a diversified professionally managed basket of securities at a relatively low cost.

1.3 WHO CAN INVEST IN MUTUAL FUNDS

Anybody with an investible surplus of as little as a few thousand rupees can invest in mutual funds by buying units of a particular mutual fund scheme that has a defined investment objective and strategy.

1.4 HOW MUTUAL FUNDS WORK FOR YOU

The money collected from the investors is invested by a fund manager in different types of securities.

9.2 Strategic Financial Management

These could range from shares and debentures to money market instruments depending upon the scheme's stated objectives.

The income earned through these investments and capital appreciation realized by the scheme are shared by its unit holders in proportion to the units owned by them.

1.5 SHOULD WE INVEST IN STOCKS OR MUTUAL FUNDS?

As soon as, you have set your goals and decided to invest in equity the question arises should you invest in stocks or mutual funds? Well, you need to decide what kind of an investor you are.

First, consider if you have the kind of disposable income to invest in 15-20 stocks. That is how many stocks you will have to invest in if you want to create a well-diversified portfolio. Remember the familiar adage: Do not put all your eggs in one basket? If Rs.5,000 were all you have to spare, it would be impractical to invest it across many stocks.

Many beginners tend to focus on stocks that have a market price of less than Rs.100 or Rs.50; that should never be a criterion for choosing a stock. Also, brokerage could eat into your returns if you purchase small quantities of a stock.

On the other hand, you would be able to gain access to a wide basket of stocks for Rs.5,000 if you buy into a fund. Investing in funds would also be an easy way to build your equity portfolio over time.

Let's say you can afford to put away only Rs.1,000 a month in the market. You can simply invest in a fund every month through a systematic investment plan (SIP) as a matter of financial discipline. You can save yourself the trouble of scouting for a stock every month.

That brings us to the next point. Do you have the time to pick stocks? You need to invest a considerable amount of time reading newspapers, magazines, annual reports, quarterly updates, industry reports and talking to people who are familiar with industry practices. Else, you certainly won't catch a trend or pick a stock ahead of the market. How many great investors have you heard of who have not made investing their full-time job?

Plus, you may have the time, but not the inclination. You have to be an active investor, which means continuously monitor the stocks you pick and make changes – buy more, cut exposures – depending upon the turn of events. These actions have costs as well. As you churn your portfolio, you bear expenses such as capital gains tax. Funds do not pay capital gains tax when they sell a stock.

All this assumes you know what you are doing and have the skill to pick the right stocks. You are likely to be better at investing in an industry you understand. Only, too bad if that industry appears to be out of favour in the market.

If you love the thrill the ups and downs of the stock market offers; if you find yourself turning into business channels and scouring business papers hoping that you can pick the next Infosys; if you have an instinct for spotting stocks and, importantly, the discipline to act on it; if you have the emotional maturity to cut your losses when you are ahead, then you can trust yourself to invest in stocks.

Otherwise, hand over your money to the professional.

2.0 MUTUAL FUNDS COULD BE THE BEST AVENUE FOR THE RISK-AVERSE INVESTORS

2.1 BALANCED FUNDS

Balanced funds make strategic allocation to both debt as well as equities. It mainly works on the premise that while the debt portfolio of the scheme provides stability, the equity one provides growth. It can be an ideal option for those who do not like total exposure to equity, but only substantial exposure.

2.2 EQUITY DIVERSIFIED FUNDS

A Diversified funds is a fund that contains a wide array of stocks. The fund manager of a diversified fund ensures a high level of diversification in its holdings, thereby reducing the amount of risk in the fund.

DIVERSIFIED FUNDS

1. **Flexicap/Multicap Fund:** These are by definition, diversified funds. The only difference is that unlike a normal diversified fund, the offer document of a multicap/flexi cap fund generally spells out the limits for minimum and maximum exposure to each of the market caps.
2. **Contra fund:** A contra fund invests in those out-of-favour companies that have unrecognised value. It is ideally suited for investors who want to invest in a fund that has the potential to perform in all types of market environments as it blends together both growth and value opportunities.
3. **Index fund:** An index fund seeks to track the performance of a benchmark market index like the BSE Sensex or S&P CNX Nifty. Simply put, the fund maintains the portfolio of all the securities in the same proportion as stated in the benchmark index.
4. **Dividend Yield fund:** A dividend yield fund invests in shares of companies having high dividend yields. Dividend yield is defined as dividend per share divided by the share's market price. Most of these funds invest in stocks of companies having a dividend yield higher than the dividend yield of a particular index, i.e., Sensex or Nifty. The prices of dividend yielding stocks are generally less volatile than growth stocks. Besides, they also offer the potential to appreciate.

Among diversified equity funds, dividend yield funds are considered to be a medium-risk proposition. However, it is important to note that dividend yield funds have not always proved resilient in short-term corrective phases.

2.3 EQUITY LINKED TAX SAVINGS SCHEME

ELSS is one of the options for investors to save taxes under Section 80 C of the Income Tax Act. They also offer the perfect way to participate in the growth of the capital market, having a

9.4 Strategic Financial Management

lock-in-period of three years. Besides, ELSS has the potential to give better returns than any traditional tax savings instrument.

Moreover, by investing in an ELSS through a Systematic Investment Plan (SIP), one can not only avoid the problem of investing a lump sum towards the end of the year but also take advantage of “averaging”.

2.4 SECTOR FUNDS

These funds are highly focused on a particular industry. The basic objective is to enable investors to take advantage of industry cycles. Since sector funds ride on market cycles, they have the potential to offer good returns if the timing is perfect. However, they are bereft of downside risk protection as available in diversified funds.

Sector funds should constitute only a limited portion of one's portfolio, as they are much riskier than a diversified fund. Besides, only those who have an existing portfolio should consider investing in these funds.

2.5 THEMATIC FUNDS

A Thematic fund focuses on trends that are likely to result in the ‘out-performance’ by certain sectors or companies. In other words, the key factors are those that can make a difference to business profitability and market values.

However, the downside is that the market may take a longer time to recognize views of the fund house with regards to a particular theme, which forms the basis of launching a fund.

2.6 ARBITRAGE FUNDS

Typically these funds promise safety of deposits, but better returns, tax benefits and greater liquidity. Pru-ICICI is the latest to join the list with its equities and derivatives funds.

The open ended equity scheme aims to generate low volatility returns by investing in a mix of cash equities, equity derivatives and debt markets. The fund seeks to provide better returns than typical debt instruments and lower volatility in comparison to equity.

This fund is aimed at an investor who seeks the return of small savings instruments, safety of bank deposits, tax benefits of RBI relief bonds and liquidity of a mutual fund.

Arbitrage fund finally seeks to capitalize on the price differentials between the spot and the futures market.

The other schemes in the arbitrage universe are Benchmark Derivative, JM Equity and Derivatives, Prudential ICICI Balanced, UTI Spread and Prudential ICICI Equity and Derivatives.

2.7 HEDGE FUND

A hedge fund (there are no hedge funds in India) is a lightly regulated investment fund that escapes most regulations by being a sort of a private investment vehicle being offered to selected clients.

The big difference between a hedge fund and a mutual fund is that the former does not reveal any thing about its operations publicly and charges a performance fee. Typically, if it outperforms a benchmark, it take a cut off the profits. Of course, this is a one way street, any losses are borne by the investors themselves.

2.8 CASH FUND

Cash Fund is an open ended liquid scheme that aims to generate returns with lower volatility and higher liquidity through a portfolio of debt and money market instrument.

The fund will have retail institutional and super institutional plans. Each plan swill offer growth and dividend options. The minimum initial investment for the institutional plan is Rs.1 crore and the super institutional is Rs.25 crore. For the retail plan, the minimum initial investment is Rs.5,000/-. The fund has no entry or exit loads. Investors can invest even through the Systematic Investment Planning (SIP) route with a minimum amount of Rs.500 per instalment with the total of all instalments not being less than Rs.5,000/-.

2.9 EXCHANGE TRADED FUNDS

An Exchange Traded Fund (ETF) is a hybrid product that combines the features of an index fund. These funds are listed on the stock exchanges and their prices are linked to the underlying index. The authorized participants act as market makers for ETFs.

ETFs can be bought and sold like any other stock on an exchange. In other words, ETFs can be bought or sold any time during the market hours at prices that a re expected to be closer to the NAV at the end of the day. Therefore, one can invest at real time prices as against the end of the day prices as is the case with open-ended schemes.

There is no paper work involved for investing in an ETF. These can be bought like any other stock by just placing an order with a broker.

3.0 KEY PLAYERS IN MUTUAL FUNDS

Mutual Fund is formed by a trust body. The business is set up by the sponsor, the money invested by the asset management company and the operations monitored by the trustee. There are five principal constituents and three market intermediaries in the formation and functioning of mutual fund.

The five constituents are:

- (1) **Sponsor:** A company established under the Companies Act forms a mutual fund.
- (2) **Asset Management Company:** An entity registered under the Companies Act to manage the money invested in the mutual fund and to operate the schemes of the mutual fund as per regulations. It carries the responsibility of investing and managing the investors' money.
- (3) **Trustee:** The trust is headed by Board of Trustees. The trustee holds the property of the mutual fund in trust for the benefit of unit holders and looks into the legal requirements of

9.6 Strategic Financial Management

operating and functioning of the mutual fund. The trustee may also form a limited company under the Companies Act in some situations.

(4) Unit Holder: A person/entity holding an undivided share in the assets of a mutual fund scheme.

(5) Mutual Fund: A mutual fund established under the Indian Trust Act to raise money through the sale of units to the public for investing in the capital market. The funds thus collected are passed on to the Asset Management Company for investment. The mutual fund has to be registered with SEBI.

The three market intermediaries are:

(1) Custodian (2) Transfer Agents (3) Depository.

(1) Custodian: A custodian is a person who has been granted a Certificate of Registration to conduct the business of custodial services under the SEBI (Custodian of Securities) Regulations 1996. Custodial services include safeguarding clients' securities along with incidental services provided. Maintenance of accounts of clients' securities together with the collection of benefits / rights accruing to a client falls within the purview of custodial service. Mutual funds require custodians so that AMC can concentrate on areas such as investment and management of money.

(2) Transfer Agents: A transfer agent is a person who has been granted a Certificate of Registration to conduct the business of transfer agent under SEBI (Registrars to an Issue and Share Transfer Agents) Regulations Act 1993. Transfer agents' services include issue and redemption of mutual fund units, preparation of transfer documents and maintenance of updated investment records. They also record transfer of units between investors where depository does not function.

(3) Depository: Under the Depositories 1996, a depository is body corporate who carries out the transfer of units to the unit holder in dematerialised form and maintain records thereof.

4.0 CLASSIFICATION OF MUTUAL FUNDS

There are three different types of classification of mutual funds. (1) Functional (2) Portfolio and (3) Ownership. Each classification is mutually exclusive.

4.1 FUNCTIONAL CLASSIFICATION

Funds are divided into : Open ended and close ended. In an open ended scheme, the investor can make entry and exit at any time. Also, the capital of the fund is unlimited and the redemption period is indefinite. On the contrary, in a close ended scheme, the investor can buy into the scheme during Initial Public offering or from the stock market after the units have been listed. The scheme has a limited life at the end of which the corpus is liquidated. The investor can make his exit from the scheme by selling in the stock market, or at the expiry of the scheme or during repurchase period at his option.

4.2 PORTFOLIO CLASSIFICATION

Funds are classified into Equity Funds, Debt Funds and Special Funds.

Equity Funds are invested in equity stocks. They are of the following types viz. (a) Growth Funds : They seek to provide long term capital appreciation to the investor and are best to long term investors (b) Aggressive Funds : They look for super normal returns for which investment is made in start-ups, IPOs and speculative shares. They are best to investors willing to take risks (c) Income Funds : They seek to maximize present income of investors by investing in safe stocks paying high cash dividends and in high yield money market instruments. They are best to investors seeking current income (d) Balanced Funds : They are a mix of growth and income funds. They buy shares for growth and bonds for income and best for investors seeking to strike golden mean.

Debt Funds are of two types viz. (a) Bond Funds : They invest in fixed income securities e.g. government bonds, corporate debentures, convertible debentures, money market. Investors seeking tax free income go in for government bonds while those looking for safe, steady income buy government bonds or high grade corporate bonds (b) Gilt Funds : They are mainly invested in Government securities.

Special Funds are of four types viz. (a) Index Funds : Every stock market has a stock index which measures the upward and downward sentiment of the stock market. Index Funds are low cost funds and influence the stock market. The investor will receive whatever the market delivers. (b) International Funds : A mutual fund located in India to raise money in India for investing globally. (c) Offshore Funds : A mutual fund located in India to raise money globally for investing in India. (d) Sector Funds: They invest their entire fund in a particular industry e.g. utility fund for utility industry like power, gas, public works.

4.3 OWNERSHIP CLASSIFICATION

Funds are classified into Public Sector Mutual Funds, Private Sector Mutual Funds, Foreign Mutual Funds. Public Sector Mutual Funds are sponsored by a company of the public sector. Private Sector Mutual Fund are sponsored by a company of the private sector. Foreign Mutual Funds are sponsored by companies for raising funds in India, operate from India and invest in India.

5.0 ADVANTAGES OF MUTUAL FUND

- (1) **Professional Management:** The funds are managed by skilled and professionally experienced managers with a back up of a Research team.
- (2) **Diversification:** Mutual Funds offer diversification in portfolio which reduces the risk.
- (3) **Convenient Administration:** There are no administrative risks of share transfer, as many of the Mutual Funds offer services in a demat form which save investor's time and delay.
- (4) **Higher Returns:** Over a medium to long-term investment, investors always get higher returns in Mutual Funds as compared to other avenues of investment. This is already seen from excellent returns, Mutual Funds have provided in the last few years. However, investors

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are cautioned that such high returns riding on the IT boom should not be taken as regular returns and therefore one should look at the average returns provided by the Mutual Funds particularly in the equity schemes during the last couple of years.

(5) Low Cost of Management: No Mutual Fund can increase the cost beyond prescribed limits of 2.5% maximum and any extra cost of management is to be borne by the AMC.

(6) Liquidity: In all the open ended funds, liquidity is provided by direct sales / repurchase by the Mutual Fund and in case of close ended funds, the liquidity is provided by listing the units on the Stock Exchange.

(7) Transparency: The SEBI Regulations now compel all the Mutual Funds to disclose their portfolios on a half-yearly basis. However, many Mutual Funds disclose this on a quarterly or monthly basis to their investors. The NAVs are calculated on a daily basis in case of open ended funds and are now published through AMFI in the newspapers.

(8) Other Benefits: Mutual Funds provide regular withdrawal and systematic investment plans according to the need of the investors. The investors can also switch from one scheme to another without any load.

(9) Highly Regulated: Mutual Funds all over the world are highly regulated and in India all Mutual Funds are registered with SEBI and are strictly regulated as per the Mutual Fund Regulations which provide excellent investor protection.

6.0 MUTUAL FUND DRAWBACKS

(1) No guarantee of Return – There are three issues involved :

- (a) All Mutual Funds cannot be winners. There may be some who may under perform the benchmark index i.e. it may not even perform well as a novice who invests in the stocks constituting the index.
- (b) A mutual fund may perform better than the stock market but this does not necessarily lead to a gain for the investor. The market may have risen and the mutual fund scheme increased in value but the investor would have got the same increase had he invested in risk free investments than in mutual fund.
- (c) Investors may forgive if the return is not adequate. But they will not do so if the principal is eroded. Mutual Fund investment may depreciate in value.

(2) Diversification – A mutual fund helps to create a diversified portfolio. Though diversification minimises risk, it does not ensure maximizing returns. The return that mutual funds offer are less than what an investor can achieve.

(3) Selection of Proper Fund – It may be easier to select the right share rather than the right fund. For stocks, one can base his selection on the parameters of economic, industry and company analysis. In case of mutual funds, past performance is the only criteria to fall back upon. But past cannot predict the future.

(4) Cost Factor – Mutual Funds carry a price tag. Fund Managers are the highest paid executives. While investing, one has to pay for entry load and when leaving he has to

pay for exit load. Such costs reduce the return from mutual fund. The fees paid to the Asset Management Company is in no way related to performance.

- (5) **Unethical Practices** – Mutual Funds may not play a fair game. Each scheme may sell some of the holdings to its sister concerns for substantive notional gains and posting NAVs in a formalized manner.

7.0 EVALUATING PERFORMANCE OF MUTUAL FUNDS

(1) **Net Asset Value (NAV)** It is the amount which a unit holder would receive if the mutual fund were wound up. An investor in mutual fund is a part owner of all its assets and liabilities. Returns to the investor are determined by the interplay of two elements Net Asset Value and Costs of Mutual Fund. Net Asset Value is the mutual fund's calling card. It is the basis for assessing the return that an investor has earned. There are three aspects which need to be highlighted:

- (i) It is the net value of all assets less liabilities. NAV represents the market value of total assets of the Fund less total liabilities attributable to those assets.
- (ii) NAV changes daily. The value of assets and liabilities changes daily. NAV today will not be NAV tomorrow or day later.
- (iii) NAV is computed as a value per unit of holding.

The main activity of a Mutual Fund is investing the money raised from unit holders. Investments are assets that provide benefits eligible for distribution to unit holders or assets that appreciate in value. The evaluation of the performance of a Mutual Fund rests largely on the reported results of such activity. Investments of Mutual Fund are long term. The RBI and SEBI guidelines provide that Mutual Funds should adopt Market Value Approach and not give credence to gains by way of appreciation in value until realised.

Asset Values : Valuation Rule

Nature of Asset	Valuation Rule
Liquid Assets e.g. cash held	As per books.
All listed and traded securities (other than those held as not for sale)	Closing Market Price
Debentures and Bonds	Closing traded price or yield
Illiquid shares or debentures	Last available price or book value whichever is lower. Estimated Market Price approach to be adopted if suitable benchmark is available.
Fixed Income Securities	Current Yield.

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Netting the Asset Values

The asset values obtained from above have to be adjusted as follows :

Additions	Deductions for Liabilities
Dividends and Interest accrued	Expenses accrued
Other receivables considered good	Liabilities towards unpaid assets
Other assets (owned assets)	Other short term or long term liabilities

Computation of NAV

Net Asset Value (NAV) : It is value of net assets of the funds. The investors subscription is treated as the unit capital in the balance sheet of the fund and the investments on their behalf are treated as assets. The funds net assets are defined as the assets less liabilities.

$$\text{NAV} = \frac{\text{Net asset of the scheme}}{\text{Number of units outstanding}}$$

Where net assets of the scheme is defined as below.

Net Assets of the Scheme = Market value of investments + Receivables + Other accrued income + other assets - Accrued Expenses - Other Payables - Other Liabilities

PROBLEM 1

Based on the following data, determine the NAV of a Regular Income Scheme

	Rs. (in lakhs)
Listed Shares at cost (ex-dividend)	20.00
Cash in hand	1.23
Bonds and Debentures at cost	4.30
Of these, Bonds not listed and quoted	1.00
Other fixed interest securities at cost	4.50
Dividend accrued	0.80
Amounts payable on shares	6.32
Expenditure accrued	0.75
Number of Units (Rs. 10 F.V. each)	2,40,000
Current realizable value of fixed income securities of F.V. of Rs. 100	106.50

All the listed shares were purchased at a time when index was 1200. On NAV date, the index is ruling at 2120. Listed bonds and debentures carry a market value of Rs. 5 (lakhs) on NAV date.

Particulars of assets at cost (or liabilities)	Adjustment	Value (Rs. In lakhs)
Equity shares	Index $(^{2120}/_{1200}) \times 20$	35.33
Cash in hand	Book Value	1.23
Bonds and Debentures not listed	Book Value	1.00
Bonds and Debentures listed	Market Value	5.00
Dividends accrued		0.80
Fixed Income Securities	MV $(^{106.50}/_{100} \times 4.50)$	4.7925
Sub Total Assets (A)		48.1525
Less : Liabilities		6.32
Due on shares		
Expenses Payable	Accrual Basis	0.75
Sub Total Liabilities (B)		7.07
Net Asset Value (A) – (B)		41.0825
Units under the scheme	Number	2,40,000
Net Asset Value	Per Unit	Rs. 17.12

(2) Costs incurred by Mutual Fund

Costs when high reduce the returns of an investor. High Costs are the cause of below par performance of some mutual funds. Costs carry two components : (1) Initial Expenses attributable to establishing a scheme under a Fund and (2) Ongoing recurring expenses (Management Expense Ratio) which is made up of (a) Cost of employing technically sound investment analysts (b) Administrative Costs (c) Advertisement Costs involving promotion and maintenance of Scheme funds. The Management Expense Ratio is measured as a % of average value of assets during the relevant period.

Expense Ratio = Expense / Average value of Portfolio

If Expenses are expressed per unit, then Expense Ratio = Expenses incurred per unit / Average Net Value of Assets

The Expense Ratio relates to the extent of assets used to run the Mutual Fund. It is inclusive of travel cost, management consultancy and advisory fees. It however excludes brokerage expenses for trading as purchase is recorded with brokerage while sales are recorded without brokerage.

Computations of Returns

Investors derive three types of income from owning mutual fund units

1. Cash Dividend
2. Capital Gains Disbursements

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3. Changes in the fund's NAV per unit (Unrealised Capital Gains)

For an investor who holds a mutual fund for one year, the one-year holding period return is given by

$$\text{Return} = \text{Dividend} + \text{Realised Capital Gains} + \text{Unrealised Capital Gains} / \text{Base Net Asset Value} \\ = D_1 + CG_1 + (NAV_1 - NAV_0) / NAV_0 \times 100$$

Where $D_1 \rightarrow$ Dividend, $CG_1 \rightarrow$ Realised Capital Gains, $NAV_1 - NAV_0 \rightarrow$ Unrealised Capital Gains, $NAV_0 \rightarrow$ Base Net Asset Value.

Problem 2 A mutual fund, that had a net asset value of Rs. 10 at the beginning of the month, made income and capital gain distribution of Rs. 0.05 and Rs. 0.04 per unit respectively during the month and then ended the month with a net asset value of Rs. 10.03. Compute the monthly return.

Given $D_1 = 0.05$, $CG_1 = 0.04$, Unrealised Capital Gains = $NAV_1 - NAV_0 = \text{Rs. } 10.03 - \text{Rs. } 10.00 = \text{Rs. } 0.03$.

$$\text{Monthly Return} = (0.05 + 0.04 + 0.03) / 10 \times 100 = 1.2\%.$$

Problem 3 A mutual fund's opening NAV is Rs. 20 and its closing NAV is Rs. 24. If the expense per unit is Rs. 0.50, what is the expense ratio?

$$\text{Expense Ratio} = (\text{Expense incurred per unit} / \text{Average NAV}) \\ = 0.50 / (20+24) / 2 = 2.27$$

8.0 THE CRITERIA FOR EVALUATING THE PERFORMANCE

8.1 SHARPE RATIO

This ratio measures the return earned in excess of the risk free rate (normally Treasury instruments) on a portfolio to the portfolio's total risk as measured by the standard deviation in its returns over the measurement period. Nobel Laureate William Sharpe developed the model and the results of it indicate the amount of return earned per unit of risk. The Sharpe ratio is often used to rank the risk-adjusted performance of various portfolios over the same time. The higher a Sharpe ratio, the better a portfolio's returns have been relative to the amount of investment risk the investor has taken. The major advantage of using the Sharpe ratio over other models (CAPM) is that the Sharpe ratio uses the volatility of the portfolio return instead of measuring the volatility against a benchmark (i.e., index). The primary disadvantage of the Sharpe ratio is that it is just a number and it is meaningless unless you compare it to several other types of portfolios with similar objectives

$$S = \frac{\text{Return portfolio} - \text{Return of Risk free investment}}{\text{Standard Deviation of Portfolio}}$$

Example : Let's assume that we look at a one year period of time where an index fund earned 11%

Treasury bills earned 6%

The standard deviation of the index fund was 20%

Therefore $S = 11.6 / .20 = 25\%$

The Sharpe ratio is an appropriate measure of performance for an overall portfolio particularly when it is compared to another portfolio, or another index such as the S&P 500, Small Cap index, etc.

That said however, it is not often provided in most rating services.

8.2 TREYNOR RATIO

This ratio is similar to the above except it uses beta instead of standard deviation. It's also known as the Reward to Volatility Ratio, it is the ratio of a fund's average excess return to the fund's beta. It measures the returns earned in excess of those that could have been earned on a riskless investment per unit of market risk assumed. The formula is typically used in ranking Mutual Funds with similar objectives.

$$T = \frac{\text{Return of Portfolio} - \text{Return of Risk Free Investment}}{\text{Beta of Portfolio}}$$

The absolute risk adjusted return is the Treynor plus the risk free rate.

Assume two portfolios A B

Return 12 and 14

Beta .7 and 1.2

Risk Free Rate= 9%

$T_a = .12 - .09 = .03$ Risk adjusted rate of return of Portfolio A $= 0.03 + .09 = 0.12 = 12\%$
.07

$T_b = .14 - .09 = 0.05$ Risk adjusted rate of return of Portfolio B $= 0.05 + .09 = .14 = 14\%$
1.2

For many investors, without any analysis of risk, if we ask them what is the better number (12% or 14%) almost universally they state 14%. However, when we point out the risk adjusted rate of return, many adjust their thinking.

Example

In 2005 - 06 where Fidelity Magellan had earned about 18%. Many bond funds had earned 13 %. Which is better? In absolute numbers, 18% beats 13%. But if we then state that the bond funds had about half the market risk, now which is better? We don't even need to do the formula for that analysis. But that is missing in almost all reviews by all brokers. For clarification we do not suggest they put all the money into either one- just that they need to be aware of the implications.

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8.3 JENSEN'S ALPHA

This is the difference between a fund's actual return and those that could have been made on a benchmark portfolio with the same risk- i.e. beta. It measures the ability of active management to increase returns above those that are purely a reward for bearing market risk. Caveats apply however since it will only produce meaningful results if it is used to compare two portfolios which have similar betas.

Assume Two Portfolios

	A	B	Market Return
Return	12	14	12
Beta	.7	1.2	1.0

Risk Free Rate = 9%

The return expected = Risk Free Return + Beta portfolio (Return of Market - Risk Free Return)

Using Portfolio A, the expected return = $0.09 + 0.7 (0.12 - 0.09) = 0.09 + 0.021 = 0.111$

Alpha = Return of Portfolio- Expected Return= $0.12 - 0.111 = 0.009$

As long as "apples are compared to apples"- in other words a computer sector fund A to computer sector fund b- it is a viable number. But if taken out of context, it loses meaning. Alphas are found in many rating services but are not always developed the same way- so you can't compare an alpha from one service to another. However we have usually found that their relative position in the particular rating service is to be viable. Short-term alphas are not valid. Minimum time frames are one year- three year is more preferable.

Expense Ratio

The percentage of the assets that were spent to run a mutual fund. It includes things like management and advisory fees, travel costs and consultancy fees. The expense ratio does not include brokerage costs for trading the portfolio. Also referred to as the Management Expense Ratio (MER)

Pay close attention to the expense ratio, it can sometimes be as high as 2-3% which can seriously undermine the performance of your mutual fund.

9.0 FACTORS INFLUENCING THE SELECTION OF MUTUAL FUNDS

- (1) **Past Performance** – The Net Asset Value is the yardstick for evaluating a Mutual Fund. The higher the NAV, the better it is. Performance is based on the growth of NAV during the referral period after taking into consideration Dividend paid.

$$\text{Growth} = (\text{NAV1} - \text{NAV0}) + \text{D1} / \text{NAV0}.$$

- (2) **Timing** – The timing when the mutual fund is raising money from the market is vital. In a bullish market, investment in mutual fund falls significantly in value whereas in a

bearish market, it is the other way round where it registers growth. The turns in the market need to be observed.

- (3) **Size of Fund** – Managing a small sized fund and managing a large sized fund is not the same as it is not dependent on the product of numbers. Purchase through large sized fund may by itself push prices up while sale may push prices down, as large funds get squeezed both ways. So it is better to remain with medium sized funds.
- (4) **Age of Fund** – Longevity of the fund in business needs to be determined and its performance in rising, falling and steady markets have to be checked. Pedigree does not always matter as also success strategies in foreign markets.
- (5) **Largest Holding** – It is important to note where the largest holdings in mutual fund have been invested.
- (6) **Fund Manager**– One should have an idea of the person handling the fund management. A person of repute gives confidence to the investors.
- (7) **Expense Ratio**– SEBI has laid down the upper ceiling for Expense Ratio. A lower Expense Ratio will give a higher return which is better for an investor.
- (8) **PE Ratio** – The ratio indicates the weighted average PE Ratio of the stocks that constitute the fund portfolio with weights being given to the market value of holdings. It helps to identify the risk levels in which the mutual fund operates.
- (9) **Portfolio Turnover** – The fund manager decides as to when he should enter or quit the market. A very low portfolio turnover indicates that he is neither entering nor quitting the market very frequently. A high ratio, on the other hand, may suggest that too frequent moves have lead the fund manager to miss out on the next big wave of investments. A simple average of the portfolio turnover ratio of peer group updated by mutual fund tracking agencies may serve as a benchmark. The ratio is lower of annual purchase plus annual sale to average value of the portfolio.

10.0 SIGNALS HIGHLIGHTING THE EXIT OF THE INVESTOR FROM THE MUTUAL FUND SCHEME

- (1) When the mutual fund consistently under performs the broad based index, it is high time that it should get out of the scheme. It would be better to invest in the index itself either by investing in the constituents of the index or by buying into an index fund.
- (2) When the mutual fund consistently under performs its peer group instead of it being at the top. In such a case, it would have to pay to get out of the scheme and then invest in the winning schemes.
- (3) When the mutual fund changes its objectives e.g. instead of providing a regular income to the investor, the composition of the portfolio has changed to a growth fund mode which is not in tune with the investor's risk preferences.
- (4) When the investor changes his objective of investing in a mutual fund which no longer is beneficial to him.

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- (5) When the fund manager, handling the mutual fund schemes, has been replaced by a new entrant whose image is not known.

11.0 MONEY MARKET MUTUAL FUNDS (MMMFs)

The Government of India thought of introducing Money Market Mutual Funds (MMMFs) on Indian financial canvass in 1992. The aim of the Government was to develop the money market and to enable individual investors to gain from money market instruments since it is practically impossible for individuals to invest in instruments like Commercial Papers (CPs), Certificate of deposits (CDs) and Treasury bills (TBs) which require huge investments. The Government constituted a Task Force on MMMFs under the chairmanship of Shri D. Basu.

The broad framework of guidelines in respect of MMMFs issued by RBI in April, 1991 specified that

- ◆ The investment by individuals and other bodies would be in the form of negotiable and transferable instruments and MMMF deposit accounts.
- ◆ The minimum investments would be Rs. one lakh.
- ◆ The re-purchase would be subject to a minimum lock-in-period of 3 months.
- ◆ The funds will not be subject to reserve requirements as these will be invested in money market instruments.
- ◆ Minimum of 20 per cent of funds will be invested in 182 days treasury bills.
- ◆ Maximum of 20 per cent of funds will be diverted to call money markets.

As compared to earlier guidelines, the fresh instructions based on recommendations of the Task force constituted under the chairmanship of Shri D. Basu on MMMFs were more liberal, wherein

- ◆ Minimum investment amount is no longer Rs. one lakh. This decision has been left to MMMFs.
- ◆ Minimum lock-in-period has been reduced to 46 days.
- ◆ Minimum of 25 percent of funds (20 percent earlier) to be invested in treasury bills and dated Government securities having an unexpired maturity upto one year.
- ◆ Maximum of 30 percent of funds (20 percent earlier) to be diverted to call money market.
- ◆ Investment in CP restricted to 15 percent and no such limit on CDs.
- ◆ Maximum of 20 percent of funds can be invested in commercial transactions and accepted/co-accepted by banks.

The banks have also been given an option of setting up "in-house" MMMFs wherein the assets and liabilities of such funds will form part of bank's balance sheet or as a separate entity, i.e., as a trust. MMMFs can be operated either as Money Market Deposit Accounts (MMDAs) or MMMFs. In all probability MMDAs will be non-transferable and just like bank deposits as Deposit Insurance and credit guarantee corporation (DICGC) is giving insurance cover only

against MMDAs, though the RBI circular is silent on this. On the other hand, MMMFs would be like a tradeable scrip. MMDAs can be operated either by issuing deposit receipt or through issue of a Pass Book Account (without cheque book facility). MMMFs are now allowed to float both open ended as well as close ended schemes.

A MMMF set up by a scheduled commercial bank or its subsidiary can raise resources only upto 2 percent of sponsoring bank's fortnightly average aggregate deposits. In case the bank falls short of Rs. 50 crores they are allowed to set up a joint fund. In case of public financial institutions or their subsidiaries, this limit has been restricted to 2 percent of their long term domestic borrowings, as indicated in their latest available audited balance sheet. However, units/shares of MMMFs can be issued only to individuals. Individual non-resident Indians may also subscribe subject to the condition that both the capital and the dividend would be non-repatriable. MMMFs are free to determine the minimum size of investment by a single investor.

Further MMMFs have been barred from investing in capital market instruments so as to avoid undue risks. Besides borrowing and lending between schemes of the MMMFs and between sponsoring bank and MMMFs are also prohibited. Switching of assets between schemes will have to be at market rates and based on conscious investment decisions.

MMMFs should also invariably take delivery of money market instruments purchased and give delivery of instruments sold. RBI's prior authorisation has been made compulsory to set-up MMMFs and RBI has been given regulatory powers to control these funds. The units issued and any transfer of units of MMMFs would attract stamp duty.

There are still some reservations in the mind of bankers. Some of the restrictions which could have been avoided are discussed below :

- ◆ It is difficult to mobilise enough funds from individual investors alone and that too when these funds are restrained from guaranteeing a minimum rate of return to the investors. Further, approaching only individuals would raise the cost of funds. A better alternative would have been to allow institutions as well and to give preference to individuals over others.
- ◆ There was no need to impose restriction on investments in different instruments. This will only go against the market mechanism, e.g., a stringent call money market would require release of substantial funds to cool the market. However, banks would not be able to reduce the heat in the call market due to the 30 percent stipulation, even if they are in a capacity to do so.
- ◆ Stamp duty will only further raise overhead costs. Unequal inter-state stamp duties will also result in crowding of mutual funds in states where duties are low. Infact, financial capitals like Bombay will have no MMMFs because the duty rates in Maharashtra are as high as 50 paise per rupee 100. Moreover, the higher the turnover in instruments, higher will be the stamp duty, acting as a deterrant to active trading in these instruments. This will go against the basic aim of developing an active secondary market in money market instruments.

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- ◆ Lock-in-period will also result in loss in turnover of money market instruments. In the absence of a lock-in-period, the MMMFs have no choice but to either buy or sell money market instruments for the purpose of investing surplus funds or for acquiring funds for investors. This will surely go a long way in activating and developing a secondary money market.
- ◆ Restricting the resources raised to 2 percent of fortnightly average deposits would give a competitive edge to bigger banks with high deposit base. It is necessary to put all banks at par and create a level playing field by prescribing a fixed quantum ceiling.
- ◆ If a MMMF is set-up as a trust one can get the benefit of tax exemption under section 10 (23) D of Income Tax Act which is not available if it is set up as a division. A lower tax liability will necessarily result in higher return on these funds vis-a-vis those set-up as in house divisions.
- ◆ Insurance cover is provided by DICGC to only MMDAs which are not eligible for tax exemptions under Section 10 (23 D) of Income Tax Act.

The close competitors of these MMMFs are the 46 days bank deposits. The saleability of MMMFs would depend upon two factors —

- (a) interest differential between bank deposits of 46 days and MMMFs and
- (b) minimum lock-in-period and the liquidity of funds.

What is now needed is a small push by the Government to set these funds rolling. The tax incentives given to other mutual funds should also be extended to MMMFs. Besides, there is a need to further reduce the gestation period of 46 days. However, it may not be feasible to reduce it in near future as money market instruments in India have maturity periods extending upto 182 days for TBs, 6 months in case of commercial paper and 3 months to one year for certificate of deposits. There is a need to introduce instruments of lower maturity ranges as well as to improve the liquidity and marketability of MMMFs. Once the MMMFs come of age and activate a secondary money market, lower maturity range instruments will automatically lose importance.

The blame for the initial lack of interest in these funds must be placed at the RBI's door. It placed too many impossible conditions. To begin with, it permitted only public sector mutual funds to launch MMMFs. It also specified the proportion of funds that could be invested in each instrument : treasury bills and government securities (at least 25%), commercial paper (a maximum of 15%), call money (not more than 30%), bills (20%) and the balance in certificates of deposit. These stipulations were eliminated in November 1995. But two onerous conditions remained. Companies were still not allowed to participate in MMMFs. And the minimum lock-in period was too long : 46 days. Now the first of these conditions has been removed. And the lock-in period has been reduced to 30 days.

Encouraged by this relaxation, several asset management companies (AMCs) like SBI, LIC, Sun, Templeton and Tata Mutual Fund were toying with the idea of launching MMMFs.

Some mutual fund managers say MMMFs may be just the thing to pep up the lacklustre mutual fund industry. This may be overly optimistic. The principal investors in existing mutual

funds are retail investors — and they are not likely to invest in MMMFs in a big way. These funds will be of interest mainly to companies with short-term funds which are seeking avenues more profitable than a simple bank deposit.

The money market funds themselves will probably prefer to target companies rather than individuals. Partly, this is because of the very nature of the instruments they can invest in. A treasury bill or commercial bill comes in very large denominations, of the order of Rs. 25 lakhs or multiples of it. It makes little sense to lure investors who will put in Rs. 10,000 or so. The cost of servicing them would be too high and the returns not worth the trouble. The returns are likely to be more than bank deposits and comparable to the yields offered by company fixed deposits — exactly what companies are looking for. To give them added flexibility, fund managers point out an MMMF should be an open-ended fund rather than a 30-days close-ended fund.

"Dealing in the money market requires expertise of a sort different from that required in equity. The banks have an advantages over the private sector mutual funds."

Banks have a worry of their own : If they launch an MMMF, they risk cannibalising their own savings accounts. But that was a fear when commercial paper (CP) was introduced — and it hasn't prevented the success of CPs.

The RBI's tough rules haven't helped MMMFs

Is the reduction in the minimum lock-in period an advantage ? Yes, but it only puts MMMFs on a par with bank deposits, the minimum duration of which has been recently cut from 46 days to 30 days. Many fund managers worry that even such a short period is too long and would hamper liquidity. Other grey areas need to be illuminated. For instance, who will regulate MMMFs, the RBI or the Securities & Exchange Board of India ?

Finally, it won't help at all that short-term interest rates are coming down. Call money rates, to take one example, are now down to less than 5%, which rules them out as an investment avenue for the immediate future. If such a regime continues, it will be some more time before MMMFs finally catch on.

THE HURDLES

- A lock-in period of even 30 days hampers the liquidity of the fund. An MMMF should operate like a savings account, say fund managers.
- Investors expect to get more than what they would get on bank fixed deposits. Considering the administrative expenses involved, the yield on MMMFs would have to be in the region of 15%.
- Retail investors have to be educated about MMMFs. A huge network is needed to target these investors.
- A large corpus is needed to deal in the money market on a consistent basis.
- No regulatory body has been determined.

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MMMFs in the US constitute 40 per cent of the total MF industry and had assets worth \$0.8 trillion in 1995. MFs in the US were managing assets of more than \$2 trillion as of mid-1995 and their net sales totalled over \$750 billion. The number of MMMFs has grown to about 1,000 since the first one was set up in 1971. They offer current (or savings) account and cheque writing privileges to their investors in addition to higher returns than bank deposit rates, thus giving the banks a run for their money. They invest in short-term liquid securities like US T-bills and notes and other US government agency obligations, bank CDs, CPs, municipal bonds, etc. The funds that pay the highest yields invest in bank CDs and CPs.

The following summary of the MF industry in the US by Lavine (1996) makes interesting reading.

"There were more than 70 million MF shareholders in mid-1995 with total assets of more than \$2 trillion and net sales of over \$750 billion. One of every four families invests in MFs. Most households own two funds—a stock fund and a bond or money market fund. The average MF investor is a 45-years-old male or female who earns \$45,000 to \$53,000 a year. The average household has \$43,000 invested in MFs. That amount is about 38 percent of the average household's total of \$113,000 invested in financial assets. Most people use MFs as a way to save for retirement. Retirement dollars accounted for 21 percent of all mutual fund assets... Today there are more than 6,000 MFs in the market—more funds than there are stocks traded on the New York Stock Exchange."

Banks have to face competition from MMMFs for short-term funds if, and when, they come into existence. The declining growth in deposits, coupled with the rising cost of funds due to high call rates and the increasing demand for credit require banks to come up with imaginative and attractive schemes to lure the investor. Banks seem to be learning fast if one were to believe the reported incentives to depositors—such as issue of demand drafts without charging commission, gift coupons and lucky draws—thanks to the reforms in the financial sector. Bank, too are contemplating offering incentives.

RELAXATIONS IN MMMF NORMS

	Earlier	Now
Eligibility	Scheduled commercial banks & FIs, their existing MFs, and subsidiaries	MFs in the private sector included
Ceiling on raising resources	2 per cent of average deposits in 1991-92	Withdrawn
Minimum size of MMMF	Rs. 50 crores	Withdrawn
Investment in GOI paper (T-bills & dated securities)	Minimum 25 per cent	Limit withdrawn

Investment call/notice money	in	Minimum 30 per cent	Limit withdrawn
Investment commercial paper	in	Maximum 15 per cent	Limit withdrawn
Investment commercial bills	in	Maximum 20 per cent	Limit withdrawn
Eligibility of investors		Units/shares of MMMFs to be issued only to individuals	NRIs can also invest but can only repatriate dividend / income, but not the principal amount of subscription.
Minimum size of investment by a single investor	rate	—	MMMFs are free to determine but can't offer a guaranteed of return
Minimum lock-in period		46 days. Investors can't exit the fund within 46 days of making their investment.	Retained

12.0 EXCHANGE TRADED FUNDS

Exchange Traded Funds are a type of financial instrument whose unique advantages over mutual funds have caught the eye of many an investor.

12.1 WHAT IS AN EXCHANGE TRADED FUNDS?

An Exchange Traded Fund (ETF) is a hybrid product that combines the features of an index fund. These funds are listed on the stock exchanges and their prices are linked to the underlying index. The authorized participants act as market makers for ETFs.

ETFs can be bought and sold like any other stock on an exchange. In other words, ETFs can be bought or sold any time during the market hours at prices that are expected to be closer to the NAV at the end of the day. Therefore, one can invest at real time prices as against the end of the day prices as is the case with open-ended schemes.

There is no paper work involved for investing in an ETF. These can be bought like any other stock by just placing an order with a broker.

An exchange-traded fund trades like a stock. Just like an index fund, an exchange traded funds represents a basket of stocks that reflect an index such as the Nifty, BSE, S&P 500 in global market. An exchange traded funds, however, isn't a mutual fund; it trades just like any other company on a stock exchange. Unlike a mutual fund that has its net-asset value (NAV) calculated at the end of each trading day, an exchange traded funds's price changes throughout the day, fluctuating with supply and demand. It is important to remember that while exchange traded funds's attempt to replicate the return on indexes, there is no guarantee that they will do so exactly. It is not uncommon to see a 1% or more difference between the actual index's year-end return and that of an exchange traded funds.

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By owning an exchange traded funds, investors get the diversification of an index fund plus the flexibility of a stock. Because Exchange Traded Funds trade like stocks, one can short sell them, buy them on margin and purchase as little as one share. Another advantage is that the expense ratios of most Exchange Traded Funds are lower than that of the average mutual fund. When buying and selling Exchange Traded Funds investors pay their broker the same commission that they would pay on any regular trade.

A great reason to consider Exchange Traded Funds is that they simplify index and sector investing in a way that is easy to understand. If investors feel a turnaround is around the corner, they can go long. If, however, they think ominous clouds will be over the market for some time, they have the option of going short. The combination of the instant diversification, low cost and the flexibility that Exchange Traded Funds offer makes these instruments one of the most useful innovations and attractive pieces of financial engineering to date.

They first came into existence in the USA in 1993. It took several years for their public interest. But once they did, the volumes took off with a vengeance. Over the years more than \$ 120 billion (as on June 2002) is invested in about 230 ETFs of trading volumes on the American Stock Exchange are from ETFs. The most popular are QQQs (Cubes) based on the Nasdaq-100 Index, SPDRs (Spiders) based on the Index, I SHARES based on MSCI indices and TRAHK (Tracks) based on the Hand . The average daily trading volume in QQQ is around 89 million shares.

The following Exchange Traded funds (ETFs) are being presently traded at National Stock Exchange of India:

- S&P Cnx Nifty Uti Notional Depository Receipts Scdheme (Sunder)
- Liquid Benchmark Exchange Traded Scheme (Liquid BeES)
- Junior Nifty BeES
- Nifty BeES
- Bank BeES

ETFs can be bought/sold through trading terminals anywhere across the country 1 presents a comparative view ETFs vis-à-vis other funds.

ETFs Vs. Open Ended Funds Vs. Close Ended Funds

<i>Parameter</i>	<i>Open Ended Fund</i>	<i>Closed Ended Fund</i>	<i>Exchange Traded</i>
Fund Size	Flexible	Fixed	Flexible
NAV	Daily	Daily	Real Time
Liquidity Provider	Fund itself	Stock Market	Stock Market/Fund it
Sale Price	At NAV plus load, if any	Significant Premium/Discount to NAV	Very close to actual New Scheme
Availability	Fund itself	Through Exchange where listed	Through Exchange with Fund itself.

Portfolio Disclosure	Monthly	Monthly	Daily/Real-time
Uses	Equitising cash		Equitising Cash, hedge Arbitrage
Intra-Day Trading	Not possible	Expensive	Possible at low cost.

(Source: www.nseindia.com)

Self- examination questions

1. What is a mutual fund? How it is beneficial to small investors?
2. What is an Assets Management Company? What is the role to be played by it in the affairs of a Mutual Fund?
3. Define the Concept of Net Assets Value. How it is calculated?
4. What is an Index Fund?
5. Who is a Trustee in a Mutual Fund? What are his duties and responsibilities?
6. What is the significance of custodians and depositories in a Mutual Fund?
7. What type of schemes have been floated by Mutual Funds in India? Briefly explain them.
8. What is an Hedge Fund? Whether hedge funds are being presently traded in India.
9. What do you mean by Money market Mutual Funds? How they are beneficial to the small investors?
10. What is the Concept Known as Exchange Traded Funds? Write a note on ETF traded at National Stock Exchange of India?
11. A has invested in three mutual fund schemes as per details below:

	MF A	MF B	MF C
Date of investment	0.1.12.2005	01.01.2006	01.03.2006
Amount of investment	Rs.50,000	Rs.1,00,000	Rs.50,000
Net Asset Value (NAV) at entry date	Rs.10.50	Rs.10	Rs.10
Dividend received upto 31.03.2006	Rs.950	Rs.1,500	Nil
NAV as at 31.03.2006	Rs.10.40	Rs.10.10	Rs.9.80

What is the effective yield on per annum basis in respect of each of the three schemes of Mr. A upto 31.03.2006?

12. (a) Explain, how to establish a Mutual Fund
- (b) Mr. A can earn a return of 16 per cent by investing in equity shares on his own. Now he is considering a recently announced equity based mutual fund scheme in which initial expenses are 5.5 per cent and annual recurring expenses are 1.5 per cent. How much should the mutual fund earn to provide Mr. A a return of 16 per cent?

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13. Following information is available regarding four mutual funds:

Mutual Fund	Return	Risk σ	β (Beta)	Risk free rate R_f
P	13	16	.90	9
Q	17	23	.86	9
R	23	39	1.20	9
S	15	25	1.38	9

Evaluate performance of these mutual funds using Sharp Ratio and Treynor's Ratio. Comment on the evaluation after ranking the funds.

MONEY MARKET OPERATIONS

1.0 INTRODUCTION

The financial system of any country is a conglomeration of sub-market, viz. money, capital and forex markets. The flow of funds in these markets is multi-directional depending upon liquidity, risk profile, yield pattern, interest rate differential or arbitrage opportunities, regulatory restrictions, etc. The role of money market in the overall financial system is prime inasmuch as the market acts as an equilibrating mechanism for evening out short term surpluses and deficits and provides a focal point for Central Bank's intervention to bring out variations in liquidity profile in the economy. Thus, presence of an active and vibrant money market is an essential pre-requisite for growth and development of an economy.

As the Indian economy gets integrated with the global economy, the demand for borrowing and lending options for the corporates and the financial institutions increases everyday. Known as the money market instruments, mutual funds, money market mutual funds, government bonds, treasury bills, commercial paper, certificates of deposit, repos (or, ready-forward purchases) offer various short-term alternatives. The major players in the money market are the Reserve Bank of India and financial institutions like the UTI, GIC, and LIC.

While the call money rates have been deregulated and left to the demand and supply forces of the market, the RBI intervenes in the repos through its subsidiaries. The RBI also acts in the foreign exchange market, where it sells US dollars to stabilise the rupee-dollar exchange rate.

Call Money rates have been dropped. We read these reports very often in the financial press and business pages of newspapers without understanding much of it. What is this money market ? Who are the participants ? What are the instruments used ? How are the interest rates determined ? What is call money ? What is meant by the term *repos* ? What are the interlinkages between the money market and the foreign exchange market ? What are the money market mutual funds (MMMFs), and how are they different from ordinary

10.2 Strategic Financial Management

mutual funds (MFs) as they exist today ? We attempt to answer these questions in this chapter and elsewhere in this Book.

1.1 CONCEPTUAL FRAMEWORK

The money market is market for short-term financial assets which can be turned over quickly at low cost. It provides an avenue for equilibrating the short-term surplus funds of lenders and the requirements of borrowers. It, thus, provides a reasonable access to the users of short term money to meet their requirements at realistic prices. Short term financial asset in this context may be construed as any financial asset which can be quickly converted into money with minimum transaction cost within a period of one year and are termed as close substitute for money or near money.

The money market thus may be defined as a centre in which financial institutions congregate for the purpose of dealing impersonally in monetary assets. In a wider spectrum, a money market can be defined as a market for short-term money and financial assets that are near substitutes for money. The term short-term means generally a period upto one year and near substitutes to money is used to denote any financial asset which can be quickly converted into money with minimum transaction cost.

This is a market for borrowing and lending *short-term* funds. Banks, financial institutions, investment institutions, and corporates attempt to manage the mis-match between inflow and outflow of funds by lending in or borrowing from the money market.

Call money market, or inter-bank call money market, is a segment of the money market where scheduled commercial banks lend borrow on call (i.e., overnight) or at short notice (i.e., for periods upto 14 days) to manage the day-to-day surpluses and deficits in their cash-flows. These day to day surpluses and deficits arise due to the very nature of their operations and the peculiar nature of the portfolios of their assets and liabilities.

While the portfolio of liabilities comprises deposits which are withdrawable on demand, the portfolio of assets consists of working capital and other loans to corporates and advances to individuals, and commercial and non-commercial organisations. Earlier, banks used to extend working capital loans to corporates while term-lending institutions like the Industrial Development Bank of India (IDBI), Industrial Finance Corporation of India (IFCI), and the Industrial Credit and Investment Corporation of India (ICICI) provided long-term loans.

The distinction between banks and term-lending institutions is getting blurred, with banks extending term loans and financial institutions setting up their commercial banking outfits. Depositors withdraw and deposit cash daily while corporates withdraw the loan amount as and when the need arises, i.e., when they have to make payments to their suppliers, etc. As a result, the balance, or net inflow or net outflow of cash, is not zero at the end of the

day or the week or the fortnight. Hence, the need for an inter-bank call money market the world over.

According to, former governor of the RBI, the money market, like the foreign exchange market, is more a concise description of transactions than a location, unlike a stockmarket. It is what happens between banks, financial institutions, corporates, and others who have money to *place* or *park* for a very short period, viz., a day, a week, or a fortnight.

To quote the Vaghul Committee report : "The money market is a market for short-term financial assets that are close substitutes for money. The important feature of money market instrument is that it is liquid and can be turned over quickly at low cost, and it provides an avenue for equilibrating the short-term surplus funds of lenders and the requirements of borrowers."

1.2 THE DISTINCT FEATURES OF MONEY MARKET

- (i) It is one market but collection of markets, such as, call money, notice money, repose, term money, treasury bills, commercial bills, certificate of deposits, commercial papers, inter-bank participation certificates, inter-corporate deposits, swaps futures, options, etc. and is concerned to deal in particular type of assets, the chief characteristic is its relative liquidity. All the sub-markets have close inter-relationship and free movement of funds from one sub-market to another. There has to be network of large number of participants which will add greater depth to the market.
- (ii) The activities in the money market tend to concentrate in some centre which serves a region or an area; the width of such area may vary considerably in some markets like London and New York which have become world financial centres. Where more than one market exists in a country, with screen-based trading and revolutions in information technology, such markets have rapidly becoming integrated into a national market. In India, Mumbai is emerging as a national market for money market instruments.
- (iii) The relationship that characterises a money market should be impersonal in character so that competition will be relatively pure.
- (iv) In a true money market, price differentials for assets of similar type (counterparty, maturity and liquidity) will tend to be eliminated by the interplay of demand and supply. Even for similar types of assets, some differential will no doubt continue to exist at any given point of time which gives scope for arbitrage.
- (v) Due to greater flexibility in the regulatory framework, there are constant endeavours for introducing new instruments/innovative dealing techniques; and
- (vi) It is a wholesale market and the volume of funds or financial assets traded in the market are very large.

10.4 Strategic Financial Management

1.3 PRE-CONDITIONS FOR AN EFFICIENT MONEY MARKET

A well developed money market– (i) uses a broad range of financial instruments (treasury bills, bills of exchange etc). (ii) channelises savings into productive investments (like working capital), (iii) promote financial mobility in the form of inter sectoral flows of funds and (iv) facilitate the implementation of monetary policy by way of open market operations.

The development of money market into a sophisticated market depends upon certain critical conditions. They are :

- (i) Institutional development, relative political stability and a reasonably well developed banking and financial system.
- (ii) Unlike capital market or commodity markets, tradings in money market are concluded over telephone followed by written confirmation from the contracting parties. Hence, integrity is *sine qua non*. Thus banks and other players in the market may have to be licensed and effectively supervised by regulators.
- (iii) The market should be able to provide an investment outlet for any temporarily surplus funds that may be available. Thus, there must be supply of temporarily idle cash that is seeking short-term investment in an earning asset. There must also exist a demand for temporarily available cash either by banks or financial institutions for the purpose of adjusting their liquidity position and finance the carrying of the relevant assets in their balance sheets.
- (iv) Efficient payment systems for clearing and settlement of transactions. The introduction of Electronic Funds Transfer (EFT), Depository System, Delivery versus Payment (DVP), High Value Inter-bank Payment System, etc. are essential pre-requisites for ensuring a risk free and transparent payment and settlement system.
- (v) Government/Central Bank intervention to moderate liquidity profile.
- (vi) Strong Central Bank to ensure credibility in the system and to supervise the players in the market.
- (vii) The market should have varied instruments with distinctive maturity and risk profiles to meet the varied appetite of the players in the market. Multiple instruments add strength and depth to the market; and
- (viii) Market should be integrated with the rest of the markets in the financial system to ensure perfect equilibrium. The funds should move from one segment of the market to another for exploiting the advantages of arbitrage opportunities.

The money market in India has been undergoing rapid transformation in the recent years in the wake of deregulation process initiated by Government of India/Reserve Bank of India. The institutions of Primary Dealers (PDs) and Satellite Dealers have been set up as specialised institutions to facilitate active secondary market for money market

instruments. New money market instruments have been introduced and more institutions have been permitted as players in the market. Interest rates in respect of all money market instruments have been completely freed and are allowed to be fixed in terms of market forces of demand and supply.

1.4 RIGIDITIES IN THE INDIAN MONEY MARKET

Notwithstanding the deregulation process initiated by the Reserve Bank of India and several innovations, the money market is not free from certain rigidities which are hampering the growth of the market. The most important rigidities in the Indian money market are :

- (i) Markets not integrated,
- (ii) High volatility,
- (iii) Interest rates not properly aligned,
- (iv) Players restricted,
- (v) Supply based-sources influence uses,
- (vi) Not many instruments,
- (vii) Players do not alternate between borrowing and lending,
- (viii) Reserve requirements,
- (ix) Lack of transparency, and,
- (x) Inefficient Payment Systems.

1.5 DISTINCTION BETWEEN CAPITAL AND MONEY MARKET

There is, however, basically a difference between the money market and capital market. The operations in money market are for a duration upto one year and deals in short term financial assets whereas in capital market operations are for a longer period beyond one year and therefore, deals in medium and long term financial assets. Secondly, the money market is not a well defined place like the capital market where business is done at a defined place viz. stock exchanges. The transactions in the money market are done through electronic media and other written documents. The major points of distinction are enumerated as follows.

- (1) In the Capital Market, there is classification between Primary Market and Secondary Market. While there is no such sub-division in money market, as such. However, slowly a secondary market in greater form is coming up in Money Market also.
- (2) Capital Market deals for fund of long term requirement. In contrast, the Money Market generally supply fund for short term requirement.

10.6 Strategic Financial Management

- (3) If the volume of business of Capital Market is considered (both Primary and Secondary Markets), it will lag behind the total value of transaction in Money Market.
- (4) While the number of instruments dealt with in the Money Market are many like
 - (a) Interbank Call Money,
 - (b) Notice Money upto 14 days
 - (c) Short-term deposits upto 3 months
 - (d) 91-days treasury bill
 - (e) 182-days treasury bill
 - (f) Commercial Paper etc.

The number of instruments in Capital Market are shares and debentures.

- (5) The players in Capital Market are general investors, brokers, Merchant Bankers, Registrar to the issue, underwriters, Corporate Investors, Foreign Financial Institutions (FII) and Bankers. While in money market the participants are Bankers, RBI and Government.

1.6 VAGHUL GROUP REPORT

Until few years ago, the Indian money market was small with transactions generally confined to over night borrowing and lending money by banks/financial institutions. Except commercial bills, there was no major other short term negotiable instrument for dealings. The fixed interest rate regime alongwith restrictions on entry of participants in the market provided little incentive for market development, which was almost dormant. The money management was, therefore, regarded as if no consequence by the investors, aspiring for better returns on short-term funds.

The Reserve Bank of India, however, in due course of time, recognised the need for an active secondary money market in India especially in the context of the setting up subsidiaries by many banks for operating mutual funds schemes and ever expanding business of the Unit Trust of India, Life Insurance Corporation of India, Industrial Development Bank of India and other financial institutions which needed avenues for the deployment of funds, flowing in regularly. For an indepth study and to make recommendations on the steps required to be taken for the development of a healthy and active money market, the Reserve Bank of India, appointed a working group under the Chairmanship of Shri N. Vaghul in September 1986. The recommendations, of the working group laid foundation for systematic action by the Reserve Bank of India for the development of the Indian money market. The broad objectives and the strategy as laid down by the Vaghul group serves as a milestone in the development of Indian money market. The working group recommended that the money market should be made broad-based by introducing new negotiable instruments and allowing more participants.

Turnover or volume of trading is a sure indicator of growth of market and for increase in turnover, there has to be a free play of market forces in fixing the rates and prices. The working group, therefore, recommended that the administered interest rate regime should be given up initially in such financial transactions as are put through the money market.

The specific terms of reference of the Vaghul Group were :

- (i) to examine money market instruments and recommend specific measures for their development;
- (ii) to recommend the pattern of money market interest rates and to indicate whether these should be administered or determined by the market;
- (iii) to study the feasibility of increasing the participants in the money market;
- (iv) to assess the impact of changes in the cash credit system on the money market and to examine the need for developing specialised institutions such as discount houses; and
- (v) to consider any other issue having a bearing on the development of the money market.

1.7 RECOMMENDATIONS

The Vaghul Group, as a background to its recommendations, outlines the conceptual framework in the form of broad objectives of the money market which are :

- (a) It should provide an equilibrating mechanism for evening out short-term surpluses and deficits;
- (b) It should provide a focal point for central bank intervention for influencing liquidity in the economy;
- (c) It should provide reasonable access to users of short-term money to meet their requirements at a realistic price.

To achieve these objectives, the Vaghul Group adopts a four-pronged strategy :

- (a) selective increase in the number of participants to broaden the base of the money market,
- (b) activating the existing instruments and developing new ones so as to have a diversified mix of instruments,
- (c) orderly movement away from administered interest rates to market determined interest rates, and
- (d) creation of an active secondary market through establishing new instruments.

The broad objectives and the strategy laid down by the Group serve as a touchstone for testing the various recommendations and for assessing the extent to which these recommendations would facilitate the development of money market in India.

1.8 OTHER RECOMMENDATIONS

There are a few other aspects of the Vaghul Group report which call for our attention. These relate to (a) new money market instrument (b) new supporting institutions and (c) the time schedule for implementing the recommendations of the Group.

The new money market instruments suggested by the Group are : commercial paper, certificate of deposits, factoring services and inter-bank participation certificates. These suggestions have to be appreciated, though some of the instruments do not seem to be in the area of immediate possibility. The launching of factoring services would call for a lot of spade-work with reference to the legal aspects and infrastructure required. Moreover, the introduction of short-term commercial paper should be preceded by the setting up of the credit rating agency.

Regarding the instrument of inter-bank participation certificates suggested by the group, it is difficult to appreciate why the group confines it only to banks and excludes institutions. It will restrict the size of the market for participation certificates if it is confined only to banks.

The recommendation of Vaghul Group for establishing an autonomous public limited company called Finance House of India is commendable. The failure of past efforts at developing a bill market or money market in general, was due to the absence of supporting institutions which would deal in money market instruments.

Viewed in this context, the setting up of finance house is an important step towards the development of the money market. The nature and scope of operations of the finance house would depend, to a considerable extent, on the environment in which it is expected to operate.

In August 1987, the decision of the RBI to set up a finance house amounted to putting the cart before the horse. The RBI side-stepped the recommendations of the Vaghul Group on the reform of the call money market and other sub-markets of the money market. It went ahead with the modalities of establishing the Finance House of India (FHI). Even here its proposal to participate on an equal basis in the capital of FHI with other institutions and banks came in for criticism. Banks were asked to provide nearly Rs 125 crores in the form of capital and low cost funds while the RBI wanted to administer the finance house with a stake of a fifth of the investment.

The Vaghul Group's report on the money market has been regarded as a quick job but that does not mean a thorough job. The Group has, instead of carrying forward the ideas of the Chakravarty Committee, developed a restrictive approach to the money market in general and to the four important sub-markets in particular. It would have been enlightening if the Group had brought together the linkages among the four sub-markets. This is necessary because the concept of evening out surpluses and deficits in short-term

funds means that funds flows not only among borrowers and lenders in a given sub-market but also between sub-markets. In other words, the money market is an organic whole, though sub-markets may be treated separately for convenience. There is need to assess the overall impact of the recommendations of the Vaghul Group. However, credit should be given to the Group for providing a good base for discussion with a view to arriving at correct decision.

Pursuant to these recommendations, the Reserve Bank of India has taken a number of steps to develop the money market. The timing of the action by the Reserve Bank of India coincided with the phase of gradual but definite liberalisation in the economy. The various institutional developments and new instruments introduced in the market are explained in this chapter.

In sequel to the recommendations, of Sukhmoy Chakravorty Committee (1985) and Vaghul Committee (1987) the interest rates in money market were de-regulated in May, 1989. A host of other new instruments have also been introduced since 1986 and onwards. These are 182 days treasury bills in 1986, certificate of deposits (CDs), Commercial Papers (CPs) and Inter Bank participation certificates in 1989 and 364 days Treasury Bills and Money Market Mutual Funds in 1992. To broaden both the primary and secondary market, specialised institution known as Discount and Finance House of India Ltd. (DFHI) was launched in April 1988. The institution is a market maker for money market instruments. These measures have made the Indian money market a vibrant one.

1.9 THE PARTICIPANTS

The money market in India, as many other less developed countries, is characterised by organised and unorganised segments. The principal intermediaries in the organised segment are the commercial and other banks, Non-banking finance companies and cooperative societies. The primary activity of these intermediaries is to accept deposits from the public and lend them on a short-term basis to industrial and trading organisations. In recent years, they have extended their activities to rural areas to support agricultural operations. There is also an active inter-bank loan market as part of the organised money market.

The salient features of the organised money market in India are (i) A significant part of its operations which is dominated by commercial banks, is subject to tight control by the Reserve Bank of India which (a) regulates the interest rate structure (on deposits as well as loans), reserve requirements and sectoral allocation of credit and (b) provides support to the banks by lending them on a short term basis and insuring the deposits made by the public. (ii) It is characterised by fairly rigid and complex rules which may prevent it from meeting the needs of some borrowers even though funds may be available (iii) overall, there is a paucity of loanable funds, mainly because of the low rate of interest paid on deposits.

10.10 Strategic Financial Management

The principal participants in the unorganised money market are money lenders, indigenous bankers, *nidhis* (mutual loan associations) and *chit funds*. They lend, primarily to borrowers who are not able to get credit from the organised money market. The characteristics of the unorganised money market are : informal procedures, flexible terms, attractive rates of interest to depositors and high rates of interest to borrowers.

The size of the unorganised money market is difficult to estimate, though it appears to be fairly large. However, its importance relative to that of the organised money market is declining. This is a welcome development from the point of view of the Reserve Bank of India because of the existence of a large unorganised market frustrates its efforts to control credit.

Access to call money market was restricted to scheduled commercial banks until 1971 when the RBI permitted the Unit Trust of India (UTI) and the Life Insurance Corporation of India (LIC) to deploy their short-term funds. The list was later expanded to include cooperative banks, term-lending financial institutions (such as IDBI, IFCI, ICICI and SCICI), MFs launched by the public sector banks and investment institutions, and the MFs set up in private sector. The RBI allowed the MMMFs set up in the public and private sectors to participate in the money market. Former finance minister agreed in principle to allow the Department of Posts to invest its short-term funds in the call money market.

While banks and the UTI can lend as well as borrow, financial institutions, General Insurance Corporation (GIC), LIC, MFs, and MMMs can only lend in the call money market. The private sector banks and MFs have been demanding a level playing field vis-a-vis the UTI regarding the facility to borrow from the money market so as to meet their redemption requirements. This facility comes in handy for them, particularly in a declining market, as they can obtain the required short-term funds at a lower cost. This is because of the large difference between the cost of the short-term funds in the organised money market and that in the unorganised, or informal, money market. The participation of LIC, GIC and UTI would increase the availability of short-term funds and enable UTI to meet any large repurchases from unit-holders. MFs have now been permitted to borrow from the money market to meet their dividend, interest and redemption obligations. They can borrow upto 20 per cent of their net assets owned.

MMMFs provide an ideal vehicle for an average investor to reap the benefits of high call money rates and high yields on money market instruments which, hitherto, have been enjoyed only by banks and financial institutions while paying a lower rate of interest on deposits. This is because retail investors can't invest in money market instruments due to the restrictions in terms of eligibility and the minimum amount of investment despite higher return offered by these securities.

2.0 INSTITUTIONS

The important institutions operating in money market are :

(i) **Reserve Bank of India (RBI)** is the most important participant of money market which takes requisite measures to implement monetary policy of the country.

(ii) **Schedule Commercial Banks (SCBs)** form the nucleus of money market. They are the most important borrower/supplier of short term funds.

(iii) **Discount and Finance House of India** : The Discount and Finance House of India Limited (DFHI) has been set up by the Reserve Bank of India jointly with public sector banks and all-India financial institutions to deal in short-term money market instruments. It started operations in April, 1988. At present DFHI participates in the inter-bank call/notice money market and term deposit market, both as lender and borrower. It also rediscounts 182 Days Treasury Bills, commercial bills, CDs and CPs.

The DFHI's turnover in the various segments of the money market has shown improvements during the last few years. The call money operations of DFHI has enabled the pooling of borrowers demand and lenders supplies to the extent both borrowers and lenders opt to avail of DFHI services for their operations. The DFHI's average daily lending in the call money market has grown significantly over the years. DFHI accounts for a market share of a little more than 10 per cent, in the call and notice money market.

The participation of DFHI in the money market has activated the secondary market specially for 182 Days Treasury Bills and commercial bills. As already stated, RBI does not purchase 182 Days Treasury Bills before maturity nor it sells these Treasury Bills except through the fortnightly auctions. DFHI fulfills the role of provider of liquidity to the Treasury Bills. It quotes every day its bid and offer discount rates for different instruments. While selling of Treasury Bills by DFHI at the 'offer' rate depends upon the availability of such bills in its assets portfolio, DFHI is always willing to purchase Treasury Bills at its bid rate.

The DFHI also provides 'repos' facility (buy-back and sell-back) to banks, selected financial institutions and public sector undertakings, upto a period of 14 days at negotiated interest rates.

In regard to commercial bills, the introduction of derivative usance promissory notes (DPNs) for rediscounting bills has facilitated multiple rediscounting of this instrument in the secondary money market. DFHI purchases and sells DPN for a period of upto 90 days at its bid and offer rediscount rate.

It may not be out of place to mention that after the setting up of DFHI, there has been an upsurge of activities in the money market. This, with selective relaxations of control on the money market operations by the Reserve Bank of India, has stimulated awareness for efficient fund management on the part of investors and borrowers in the money market. At

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the same time, it is imperative to point out that the money market is place for equilibrating the supply and demand for temporary short term funds at market related rates and prices. The DFHI is essentially an agency for smoothening out short term mismatches in the money market and not as a basic source for meeting fund requirements on a longer duration. With its own resources and the financial support from the Reserve Bank of India by way of refinance facilities and the broad-basing of the money market, DFHI is poised for continued sustained growth and more effective role to fulfill the basic objective of the money market.

3.0 INSTRUMENTS

The money market in India is an important source of finance to industry, trade, commerce and the government sector for both national and international trade through bills–treasury/commercial, commercial papers and other financial instruments and provides an opportunity to the banks to deploy their surplus funds so as to reduce their cost of liquidity. The money market also provides leverage to the Reserve Bank of India to effectively implement and monitor its monetary policy.

The instruments of money market are characterised by short duration, large volume and de-regulated interest rates. The instruments are highly liquid. They also are safe investments owing to issuers inherent financial strength.

The traditional short-term money market instruments consists of mainly call money and notice money with limited players, treasury bills and commercial bills. The new money market instruments were introduced giving a wider choice to short term holders of money to reap yield on funds even for a day or to earn a little more by parking funds by instruments for a few days more or until such time till they need it for lending at a higher rate. The various features of individual instruments of money market are discussed.

The instruments used by above-mentioned players to borrow or lend in the money market, include, *inter-alia*, treasury bills (T-bills), Government of India securities (GOI secs), State government securities, government guaranteed bonds, public sector undertaking (PSU) bonds, commercial paper (CP) and certificates of deposit (CDs). Banks, which require short-term funds, borrow or sell these securities and those having surplus funds would lend or buy the securities. Banks experiencing a temporary rise (fall) in their deposits and hence, a temporary rise (fall) in their statutory liquidity ratio (SLR) obligations, can borrow (lend) SLR securities from those experiencing a temporary fall (rise) in their deposits. Banks invest in T-bills, GOI and State government securities, government-guaranteed bonds and PSU bonds to fulfill their SLR obligations.

(a) Call/Notice money : The core of the Indian money market structure is the inter-bank call money market which is centralised primarily in Mumbai, but with sub-markets in Delhi, Calcutta, Chennai and Ahmedabad. Moreover current and expected interest rates on call

money are the basic rates to which other money markets and to some extent the Government securities market are anchored. The activities in the call money are confined generally to inter-bank business, predominantly on a overnight basis, although a small amount of business, known as notice money was also transacted side by side with call money with a maximum period of 14 days. The participants in the markets are commercial banks, co-operative banks and primary dealers who can borrow and lend funds. Large mutual funds promoted by nationalised banks, private sector mutual funds and all India financial institutions can participate in the market as lenders only. Corporate entities having bulk lendable resources of minimum of Rs. 5 crores per transactions have been permitted to lend in call money through all Primary Dealers provided they do not have any short-term borrowings from banks. Brokers are not permitted in the market. Interest rate in the market is market driven and is highly sensitive to the forces of demand and supply. Within one fortnight, rates are known to have moved as high as and/or touch levels as low as 0.50% to 1% Intra-day variations as also quite large. Hence, the participants in the markets are exposed to a high degree of interest rate risk.

The call money rates have been fluctuating widely going upto 70 per cent and dropping to around 3 per cent in the recent past.

For many years, while a set of institutions like State Bank of India, UTI, LIC, GIC, etc. continue to be lenders, some banks which have limited branch network are regular borrowers. Although by no means as pronounced as it was once, the activities in the money market are subjected to fluctuations due to seasonal factors, i.e. busy (November to April) and slack (May to October) seasons. One of the most important factors contributing to volatility in the market is mismatches in assets and liabilities created by the banks. Some banks over-extended themselves by using call money borrowings to finance the build-up of a large portfolio of Government of India securities, other long-term assets and non-food credit. It is this asset-liability mismatch which resulted in a sporadic volatility in the market. Apart from the mismatches in assets and liabilities, the inherent weakness of the bank of reasonably forecast their liquidity position had often pushed some of them to the pool of liquidity overhang or severe liquidity crunch.

The cash credit and the demand loan with automatic renewal/rollover facility, once in six months, systems of financing working capital requirements has a skewed demand pattern. While the drawls in the cash credit/loan accounts are to the brim during peak season or when liquidity crunch pervade in the financial system, large return flow of funds in the slack season overburdens the banking system with liquidity overhang. The disintermediation process accelerates the volatility in the use of cash credit/loan system. Any interest rate arbitrage opportunities in the market are being exploited by big corporates entities. Large scale issue of CPs, GDRs, Euro Currency Borrowings, Bonds, etc., for meeting working capital requirements/prepaying high cost debts often result in huge liquidity overhang in the banking system. On the other hand, when interest rates

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tends to rise in the market, the blue-chip corporates return to their cash credit/loan accounts thereby triggering a liquidity crisis and call money rates reaching dizzy heights.

Large-scale diversion of working capital facilities for lending in the inter-corporate deposit market and investments in other treasury products by blue-chip companies amply testify the malady in the current system of working capital financing and its impact on the call money market. The uneasy calm in the money market is attributed to the corporates hunting for cheaper funds in the Euro Dollar and Indian money markets.

(b) Inter-bank term money : This market which was exclusively for commercial banks and co-operative banks has been opened up for select All India Development Financial Institutions in October, 1993. The DFIs are permitted to borrow from the market for a maturity period of 3 to 6 months within the limits stipulated by Reserve Bank of India for each institution. The interest rates in the market are driven. As per IBA ground rules, lenders in the market cannot prematurely recall these funds and as such this instrument is not liquid. The market is predominantly 90-days market. The market has shown a lot of transactions following withdrawal of CRR/SLR on liabilities of the banking system.

(c) Inter-bank participation certificate (IBPC) : The IBPCs are short-term instruments to even-out the short-term liquidity within the banking system. The primary objective is to provide some degree of flexibility in the credit portfolio of banks and to smoothen the consortium arrangements. The IBPC can be issued by scheduled commercial bank and can be subscribed to by any commercial bank. The IBPC is issued against an underlying advance, classified standard and the aggregate amount of participation in any account time issue. During the currency of the participation, the aggregate amount of participation should be covered by the outstanding balance in account. The participation can be issued in two types, viz. with and without risk to the lender. While the participation without it can be issued for a period not exceeding 90 days. Participation is now with risk for a period between 91 days and 180 days. The interest rate on IBPC is freely determined in the market. The certificates are neither transferable nor prematurely redeemable by the issuing bank.

In the case of the bank issuing IBPC with risk, the aggregate amount of participation would be reduced from the aggregate advance outstanding. The participating bank would show the aggregate amount of such participation as part of its advances. In cases where risks have materialised, the issuing bank and participating bank should share the recoveries proportionately. However, in without risk sharing management, the issuing bank will show the amount of participation as borrowing while the participating bank will show the same under advances to banks. In case of any loss, the issuing bank should compensate fully the participating bank.

The scheme is beneficial both to the issuing and participating banks. The issuing bank can secure funds against advances without actually diluting its asset-mix. A bank having the highest loans to total asset ratio and liquidity bind can square the situation by issuing

IBPCs. To the lender, it provides an opportunity to deploy the short-term surplus funds in a secured and profitable manner. The IBPC with risk can also be used for capital adequacy management. A bank with capital shortfall can temporarily park its advances with other banks which have surplus capital. It can also be used for meeting shortfall in priority sector lending by swapping such advances with those banks who exceed the priority sector lending obligations.

(d) Inter corporate deposit : The inter corporate market operates outside the purview of regulatory framework. It provides an opportunity for the corporates to park their short-term surplus funds at market determined rates. The market is predominantly a 90 days market. The market which witnessed flurry of activities has received a serious jolt in the wake of series of defaults.

Market for inter-corporate funds : The Vaghul Group had not paid much attention to this segment of the money market while the volume of transactions in this market amount to Rs. 1000 crores a year. Inter-corporate loans have been a traditional feature of corporate financing in India. It would have been more enlightening if the Vaghul Group had devoted requisite attention to this market. The reasons for the casual treatment seem to be that this scheme of market operates freely and outside the regulatory framework and the risk of lending in this market is such that periodic failures characterise this market. This is precisely why this market should be brought within the regulatory framework.

The inter-corporate money market is sustained by temporary surplus funds available with companies. Different corporate units have varying seasonal peaks. Therefore, the flow of funds to this market would be steady. Besides, inter-corporate market would be a source of funds to the commercial bill market.

It is desirable that the authorities not only refrain from restructuring the growth of this market but take positive measures to encourage it by evolving guidelines for the working of the market. This seems appropriate in the context of the plans by the Union Government to effect inter-corporate transfer of funds among public sector companies.

The other money market instruments viz. Swaps, Options and Futures, in rupees are yet to emerge in the Indian market.

(e) Treasury bills (TBs) : Among money market instruments TBs provide a temporary outlet for short-term surplus as also provide financial instruments of varying short-term maturities to facilitate a dynamic asset-liabilities management. The TBs are short-term promissory notes issued by Government of India at a discount for 14 days to 364 days.

More relevant to the money market is the introduction of 14 days, 28 days, 91 days and 364 days TBs on auction basis. In order to provide investors with instruments of varying short-term maturities, Government of India introduced the auction of 14 days TBs since June 1997. Further, with a view to developing TBs market and moving towards market rate of interest on Government securities, the auction of 91 days TBs was first introduced

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in January, 1993. The amount to be auctioned will be pre-announced and cut off rate of discount and the corresponding issue price will be determined in each auction. The amount and rate of discount is determined on the basis of the bids at the auctions. While the uniform price auction method is followed in respect of 91 days TBs, the cut off yield of other TBs are determined on the basis of discriminatory price auctions. The non-competitive bids in respect of 14 and 364 days TBs are accepted outside the notified amount. The discretion to accept non-competitive bids fully or partially rest with RBI. The amount to be accepted at the auctions and the cut-off price are decided by the Reserve Bank of India on the basis of its public debt management policy, the conditions in money market and the monetary policy stance.

Following the abolition of 91 days Tap TBs, 14 days Intermediate TBs was introduced with effect from 1st April, 1997. The 14 days TBs are available on tap. State Governments, foreign, Central Banks and other specialised bodies with whom RBI has an agreement are only allowed to invest in this TBs.

(f) The salient features of 14 days TBs (Tap)

- Sold for a minimum amount of Rs. 1,00,000 and in multiples of Rs. 1,00,000.
- Issued only in book entry form.
- Not transferable.
- Discount rates are set at quarterly intervals; the effective yield is equivalent to the interest rate on Ways and Means Advances Chargeable to Central Government.
- Re-discounted at 50 basis points higher than the discount rate. On re-discounting, the TBs are extinguished.

TBs are issued at discount and their yields can be calculated with the help of the following formula :

$$Y = \left[\frac{F - P}{P} \right] \times \frac{365}{M} \times 100$$

where Y = Yield,
 F = Face Value,
 P = Issue Price/Purchase Price,
 M = Maturity.

TBs can be purchased by any person, firm, company corporate body and institutions. State Government, Non-Government Provident Funds governed by the PF Act, 1925 and Employees Provident Fund and Miscellaneous Provisions Act, 1952 are eligible to participate in the auctions of 14 days and 91 days TBs on a non-competitive basis. Non-

competitive bids are accepted at the weighted average price arrived at on the basis of competitiveness bids accepted at the auctions. TBs are issued in lots of Rs. 25,000 (14 days and 91 days)/Rs. 1,00,000 (364 days). TBs are approved securities for the purpose of SLR. While Reserve Bank of India does not participate in the auctions of 14 days and 364 days TBs, it will be at its liberty to participate in the auctions and to buy part or the whole of the amount notified in respect of 91 days TBs. The Primary Dealers also underwrite a minimum of 25% of the notified amount of the 91 days TBs. They also underwrite the amount offered by RBI in respect of 14 and 364 days TBs.

Features

- (1) Government's contribution to the money market,
- (2) Mop-up short-term funds in the money market,
- (3) Sold through auctions,
- (4) Discount rate is market driven, and
- (5) Focal Point for monetary policy.

Advantages to Investor

- (i) Manage cash position with minimum balances,
- (ii) Increased liquidity,
- (iii) Very little risk,
- (iv) Market related yield,
- (v) Eligible for repos,
- (vi) SLR security,
- (vii) No capital loss,
- (viii) Two-way quotes by DFHI/Primary Dealers (PDs)/Banks.

The treasury bills are extremely important among money market instruments, both for the issuer and investors. Through these instruments, Government can raise funds for short-term to meet the temporary mismatches in cash flows and mop up excess liquidity in the system. The PDs have assumed the role of market makers in treasury bills and they regularly provides two-way quotes. This has added to the liquidity and deepened the secondary market of this instrument. Thus treasury bills have emerged as an effective instrument for dyanmic asset-liability management. Apart from liquidating the treasury bills in the secondary market, treasury bills can be used for transactions which will help the fund managers to temporarily deploy or borrow funds without altering their assets portfolio. Due to its mode and periodicity of issue (weekly and fortnightly auctions) as also

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the existence of a well developed secondary market, the fund manager could build-up a portfolio of treasury bills with varying maturities which will match their volatile liabilities.

(g) 182 Days Treasury bills : The Chakraborty Committee which reviewed the working of the Monetary System in India had recommended that Treasury Bill should be developed as an active money market instrument with flexible interest rates. Accordingly, the Reserve Bank of India introduced 182 days Treasury Bills in November, 1986. These Treasury Bills were initially issued by the Reserve Bank of India on monthly basis, following the procedure of auction. The periodicity of auction was changed from monthly to fortnightly interval from July, 1988 with a view to providing a wider array of maturities. 182 days Treasury Bills can be purchased by any person resident in India, firms, corporate bodies, banks, financial institutions. State Government and Provident Funds Organisations are not allowed to invest in these bills. 182 Days Treasury Bills are issued in minimum denomination of Rs. one lakh and in multiples thereof. However, in the secondary market, the deals are presently transacted for a minimum amount of Rs. 25 lakhs and thereafter in multiples of Rs. 10 lakhs. RBI does not purchase 182 Days Treasury Bills before maturity but the investors (holders of these Treasury Bills) can sell them in the secondary market. DFHI is ever willing to purchase these bills at its ruling rediscount rates.

Similarly, investors who wish to purchase these bills on days other than in the fortnightly auctions can do so in the secondary market. If available in its stock, DFHI also sells them at its ruling rate. Due to assured liquidity, investment can easily be converted into cash. The rediscounting market has also made it possible to create a spread of maturity periods from one day to 182 days among the Treasury Bills available in the money market for discounting. An investor who wishes to avoid uncertainty of rediscount rate at the time of sale can get Treasury Bills of desired balance maturity period (1 to 182 days) in the market for holding till maturity. The option of repos (buy-back and sell-back) transaction is also available to banks, select financial institutions and PSUs at negotiated interest rate, if one simply wishes to park the funds for a duration of upto 14 days.

The 182 days treasury bills are, however, yet to become popular to combat the volatility of the call money market, as the yield is still not attractive though it is market determined. Moreover, RBI refinance against treasury bills is only 50% of the value.

(h) 364 Days Treasury bills : The Government of India has now floated Treasury bills of varying maturities upto 364 days on an auction basis which will be identical to that for the 182 days, treasury bills. The DFHI has already started auctioning 364 days treasury bills. The varying period of maturities help the short term investors to decide on the period of investment of their funds.

The RBI, has however, tightened bill discount rules to check misuse. It laid down special instructions to banks for strict compliance. The important ones are as follows :

1. Bills discounting facilities should not be provided by any bank outside the consortium arrangement.
2. Bill discounting limits should be part of the total working capital limits of the borrowers based on well established norms.
3. Bills for service charges, payment of duties, hire-purchase/lease rental instalments, sale of securities and other types of financial accommodation should not be discounted.
4. Accommodation bills should never be discounted and
5. Banks should not re-discount the bills earlier discounted by non-banking financial companies.

(i) **Commercial bills** : Bill financing is the core component of meeting working capital needs of corporates in developed countries. Such a mode of financing facilitates an efficient payment system. The commercial bill is instrument drawn by a seller of goods on a buyer of goods. RBI has pioneered its efforts in developing bill culture in India, keeping in mind the distinct advantages of commercial bills, like, self-liquidating in nature, recourse to two parties, knowing exact date transactions, transparency of transactions etc. The RBI introduced Bills Market Scheme (BMS) in 1952 and the Scheme was later modified into New Bills Market Scheme (NBMS) in 1970 on the recommendation of Narasimham Committee. Under the Scheme, commercial banks can discount with approved institutions (i.e. Commercial Banks, Insurance Companies, Development Financial Institutions, Mutual Funds, Primary Dealers, etc.) the bills which were originally discounted by them provided that the bills should have arisen out of genuine commercial trade transactions. The need for physical transfer of bills has been waived and the rediscounting institution can raise Derivative Usance promissory Notes (DUPNs). These DUPNs are sold to investors in convenient lots and maturities (15 days to 90 days) on the basis of genuine trade bills, discounted by the discounting bank. The discounting bank should, *inter alia*, comply with the following conditions,

- (i) Bank which originally discounts the bills only draw DUPN.
- (ii) Continue to hold unencumbered usance bills till the date of maturity of DUPN.
- (iii) Matured bills should be substituted by fresh eligible bills.
- (iv) The transactions underlying the DUPN should be *bona fide* commercial or trade transactions.
- (v) The usance of the bill should not exceed 120 days and the unmatured period of such bills for drawing DUPN should not exceed 90 days.

The interest rate on re-discounting of bills was deregulated in May, 1989. Notwithstanding various benefits accruing to this mode of financing, bill financing is yet to develop on a scale commensurate with the credit provided by the banks to the commercial sector. The

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volume of bills finance to total finance is still an insignificant portion. The DUPNs, like commercial bills, are exempted from stamp duty.

The DUPN is issued at a discount which is realised at front-end. For example, if a bank re-discounted a commercial bill with a face value of Rs. 100/- @ 15% for 2 months will fetch Rs. 97.50, on the basis of the following calculation.

$$\text{Discount} = 100 \times \frac{15}{100} \times \frac{2}{12} = \text{Rs. } 2.50$$

However, as the discount amount is paid at front-end, the yield to the investor or cost to the borrower will be higher than the discount rate in view of the fact that the discounter can deploy the amount of discount received for earning further income. This can be calculated with the following formula:

$$Y \left\{ \left[1 + \frac{D}{100 \times M} \right]^M \right\} \times 100$$

where

Y = Actual Yield

D = Discount rate

M = Period of discount compounded for one year

(12/Number of months or 365/number of days).

In pursuance to various irregularities noticed in bills re-discounting RBI has issued certain directions in this regard. They are :

- (i) The bill finance should be the part of the MPBF/working capital limits.
- (ii) Only bills covering purchase of raw material/inventory for production purpose and sale of goods should be discounted by banks. Bills covering payment in respect of electricity charges, customs duty, sale of securities and other types of financial accommodations should not be discounted by banks.
- (iii) Accommodation bill should never be discounted by banks. The underlining trade transaction should be clearly identified.
- (iv) Bank should be circumspect while discounting bills drawn by front companies set up by large industrial groups or other group companies.
- (v) Funds accepted by banks from their constituents under Portfolio Management Scheme (PMS) should not be deployed for discounting bills.

- (vi) Banks should not re-discount the bills earlier discounted by non-banking financial companies.
- (vii) Banks should seek re-discounting facility only to the extent of eligible usance bills held by them. Any excess amount obtained by any bank either due to inadequate cover or by obtaining re-discounting facilities against ineligible bills will be treated as borrowing and the bank will have to maintain CRR/SLR on such borrowings.

Commercial bills re-discounting is a safe and highly liquid instrument having advantage to both borrower and lender and can be better used for management of temporary mismatches in cash flows and asset-liability management. Borrowings by BRS is not reckoned for NDTL purpose. Thus, borrowings under BRS involve only a switch of assets without affecting the liability side of the balance sheet. Further, the instrument is highly liquid as DFHI and other financial institutions support a deeper secondary market.

(j) Certificate of deposits (CDs): The CDs are negotiable term-deposits accepted by commercial bank from bulk depositors at market related rates. The CDs can be issued by scheduled commercial banks (excluding RRBs) at a discount to face value for a period from 3 months to one year. The CDs can be issued for minimum amount of Rs. 5 lakhs to a single investor. CDs above Rs. 5 lakhs should be in multiples of Rs. 1 lakh. There is, however, no limit on the total quantum of funds raised through CDs. The discount on CDs is deregulated and is market determined. The CDs can be negotiated on or after 30 days from the date of issue to the primary investor. The CDs are to be reckoned for reserve requirements and are also subject to stamp duty. Banks are prohibited from granting loans against CDs as buy-back of their own CDs.

As stated earlier, CDs are issued at discount to face value. The discount is offered either front end or rear end. In the case of front end discount, the effective rate of discount is higher than the quoted rate, while in case of rear end discount, the CDs on maturity yield the quoted rate. This can be explained as under :

A. CDs issued at front end discount

Amount of Issue – Rs. 100

Period 6 months

Rate of discount – 20%

$$\text{Discount} = 100 \times \frac{20}{100} \times \frac{6}{12} = \text{Rs.}10.00$$

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Hence CD will be issued for Rs. $100 - 10 = \text{Rs. } 90.00$. The effective rate to the bank will, however, be calculated on the basis of the following formula :

$$ED = \left\{ \left[1 + \frac{D}{100 \times M} \right] \right\} - 1 \times 100$$

The CDs was introduced in June, 1989 with the primary objective of providing a wholesale resource base to banks at market related interest rates. The instrument was effectively used to cover certain asset sources and has since emerged as instrument for effective asset-liability management. Free transferability of instrument (after 30 days from issue) assures liquidity to the instrument. Banks can invest in CDs for better funds management; such investments beside yielding high return can be netted with liability to the banking system for CRR/SLR purpose. This type of asset also attracts only lower rate of weight under Capital Adequacy Standards. The CDs market witnessed a spurt in activities during 1995 against the backdrop of liquidity crisis.

Certificate of Deposit (CD) is a front-ended negotiable instrument, issued at a discount and the face value is payable at maturity by the issuing bank. In terms of the provisions of CD Scheme, banks were allowed to issue CDs to their customers upto an aggregate amount equivalent to 5 per cent of their aggregate deposit. The CDs are short term deposit instruments with maturity period ranging from 3 months to one year. These instruments are subject to payment of stamp duty like the usance promissory notes. A CD is transferable by endorsement and delivery after 30 days of issue.

Since a CD is eligible for rediscounting in the money market only after 30 days of holding, the maturity period of CDs available in the market can be anywhere between 1 month to one year. A CD is, therefore, another step in filling the gap between Treasury Bills/Commercial Bills and dated securities.

The discount rates for issue of CD are market-determined. Banks can use the CD Scheme to increase their deposit base by offering higher discount rates than on usual time deposits from their retail customers. Anyone can take CDs, issued by banks. Also; there is a fair degree of liquidity to the investment, though, at present, it is somewhat restricted due to non-eligibility of transfer for 30 days after issue. This is an ideal instrument when surplus cash is to be. Banks also find this instrument suitable to reward its big size depositors with better rate of return as an incentive.

CDs are issued on multiples of Rs. 1 lakh subject to the minimum size of an issue to a single investor being Rs. 5 lakhs.

Despite the large size of the primary market for CDs, there has been virtually no activity in the secondary market and the holders keep the CDs till maturity. So long as there is sluggish growth of deposits at administered low rates vis-a-vis the high rates offered by

the non-banking non-financial institutions and others, banks in distress for funds will always need CDs at any cost. They may be useful where the average yield on advances is higher than the effective cost of CDs and the loan assets are largely in Health Code No. 1.

The Banks are facing some of the problems in issuing certificate of deposits (CDs). For the banks CDs are subject to reserve requirements, while for FIs, there is no such need. Recently, FIs have been allowed to issue CDs. It is contended that whereas the cost of borrowing for FIs does not change, for banks the break even for lending is put at 30 per cent per annum against the competition pricing of 16 to 17 per cent. The banks feel a review is necessary to remove the anomaly.

(k) Commercial Paper : Commercial paper (CP) has its origin in the financial markets of America and Europe. When the process of financial dis-intermediation started in India in 1990, RBI allowed issue of two instruments, viz., the Commercial Paper (CP) and the Certificate of Deposit (CD) as a part of reform in the financial sector as suggested by Vaghul Committee. A notable feature of RBI Credit Policy announced on 16.10.1993 was the liberalisation of terms of issue of CP. At present it provides the cheapest source of funds for corporate sector and has caught the fancy of corporate sector and banks. Its market has picked up considerably in India due to interest rate differentials in the inter-bank and commercial lending rates.

Commercial Paper (CP) is an unsecured debt instrument in the form of a promissory note issued by highly rated borrowers for tenors ranging between 15 days and one year. "Corporates raise funds through CPs on an on going basis throughout the year. Some go in for CPs issuance to redeem old issues.

Thus CP is a short term unsecured promissory note issued by high quality corporate bodies directly to investors to fund their business activities. It is generally issued at a discount freely determined by the market to major institutional investors and corporations either directly by issuing corporation or through a dealer bank.

It partly replaces the working capital limits enjoyed by companies with the commercial banks and there will be no net increase in their borrowing by issue of CP.

Role of RBI

As a regulatory body, RBI lays down the policies and guidelines with regard to commercial paper to maintain a control on the operational aspects of the scheme.

- Prior approval of RBI is required before a company can issue CP in the market.
- RBI controls the broad timing of the issue to ensure orderly fund-raising.
- Every issue of CP launched by a company, including roll-over will be treated as fresh issue and the issuing company will be required to seek prior permission from RBI, before each roll-over.
- RBI approval is valid for 2 weeks only.

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RBI guidelines [as per notification No IECD 1/87 (CP) 89-90] prohibits the banks from providing any underwriting support or co-acceptance of issue of CP.

CPs are unsecured and negotiable promissory notes issued by high rated corporate entities to raise short-term funds for meeting working capital requirements directly from the market instead of borrowing from banks. CP is issued at discount to face value and is not transferable by endorsement and delivery. The issue of CP seeks to by pass the intermediary role of the banking system through the process of securitisation.

The concept of CPs was originated in USA in early 19th century when commercial banks monopolised and charged high rate of interest on loans and advances. In India, the CP was introduced in January 1990 on the recommendation of Vaghul Committee. Conditions under which the CPs can be issued are :

- (i) the issuer company should have a minimum net worth and fund-based working capital limit of not less than Rs. 4 crores each.
- (ii) the company should obtain a minimum rating of P2/A2/PR2/D2 (from CRISIL/ICRA/CARE/Duff and Phelps, respectively) which should not be more than 2 months old at the time of issue of CPs,
- (iii) the maturity of a CP could be varying between 15 days and less than one year,
- (iv) minimum amount of CP issued for a single investor will be Rs. 25 Lakhs in the minimum denomination of Rs. 5 Lakhs,
- (v) CPs can be issued to a maximum of 100% of the fund-based working capital limits of issuer company,
- (vi) the banks can neither extend any stand-by or underwriting facility nor guarantee payment of the instrument on maturity.
- (vii) the CPs are subject to stamp duty. Besides, the issuer has to incur rating agency fee, issuing and paying agents fee, etc.

The CPs can be issued by all non-banking (financial as well as non-financial) companies. Effective from September 6, 1996, Primary dealers (PDs) have also been permitted to raise funds by issuing CPs. The instrument is instantly advantageous to the issuer and the investor. The issue of CPs does not involve bulky documentation and its flexibility with the opportunities can be tailored to meet the cash flow of the issuer. A highly rated company can raise cheaper funds than from the financing bank while the investor can deploy its short-term surplus at relatively high return. The secondary market for CPs ensure liquidity and the compulsory credit rating imparts inherent strength to the issuer's ability to meet the obligations on maturity. The bank as managers or dealers of the instrument get fees to supplement their income. Bank can also invest their surplus short-term funds in CP.

Role of credit Rating agencies: The rating is based on parameters like net cash accruals, unutilised cash credit limits, assets like units and good tradeables securities,

which allow instant liquidity. If companies ask for ratings for very big amounts, there is a chance that the rating might not be as good as for a smaller amount. In which case, the interest cost for the company too will be higher. A rating is assigned for a particular amount and depends on the company's debt obligation vis-a-vis the level of cash accruals.

The Credit Rating Information Services of India Limited (CRISIL) promoted by ICICI is one of the credit rating agencies in India, the other being ICRA and CARE. CRISIL's principal objective is to rate the debt obligations of Indian companies. Its ratings provide a guidance to investors as to the risk of timely payment of interest and principal on debentures, preference shares, fixed deposit programme or a short term instrument like CP. CRISIL rating is a critical part of CP issue and every 6 months, the company would have to approach CRISIL for review of their rating.

CRISIL takes into account:

- business analysis;
- financial analysis;
- management evaluation;
- the regulatory and competitive environment, and
- fundamental analysis for determination of the ratings.

The key factors considered from the point of view of business analysis are the industry risk, the market position of the company within the industry and its operating efficiency.

From the point of view of financial analysis, the accounting quality, the earnings protection, the adequacy of cash flows, and the financial flexibility of the company are the factors taken into consideration.

The fundamental analysis involves a study of liquidity management, the asset quality, the profitability and financial position, and the interest and tax sensitivity of the corporation.

For the borrowing company, the ratings enhance the marketability of the instrument. For the investor, CRISIL's ratings serve as an objective guide to the risks involved in a particular instrument.

Timing of CP

The timing of the launch of the CP issue would be indicated by RBI while giving its permission, to ensure an orderly approach to the market.

Denomination and size of CP

Minimum size of CP issue	–	Rs. 25 lakhs.
Denomination of CP note	–	Rs. 5 lacs or multiples thereof.

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Maximum size of CP issue – 100% of the issuer's working capital (fund based) limits (determined by the consortium leader).

The entire approved quantum of CP can be issued on a single date, or in parts on different dates, within two weeks of the Reserve Bank of India's approval, subject to the condition that the entire amount of issue matures on the same date.

Period of CP

Minimum currency – 15 days from the date of issue.

Maximum currency – 360 days from the date of issue.

No grace period for repayment of CP.

If maturity date happens to be a holiday, issuer has to make the payment on the immediate preceding working day.

The entire approved amount should be raised within a period of 2 weeks from the date of approval of RBI.

Each CP issue (including roll-over) has to be treated as a fresh issue has to seek permission from RBI.

Mode of CP

CP has to be issued at a discount to face value.

Discount rate has to be freely determined by the market.

Negotiability of CP

CP (being usance promissory note) would be freely negotiable by endorsement and delivery.

Underwriting/co-acceptance of CPs

The CP issue cannot be underwritten or co-accepted in any manner. Commercial Banks, however, can provide standby facility for redemption of CPs on the maturity date.

Printing of CP

Issuer has to ensure that CP is printed on good quality security paper and that necessary precautions are taken to guard against tampering with the documents, since CP will be freely transferable by endorsement and delivery. CP should be signed by at least 2 authorised signatories and authenticated by the issuer's agent (bank).

Issue expenses

The issue of CP would be subject to payment of stamp duty. All issue expenses such as dealer's fees, issuing and paying agent's fees, rating agency fees, charges levied by

banks for providing redemption standby facilities and any other charges connected with the issue of CPs are to be borne by the issuer.

The issuer

The CP issuer can be a Company incorporated under the Companies Act, 1956, which satisfies the following requirements :

1. A tangible net worth of at least Rs. 4 crores, as per the latest audited balance sheet. The tangible net worth will comprise of paid up capital plus free reserves less accumulated balance of losses, balance of deferred revenue expenditure and also other intangible assets. Free reserves includes balance in share premium account, capital and debenture redemption reserves but exclude reserves created for any future liability, or for depreciation of assets, or for bad debts, or for revaluation reserve.
2. A working capital (fund based) limit of not less than Rs. 4 crores.
3. The Company's shares should be listed on at least one Stock Exchange (This stipulation regarding listing on the Stock Exchange does not apply to public sector companies).
4. The issuer should obtain a minimum credit rating from an RBI approved agency like (CRISIL) of P1 + for CP.
5. The issuer should fall under Health code No. 1 status.
6. The issuer should have a minimum current ratio of 1:33:1 as per the latest audited balance sheet. (For the purpose of computing the current ratio, the current assets and current liabilities are classified as per the RBI guidelines issued from time to time).
7. The issuer should ensure that the credit rating is not more than two months old at the time of applying to RBI for approval to issue CP.
8. The entire amount of CP is to be raised within a period of 2 weeks from the date of approval by RBI.

Benefits of CP

CPs have been introduced in the Indian market so as to provide a diversified source of funding to the borrowers as well as an additional investment option to the investors. CPs can now be issued as a low cost alternative to bank financing to meet a part of working capital requirements.

Benefits to the Issuer

Low interest expenses : The interest cost associated with the issuance of CP is normally expected to be less than the cost of bank financing, as among other things, it is related to the inter-corporate money market rate, which in normal times is within the cost of bank finance.

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Access to short term funding : CP issuance provides a company with increased access to short term funding sources. By bringing the short term borrower into direct contact with investors, the CP market will, to some extent, disintermediate the established role of banks and pass on the benefit to both issuers and investors.

Flexibility and liquidity : CP affords the issuer increased flexibility and liquidity in matching the exact amount and maturity of its debt to its current working capital requirement.

Investor recognition : The issuance of CP provides the issuer with favourable exposure to major institutional investors as well as wider distribution of its debt.

Ease and low cost of establishment : A CP programme can be established with ease at a low cost, once the basic criteria have been satisfied.

Benefits to the Investor

Higher yield : Higher yields are expected to be generally obtainable on CP than on other short term money market instruments like bank deposits. Investment managers are increasingly looking to match investible excess cash with higher yielding securities as compared to those presently available in the market.

Portfolio diversification : Commercial Paper provides an attractive avenue for short term portfolio diversification.

Flexibility : CPs can be issued for periods ranging from 15 days to less than one year, thereby affording an opportunity to precisely match cash flow requirements.

Liquidity : Liquidity in CP is generally provided by a dealer offering to buy it back from an investor prior to maturity, for which a market quote will be available. The investment in CP will therefore be quite liquid.

The Other CP Players

Principal parties : The principal parties to a CP transaction would include the Issuer, the Lead Bank, the Issuing and Paying Agent (Commercial Bank), Investor, the Dealer (Merchant Bank), credit rating agency like CRISIL and RBI. The responsibilities of each are briefly described as follows :

The issuer will :

- appoint a Merchant Bank and an Issuing and Paying Agent to pilot the CP issue through various stages;
- apply to CRISIL for a rating;
- get the stamp duty to be affixed on the CP notes, adjudicated;
- authorise the issue of CP by the Issuing and Paying Agent;

- advise RBI, through the Lead Bank, about CP actually issued, and;
- Provide funds for repayment of the notes at maturity.

The Lead Bank will :

- scrutinise the Company's application as to eligibility criteria and forward it to RBI;
- effect a reduction in the consortium credit limit to the extent of CP quantum on receipt of RBI's approval;
- restore the working capital limits, if the Issuer does not rollover the CP issue;
- arrange for a standby facility for redemption of the CP on the maturity date, if so required, and;
- generally liaise with the consortium member banks of the CP issue.

The application, seeking RBI approval for CP issuance, will be routed through the lead bank, since the working capital limit to the extent of the issue approved, will stand reduced. If the company issuing CP decides not to roll-over the CPs, the lead bank has a crucial role to play in the restoration of the bank facilities.

The issuing & paying agency will :

- verify the CP notes;
- hold the notes in safekeeping for the issuer;
- deliver the notes to the dealer;
- receive the proceeds of the CP and pass them on to the issuer, and;
- act as the issuer's agent for the repayment of the notes presented by holders, on maturity.

In order to properly administer this function, the issuing & paying agent establishes special bank account for the issuer, specifically to handle CP transactions.

Normally the lead bank in the consortium can be appointed as the issuing & paying agent, though any commercial bank can be entrusted with these functions.

The Investor will :

- remit funds to the issuer's account on the value date, and;
- Present the notes to the issuing company, at maturity, for repayment.

Investors in CP could be individuals, corporate as well as unincorporated bodies, NRIs and banks. NRIs can invest in CP on non-repatriable and non-transferable basis.

The Dealer will :

- assist in the rating exercise;

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- pilot the CP application with the lead bank and RBI for necessary approvals;
- price the CP at the time of issue;
- place the CP with investors, and;
- maintain a secondary market in the instrument by quoting a two way price.

Interest and charges

Indian Banks Association advises all member banks to charge a minimum rate of interest on CP. In addition to interest, the stamp duty and issuing and paying agency charges @ 0.25 per cent and 0.50 per cent, respectively, are also payable.

There are some critical issues that need to be addressed by the regulatory authorities to make the instrument more popular in the Indian Money Market.

Restoration of credit limits : When the instrument was initially introduced, the issuers enjoyed the guarantee of their limits being restored automatically on maturity of the CP. This also infused confidence in the investors as the facility coupled with the Standby agreement almost nullified the credit risks.

This measure also helped in making the instrument acceptable in the nascent Indian money market during the initial period of introduction, even though the issuers found to their dismay that the Standby agreement fee of 1 per cent was on the higher side. This facility of automatic reinstatement of credit limits has since been withdrawn and the comfort enjoyed in the past is no longer available.

Active secondary market : The success of any short term financial instrument lies in developing a sound and active secondary market. Since virtually no secondary market exists for CPs today, it has become imperative that steps to develop a healthy secondary market with proper regulatory framework wherever necessary are initiated to make this instrument survive the present crisis.

Delinking Working Capital and CP : The purpose of CP, as an instrument, is to give highly rated borrowers an opportunity to raise resources at a cheaper cost. Currently, the scope of the instrument is restricted to making use of the proceeds for working capital purposes. The scope can be enlarged to cover issue of CP to meet capital expenditures and other specific requirements till long term arrangements are made ie. CP is used as an alternative for bridge loan. Such issues can be restricted to very few corporates with high networth and market capitalisation, with strict adherence to end use objectives. Separate rating for such issues taking into account the potential cash flows including the arrangements made for long term funds, could be introduced. Banks can also be asked to give such comfort as may be necessary to assure the investors of liquidity, albeit for a fee.

Delinking CP from the Working Capital could be new to India but it is common abroad.

Till RBI takes adequate policy initiatives, this instrument which has been a very popular and time-tested one in the West, will never take-off in India.

The Reserve Bank of India has said that the issuance of Commercial paper (CP) by corporates can go upto 100 per cent of their eligible working capital limits. But CPs will first be adjusted against the cash credit component of the over all working capital.

The RBI however, does not allow the pre-payment of the loan component already availed of by the borrower in case he wants to make a CP issue in lieu of it. Moreover, the RBI makes its clear that, "on the issuance of a CP, there shall be no further increase in the overall short term borrowing facility of a company.

By abolishing the standby arrangement for commercial paper, the central bank has corrected what it considered an anomaly: that an unsecured instrument was being rated as a secured one as long as a standby arrangement was in place. The pricing of commercial paper will now be more realistic, and the real risk will be analysed. The rates will reflect the real risk on the paper; deregulation then means that the entire rating system will undergo a review.

The Reserve Bank has said that there cannot be an automatic reinstatement of a corporate's limits with banks on the maturing of a CP.

One way by which banks can exert pressure is by levying high reinstatement charges. Banks normally levy reinstatement charges justifiably so because they claim they are losing out on the yield and cannot be expected to lend to companies once again (after the CP issue) at the same rate as before. These are not standardised. Some banks (smaller ones) do not levy any charges at all, while the banks with more clout charge more. The rates range between 0.5 to one per cent per annum.

There are several complaints about stand by charges too. A stand by charge is levied if the borrower wants his limit restored immediately after the CP matures. Some banks ask for as much as 2 per cent per annum. In fact, these factors also dictate the size of a CP float. If for some reason, the CP cannot be rolled over, the reinstatement fees will be charged till the next credit requirement appraisal. This could be far as long as a year.

Moreover, since CP is a part of cash credit, it takes time before the banks credit level is brought down. To issue a CP the issuer need to gradually bring down the cash credit balance with banks. For instance, X Company has cash credit limit of Rs. 40 crores, so it can float a CP upto Rs. 30 crores.

The CP is closely linked to call money rates as banks generally funds their CP investments through over night call money. As a result, if the weighted average of call rates remains below 12 – 12.5 per cent, the dealers would have gained from the investment.

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However, with call money rates tightening over the past few days, banks have reworked their forecasts for the next few weeks. Not expecting call rates to ease to very low levels, bankers appetite for the instrument seems to be on the wane.

The credit policy also induced several corporates to turn to the CP market.

With the cash credit limits reduced from 40 to 25 per cent, the corporates would have to convert the 15 per cent into a demand loan component. According to sources, corporates treasurers have indicated a preference for issuing CPs for this converted amount instead of borrowing it under the demand loan component, primarily because corporates do not have the flexibility of prepaying their demand loan component and issuing CPs.

In addition to this, CPs also carry a lower rate of interest than the demand loan component which helps reduce the corporate's cost of funds.

4.0 DETERMINATION OF INTEREST RATES

Call money rates were regulated in the past by the RBI or by a voluntary agreement between the participants through the intermediation of the Indian Banks Association (IBA). The interest rates have been deregulated and left to the market forces of demand for; and supply of, short-term money as part of the financial sector reforms.

The call money market witnessed a turbulence in the recent past when the rates shot up to as high as 130 per cent. The reasons for increase in volatility in the call money market, amongst others, include advance corporate tax payments, investors' interest in primary and secondary capital markets including the units issued by mutual funds, large withdrawals on banks' credit lines, imprudent practices of banks, and developments in the foreign exchange market. Banks were reported to have invested in government securities by borrowing on call to earn the spread when call rates were low.

ISSUERS, INSTRUMENTS AND INVESTORS IN MONEY MARKET

Issuer	Instrument	Issuance maturity	Investors
Central government RBI	GOI secs	2 to 10 years	Banks, LIC, GIC, UTI, FIs, FIIS, MFs, MMMFs, PFs, pension funds, corporates, NBFCs, &
Central government	T-bills	3 months to 1 year	Banks, UTI, LIC, GIC, PFs, MFs MMMFs, pension funds, corporates, NBFCs & RBI
State government	State government securities	5 to 10 years	Banks, UTI, LIC, GIC, FIs, PFs, MFs, MMMFs, pension funds, corporates & NBFCs.

Government agencies & PSUs	Government guaranteed bonds	5 to 10 years	Banks, UTI, LIC, GIC, FIs, PFs, MFs, MMMFs, pension funds, corporates & NBFCs.
PSUs	PSU bonds	5 to 10 years	Banks, UTI, LIC, GIC, FIs, MFs, MMMFs, NBFCs & corporates
Private sector corporates	Corporates debentures	1 to 12 years	UTI, other MFs, LIC, GIC, FIs, MMMFs & corporates
Public & private sector corporates	Commercial paper	15 days to less than one year	Banks, MFs, FIs, MMMFs, & corporates
Banks & FIs	Certificates of deposit	3 months (banks) 1-3 years (FIs)	Banks, FIs, MFs, MMMFs, & corporates

5.0 FUTURE POSSIBILITIES

It will be appropriate to discuss some relevant thought on the likely developments in the money market. RBI has already decided to allow entities with bulk lendable resources (at least Rs. 20 crores per transaction) to lend in the call market and bill rediscounting market through DFHI. This opens up the money market to all entities—corporate bodies, trusts, Associations, etc. —and there will be real augmentation of resources in the market. The money market culture will grow and entities will try to put money lying idle to productive/income generating use. The money management will receive greater attention. It will be possible to work out gains/losses on account of delayed realisation of dues or allowing credit to buyers. Better discipline in monetary transactions will come up.

Selected Financial Institutions : (FIS) have been permitted by RBI to operate in money market as lenders. Institutions like UTI, LIC, having sizable funds at their disposal are a very important supplier of funds in call market.

Corporate Entities : Effective from October, 1990 authorised Corporate bodies have also been permitted to operate in call market and bill re-discounting market – through DFHI provided minimum amount per transaction is Rs. 20 crores and they do not have short term borrowing from banking sector.

6.0 RECENT DEVELOPMENT IN MONEY MARKET

(i) **Debt. Securitisation :** The buzzword in the money market is now debt securitisation, which refers to converting retail loans into whole sale loan and their reconverting into retail loans. For example, a bank lends Rs. 10 lakhs each to 300 borrowers as part of its

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loan portfolio. The total debt thus on the books of the bank will be Rs. 30 crores. By way of securitisation, the bank can break the entire portfolio of loans/debt of Rs. 30 crores into a paper of Rs. 300 each for instance, and market it in the secondary market to investors. The philosophy behind the arrangement is that an individual body cannot go on lending sizable amount for about a longer period continuously but if the loan amount is divided in small pieces and made transferable like negotiable instruments in the secondary market, it becomes easy to finance large projects having long gestation period. The experiment has already been initiated in India by the Housing Development Finance Corporation (HDFC) by selling a part of its loan to the Infrastructure Leasing and Financial Services Ltd. (ILFS) and has therefore become a pacesetter for other kinds of debt securitisation as well.

The Industrial Credit and Investment Corporation of India (ICICI) as well as other private financial companies have been trying similar deals for lease rentals. Some finance companies are also following the same route for financing promoters contribution for projects. The HDFC has entered into an agreement with ILFS to securitise its individual housing loan portfolio to the extent of Rs. 100 crores.

Debt Securitisation will thus provide liquidity to the instrument. As market maker, ILFS will quote a bid and offer a price for the paper. Given the scarcity of resource and to provide flexibility to investors, innovative financing techniques such as debt securitisation which will mobilise additional resources through a wider investor base, is a step in the right direction.

A major trend in the international financial markets in recent years has been towards securitisation of long dated assets, held by them as security/mortgage against credit to customers. In India, also a beginning was made to a limited extent, by introducing Inter-bank Participations (IBPs). In October, 1988, two types of IBPs were introduced (i) a risk bearing IBP with 91–180 days maturities, and (ii) non-risk bearing IBP with maturities upto 90 days. The first type of IBPs is nothing but the securitisation of bank's advances under Health Code category-I. Since the scheme was confined to scheduled commercial banks only and IBPs were not transferable, it lacked liquidity or successive tier of operations.

(ii) Money Market Mutual Funds (MMMFs) : One of the recent development in the sphere of money market is the establishment of Money Market Mutual Funds, the guidelines of which have been made public by the Reserve Bank of India. Money Market Mutual Funds (MMMFs) can be set up by the banks and public financial institutions. There can also be Money Market Deposit Accounts (MMDAs). The limit for raising resources under the MMMF scheme should not exceed 2% of the sponsoring bank's fortnightly average aggregate deposits. If the limit is less than Rs. 50 crores for any bank, it may join with some other bank and jointly set up MMMF. In the case of public financial institutions,

the limit should not exceed 2% of the long term domestic borrowings as indicated in the latest available audited balance sheets.

MMMFs are primarily intended for individual investors including NRIs who may invest on a non-repatriable basis. MMMFs would be free to determine the minimum size of the investment by a single investor. There is no guaranteed minimum rate of return. The minimum lock in period would be 46 days.

The resources mobilised by MMMFs should be invested exclusively in various money market instruments under:

Money Market Instruments at a glance and MMMFs investment limits :

- (1) Treasury bills and dated government securities having an unexpired maturity upto 1 year – Minimum 25%.
- (2) Call/notice money – Minimum 30%.
- (3) Commercial Paper – Maximum 15%. The exposure to CP issued by an individual company should not be more than 3%.
- (4) Commercial bills accepted/co-accepted by banks – Maximum 20%.
- (5) Certificate of deposits – No limit.

(iii) Repurchase Options (Repo.) and Ready forward (RF) contracts : Repo transactions are of recent origin which has gained tremendous importance due to their short tenure and flexibility to suit both lender and borrower. Under this transactions the borrower places with lender certain acceptable securities against funds received and agrees to reverse this transaction on a pre-determined future date at agreed interest cost. No fixed period has been prescribed for this transaction. However, generally repo-transactions are for minimum period of 14 days and maximum period of 1 year. The interest on such transactions is market determined and built in the structure of the Repo. The transactions can be undertaken by commercial banks, financial institutions, brokers, DFHI. At present Repo transactions have been prohibited in all securities except treasury bills. However, Nand Karni panel set up for examining transactions in PSU bonds and UTI units have recognised the importance of this instrument as a money market instrument and recommended its re-introduction.

Ready forward (RF) transactions are structured to suit the requirements of both borrower and lender and have therefore, become extremely popular mode of raising/investing short term funds. The borrower has advantage of raising funds against its securities without altering its assets mix while lender finds a safe avenue giving attractive returns. Moreover, the funds management for both borrower and lender is improved as the date of reversal of transaction is known in advance.

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The RBI intervenes in the market as and when required by conducting repos (ready forward purchases) through its two subsidiaries, namely, Securities Trading Corporation of India (STCI) and Discount and Finance House of India (DFHI). The central bank banned these transactions between banks following their misuse to divert funds from the banks to the stockmarket and reintroduced the same in April, 1992. The RBI has permitted repos in dated securities, and reverse repo transactions by non-bank subsidiary general ledger (SGL) account holders in the lean season credit policy announced in April, 1997. Non-bank entities holding SGL accounts can lend their surplus money to banks by entering into a reverse repurchase agreement or reverse repo. These entities entering into a reverse repo with banks purchase (permitted) repo securities from banks with a commitment to sell the same at an agreed future date and price.

Repo or ready-forward deal, is a sale of RBI-approved securities (or repo securities) by a bank to another bank, or STCI or DFHI, with a commitment to repurchase the same at an agreed future date. For example, Bank A, which is short of cash, can sell its repo securities to Bank B or STCI or DFHI at Rs. 96.25 with a commitment to repurchase them at Rs. 96.75 after 14 days. The difference between the sale price and the repurchase price or the spread represents the interest rate on the borrowed money. When there is a spurt in call rates, the RBI intervenes through STCI/DFHI by conducting these repos to inject the required liquidity. STCI and DFHI are market-makers in dated GOI secs and T-bills. They give a two-way quote for the securities which they make the market for. The bid, or the buying rate, is always lower than the ask, or selling rate, for a given security. The spread between bid and ask (or offer) rate accounts for the transaction cost and normal profit from operations. The RBI intervenes to prevent the diversion of investment funds to the call money market.

"At present, Repos among banks are allowed only in case of T-bills, and RBI feels that the volume of transactions in them is quite substantial which is sufficient to meet liquidity requirements of banks."

The term Repurchase Agreement (Repo) and Reverse Repurchase Agreement (Reverse Repo) refer to a type of transaction in which money market participant raises funds by selling securities and simultaneously agreeing to repurchase the same after a specified time generally at a specified price, which typically includes interest at an agreed upon rate. Such a transaction is called a Repo when viewed from the perspective of the seller of securities (the party acquiring funds) and Reverse Repo when described from the point of view of the supplier of funds. Thus, whether a given agreement is termed a Repo or a Reverse Repo depends largely on which party initiated the transaction. In many respects, Repos are hybrid transactions that combine features of both secured loans and outright purchase and sale transactions but do not fit clearly into their classification. The use of margins or haircuts in valuing repo securities, and the use of mark-to-market provisions are examples of Repo features that typically are characteristics of secured lending arrangements but are rarely found in outright purchase and sale transactions. The Repo

buyers rights to trade the securities during the term of the agreement, by contrast, represents a transfer of ownership that typically does not occur in collateralised lending arrangements.

Characteristic of Repo

Repo are usually arranged with short-term maturity – overnight or a few days. However, the minimum period of Repo in India is fixed at 3 days. Elsewhere in the world, longer-term repo are arranged for standard maturities between one day and 1 year.

The lender or buyer in a Repo is entitled to receive compensation for use of the funds provided to the counterparty. This is accomplished by setting the negotiated repurchase price over the initial sale price, the difference between the two representing the amount of interest or Repo rate owed to the lender. The Repo rate is negotiated by the counterparties independently of the coupon rate or rates of the underlying securities and are influenced by overall money market conditions. In India, Repo rates are determined on the basis of expected call money rates during a reserve mark-up period.

The amount of interest earned on funds invested in a Repo determined as follows :

Interest earned = Funds Invested × Repo Rate × Number of Days/365

For example, if Rs. 1 crore is for 3 days @ 5% would yield interest return of Rs. 0.04 lakhs.

$$1,00,00,000 \times 0.05 \times 3/365 = \text{Rs. } 4110$$

The cash outflows and inflows under a typical 14 days Repo is illustrated below. Let us assume that Bank 'A' entered into a Repo of 14 days with Bank 'B' in 13.60% Govt. Stock 2009 at a rate of 5%. Let us also assume that the purchase price agreed upon was Rs. 101 and the last coupon was paid 30 days ago.

<i>First leg</i>		<i>Second Leg</i>	
<i>(In Rupees)</i>		<i>(In Rupees)</i>	
Sale Price	101.00	Purchase Price*	100.67
+		+	
Accrued interest $\left(101 \times 13.60\% \times \frac{30}{365}\right)$	<u>1.13</u>	Accrued interest $\left(101 \times 13.60\% \times \frac{44}{365}\right)$	<u>1.66</u>
for 30 days		for 44 days	
Net Cash Outflow	102.13	Net Cash Inflow	102.33

*Derived price by deducting Accrued interest from net cash inflow, which includes Repo interest as well.

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Repo Interest Income = $102.13 \times 0.05 \times 14/365 = \text{Rs. } 0.20/$. So the cash inflow should be Rs. 102.33 (i.e. Rs. 102.13 + Rs. 0.20).

In India, the repo market in Government securities and PSU bonds became very active in 1980s, and the deals were generally inter bank. While certain regulatory restrictions were put in place in 1987, in the aftermath of securities scam, RBI imposed a ban on inter-bank repos in 1992 in all instruments except TBs. Since then RBI has made several relaxations in regard to Repo Transactions.

The conditions imposed by RBI in regard to repo transactions are :

- (i) The banks should enter into Repo transactions only in respect of TBs of all maturities, notified Government of India dated securities, and private corporate bonds/PSU bonds which are in dematerialised form and the transactions are done in recognised Stock Exchanges;
- (ii) Repo transactions should be entered only with commercial and co-operative banks and Primary Dealers. However, non-bank entities who are holders of SGL Account with RBI can enter into Reverse Repo transactions with banks/Primary Dealers in TBs, notified Government of India stocks, debentures/PSU bonds;
- (iii) The purchase/sale price should be in alignment with the ongoing market rates;
- (iv) No sale of securities should be effected unless such securities are actually held by them in their own investment portfolio;
- (v) Immediately on sale, the corresponding amount should invariably be deducted from the investment account of the banks;
- (vi) The minimum period of the Repo should be 3 days; and
- (vii) The securities under Repo should be marked to market on the balance sheet date.

DFHI/STCI/PDS are very active in Repo market and the volume of such transactions has shown substantial increase when the call money rates move up beyond a particular level. Of late, RBI has been conducting Repo auctions for 3/4 days to mop-up the excess liquidity released to the system through reduction of CRR/Intervention in the forex market.

Repo transactions are structured to suit the requirements of both the borrowers and the lender of funds and have become extremely popular mode of raising/investing short-term funds. Further, a SLR surplus and CRR deficit bank can use the repo deals as a convenient way of adjusting SLR/CRR positions simulatenously. The Repo is a convenient instrument for Asset-Liability management.

"Non-banking institutions like corporates, mutual funds and financial institutions can go to repo (repurchase) market for meeting their short-term funds or securities requirement".

Of late the Reserve Bank has been making efforts to develop the repo market in the country. Last year, it has initiated a series of measures to popularize and widen the participation in the repo market.

The measures include: permission to non-bank participants to undertake repo and reverse repo transactions, reduction in the minimum maturity for repo transactions to one day and offering even State government securities for undertaking repos.

"What we need is quick settlements in the repo market. The setting up of a clearing corporation will develop repo market very strongly. We expect the clearing corporation to come up before year." The repo (repurchase) market is mainly a buyback arrangement.

Under such an arrangement the seller sells specified securities with an agreement to repurchase the same at a mutually decided future date and a price.

Similarly, the buyer purchases the securities with an agreement to resell the same to the seller on an agreed date in future at a prefixed price.

This is done mainly to bridge the short-term gap of either cash flow or securities (to meet SLR — statutory liquidity ratio — requirements).

The primary dealers are also asking for back up funds from the RBI as available to other major players, i.e., banks in the market.

"We don't have anything to fall back upon. We should get some back up facility from the Reserve Bank just in case we don't get funds in the call money market".

Primary dealers are expecting a hike in the paid up capital from the existing Rs. 50 crores.

Self- examination questions

1. What is Money Market? Outline its important features?
2. What are the different types of Financial Instruments of Money Market in India. Briefly explain their important features.
3. What is Commercial Paper. What are the important guidelines to be followed while issuing Commercial Paper?
4. What is Inter-Bank participation Certificate (IBPC). For what purpose it is issued?
5. Write a brief note on Treasury Bills of different kinds which are presently traded in Money market.
6. Make a distinction between Capital market and Money Market.
7. List out various Institutions of Money market? Briefly explain them.
8. What do you mean by Commercial Bills?
9. Whether Certificate of Deposit is an important instrument of money market. Do you agree with the statement. If yes, so why?
10. What is the role of Credit rating agencies while rating the proposal of commercial papers?

FOREIGN DIRECT INVESTMENT (FDI), FOREIGN INSTITUTIONAL INVESTMENT (FIIs) AND INTERNATIONAL FINANCIAL MANAGEMENT

PART – A

FOREIGN DIRECT INVESTMENT (FDI), FOREIGN INSTITUTIONAL INVESTMENT (FIIS)

1.0 COSTS INVOLVED

1.1 (I) HOST COUNTRY

Inflow of foreign investment improves balance of payments position while outflow due to imports, dividend payments, technical service fees, royalty reduces balance of payments position. Use of imported raw materials may be harmful to the interest of the domestic country whereas it may be useful to the interests of the foreign country. Supply of technology to the host country makes it dependent on the home country resulting in the payment of higher price for acquisition. The technology may not be suitable to the local environment causing substantial loss to the host country. MNCs are reluctant to hire and train local persons. Advanced technology being capital intensive does not ensure bigger job prospects. Foreign investors do not care to follow pollution standards; nor do they stick to the optimal use of natural resources nor have any concern about location of industries while opting for a manufacturing process. Such violation affects host nations interest. Domestic industries cannot withstand the financial power exercised by the foreign investors and thereby die a premature death. Because of their oligopolistic position in the market, foreign companies charge higher prices for their products. Higher prices dampen the spirit of the buyers and at the same time lead to an inflationary pressure. Foreign culture is infused by these foreign companies in industrial units as well as to the society at large. Governmental decisions fall prey to such measures as they become a dominant force to reckon with.

11.2 Strategic Financial Management

1.2 (II) HOME COUNTRY

Cost involvement for the home country is a paltry sum. Any foreign investment causes a transfer of capital, skilled personal and managerial talent from the country resulting in the home country's interest being hampered. MNCs have the primary objective of maximising their overall profit while operating in different countries. The standards followed by them in most cases are not beneficial to the host nation. Such an action leads to deterioration in bilateral relations between the host and home country.

FDI is a mixed bag of bright features and dark spots. So it requires careful handling by both sides.

1.3 BENEFITS DERIVED

(I) HOST COUNTRY:

(a) Improves balance of payment position by crediting the inflow of investment to capital account. Also current account improves as FDI aids import substitution/export promotion. Exports get a boost through the expertise of foreign investors possessing export market intelligence and their mechanism. Updated technology of producing world standard goods at low cost are available to the host country. Export credits from the cheapest source in the international market can be availed of quite easily.

(b) Foreign firms foster forward and backward economic linkages. Demand for various inputs give rise to the development of the supplying industries which through employment of labour force raise their income and increase the demand for domestic industrial production. The living standard of the domestic consumers improves as quality products at competitive prices are available. Also a pool of trained personnel is created in this context.

(c) Foreign investors by investing in economic / social infrastructure, financial markets and marketing systems helps the host country to develop a support base essential for quick industrialisation. The presence of foreign investors creates a multiplier effect leading to the emergence of a sound support system.

(c) Foreign investors are a boon to government to revenue with regard to the generation of additional income tax. Also they pay tariff on their imports. Governmental expenditure requirements are greatly reduced through supplementing government's investment activities in a big way there by lessening the burden on national budget.

(d) FDI aids to maintain a proper balance amongst the factors of production by the supply of scarce resources thereby accelerating economic growth. Capital brought in by FDI supplements domestic capital as the savings rate at home is very low to augment heavy investment. Through the inflow of scarce foreign exchange, domestic savings get a boost to support the investment process. Foreign investors are bold enough to take risks

not prevalent among local investors resulting in investment projects being implemented in a large way. FDIs bring in skilled labour force to perform jobs which the local workers are unable to carry out. There is also a fear of imposition of alien culture being imposed on the local labour force. Foreign investors make available key raw materials along with updated technology to the host country. Such a practice helps the host country to obtain access to continued updation of R&D work of the investing country.

1.4 (II) HOME COUNTRY

The home country gets the benefit of the supply of raw materials if FDI helps in its exploitation. BOP improves due to the parent company getting dividend, royalty, technical service fees and also from its increased exports to the subsidiary. Also there is employment generation and the parent company enters into newer financial markets by its investment outside. The government of the home country increases its revenue income of the parent organization, imposition of tariff on imports of the parent company from its foreign subsidiary. FDI helps to develop closer political relationship between the home and the host country which is advantageous to both.

2.0 FOREIGN INSTITUTIONAL INVESTMENT

Positive tidings about the Indian economy combined with a fast-growing market have made India an attractive destination for foreign institutional investors (FIIs). The foreign Institutional Investors' (FIIs) net investment in the Indian stock markets in calendar year 2005 crossed US\$ 10 billion, the highest ever by the foreign funds in a single year after FIIs were allowed to make portfolio investments in the country's stock markets in the early 1990s. As per the Securities Exchange Board of India (SEBI) figures, FIIs made net purchases of US\$ 587.3 million on December 16, 2005, taking the total net investments in the 2005 calendar to US\$ 10.11 billion. India's popularity among investors can be gauged from the fact that the number of FIIs registered with SEBI has increased from none in 1992-93 to 528 in 2000-01 to 803 in 2005-06. In 2005 alone, 145 new FIIs registered themselves, taking the total registered FIIs to 803 (as on October 31, 2005) from 685 in 2004-05.

A number of these investors are Japanese and European funds aiming to cash in on the rising equity markets in India. In addition, there was increased registration by non-traditional countries like Denmark, Italy, Belgium, Canada and Sweden. The Japanese have, in fact, been increasing their foothold in India. Mizuho Corporate Bank's decision to successfully expand base in the country has managed to convince almost 60-65 major Japanese corporates to set up manufacturing or marketing base in India. This list of corporates includes big names in auto sectors such as Honda, Toyota and Yamaha, as well as those in home appliances, pharmaceuticals, and communications.

11.4 Strategic Financial Management

- While Nissan has already set up its base in India, other new entrants include Japanese business conglomerate Mitsui Metal, Sanyo, and pharma major Eisai. Japanese Telecom major Nippon Telegraph (NTT) is also in the process of entering the Indian market.
- Sabre Capital and Singapore's Temasek Holding have teamed up to float a fund that will invest up to US\$ 5 billion in Indian equities as well as fixed income instruments over the next five years.
- Fidelity International, a leading foreign institutional investor, has picked up about 9 per cent in the Multi Commodity Exchange of India Ltd (MCX) for US\$ 49 million.

If FIIs have been flocking to India, it is obvious that the returns are handsome. It is estimated that all the foreign investors in India, at least 77 per cent make profit and 8 per cent break even.

These facts are corroborated by recent research on the trend. A landmark survey by the Japan Bank for International Co-operation (JBIC) shows that in the next three years, India will be the third most favoured investment destination for Japanese investors in a list, which includes US and Russia. A Smith Barney (a Citigroup division) study says the estimated market value of FII investment in the top 200 companies (including ADRs and GDRs) at current market prices is a whopping US\$ 43 billion. This is 18 per cent of the market capitalisation of the BSE 200.

By a recent circular the cumulative debt investment limit for the FIIs/Sub-Accounts was increased from US \$1 billion to US \$1.75 billion. Ministry of Finance, Government of India clarified that the cap of US \$1.75 billion will be applicable to FIIs investment in dated Government Securities and T-bills only, both under 100% debt route and general 70:30 route. Thus, investment in securities other than dated Government Securities and T-Bills, i.e. Corporate Debt, would not be reckoned within the sub ceiling of US \$1.75 billion. Therefore, investments by the FIIs/Sub Accounts through 100% debt route in dated Government securities and T-Bills only will be reckoned for the purpose of monitoring of individual limits allocated to them. In respect of foreign investment the discussion (FAQ), as given by RBI and SEBI, are also important. The details are available on the respective web site.

PART – B

INTERNATIONAL FINANCIAL MANAGEMENT - INCLUDING RAISING OF CAPITAL ABROAD (ADRS, GDRS, ECB)

1.0 INTRODUCTION

The essence of financial management is to raise and utilise the funds effectively. This also holds good for the procurement of funds in the international capital markets, for a multi-national organisation in any currency. There are various avenues for a multi-national organisation to raise funds either through internal or external sources. Internal funds comprise share capital, loans from parent company and retained earnings. Now a days external funds can be raised from a number of sources. The various sources of international finance are discussed in this chapter.

1.1 EXTERNAL COMMERCIAL BORROWINGS

External Commercial Borrowings (ECB) are defined to include

1. commercial bank loans,
2. buyer's credit,
3. supplier's credit,
4. securitised instruments such as floating rate notes, fixed rate bonds etc.,
5. credit from official export credit agencies,
6. commercial borrowings from the private sector window of multilateral financial institutions such as IFC, ADB, AFIC, CDC etc. and
7. Investment by Foreign Institutional Investors (FIIs) in dedicated debt funds

Applicants are free to raise ECB from any internationally recognised source like banks, export credit agencies, suppliers of equipment, foreign collaborations, foreign equity - holders, international capital markets etc. Offers from unrecognised sources will not be entertained.

ECB entitlement for new projects

All infrastructure and Greenfield projects	50% of the total project cost
Telecom Projects	upto 50% of the project cost (including license fees)

11.6 Strategic Financial Management

In the case of power projects, greater flexibility will be allowed, based on merits.

End - use

a) ECBs are to be utilised for foreign exchange costs of capital goods and services (on FOB and CIF basis).

Proceeds should be utilized at the earliest and corporates should comply with RBI's guidelines on parking ECBs outside till actual imports. RBI would be monitoring ECB proceeds parked outside.

However, in the case of infrastructure projects in the power, telecommunications and railway sectors, ECB can be utilised for project - related rupee expenditure. License fee payments would be an approved use of ECB in the telecom sector.

b) ECB proceeds may also be utilised for project - related rupee expenditure, as outlined above. Proceeds must be brought into the country immediately.

However, under no circumstances, ECB proceeds will be utilised for :

- i) investment in the stock market
- ii) speculation in real estate
- c) ECB may be raised to acquire ships/vessels from Indian shipyards

Proceeds from Bonds & FRN

Corporates who have raised ECB through Bond/ FRN issues are permitted to use the proceeds from the issue for project related rupee expenditure till actual import of capital equipments takes place or up to one year, whichever is less. Sanction of additional ECB to the company would be considered only after the company has certified through its statutory auditor that it has fully utilised the amount for import of the capital equipment and services.

Other terms and conditions

Apart from the maturity and end - use requirements, the financial terms and conditions of each ECB proposal are required to be reasonable and market - related. The choice of the sourcing of ECB, currency of the loan, and the interest rate basis (i.e. floating or fixed), will be left to the borrowers.

• Security

The choice of security to be provided to the lenders/ suppliers will also be left to the borrowers. However, where the security is in the form of a guarantee from an Indian financial institution or from an Indian scheduled commercial bank, counter - guarantee or confirmation of the guarantee by a foreign bank/ foreign institution will not be permitted.

• Exemption from withholding tax

All interest payments and fees etc. related to external commercial borrowings would be

eligible for withholding tax exemption under Section 10(15) (iv) (b) to (g) of the Income Tax Act, 1961. Exemptions under section 10(15) (iv) (b), (d) to (g) are granted by the Department of Economic Affairs while exemption under section 10(15) (iv) (c) is granted by the Department of Revenue, Ministry of Finance.

- **Approval under Foreign exchange regulation**

After receiving the approval from the ECB Division, Department of Economic Affairs, Ministry of Finance, the applicant is required to obtain approval from the Reserve Bank of India and to submit an executed copy of the loan agreement to this department for taking the same on record, before obtaining clearance from the RBI for drawing the loan. Monitoring of end use of ECB will continue to be done by RBI.

- **Short - term loan from RBI**

While external commercial borrowing for minimum maturity of three years and above will be sanctioned by the Department of Economic Affairs, Ministry of Finance, approvals for short term foreign currency loans with a maturity of less than three years will be sanctioned by the RBI, according to the RBI guidelines.

- **Validity of approval**

Approvals are valid for an initial period of three months, i.e. the executed copy of the loan agreement is required to be submitted within this period.

1.2 INTERNATIONAL CAPITAL MARKET

It is well known today that modern organisations including multinationals largely depend upon sizable borrowings in rupees as well as in foreign currencies to finance their projects involving huge outlays. The taxation benefits available on borrowings as against the capital often influence this course as interest payment on borrowed funds is an allowable expenditure for tax purposes.

In order to cater to the financial needs of such organisations international capital markets or financial centres have sprung up wherever international trade centres have developed. Lending and borrowing in foreign currencies to finance the international trade and industry has led to the development of international capital market.

In domestic capital markets of various countries, international capital transactions also take place. For instance, USA, Japan, UK, Switzerland, West Germany have active domestic capital markets. Foreign borrowers raise money in these capital markets through issue of 'foreign bonds'. In international market, international bond is known as a "Euro-bond". The issue of Euro-bond is managed by a syndicate of international banks and

11.8 Strategic Financial Management

placed with investors and lenders worldwide. The issue may be denominated in any of the currencies for which liquid market exist.

In international capital market, the availability of foreign currency is assured under the four main systems viz. (1) Euro - currency market; (2) Export Credit Facilities; (3) Bonds issues, and (4) Financial Institutions. Euro-Currency market was originated with dollar dominated bank deposits and provide loans in Europe particularly, in London. Euro-dollar deposits form the main ingredient of Euro-currency market. Euro-dollar deposits are dollar denominated time deposits available at foreign branches of US banks and at some foreign banks. These deposits are acquired by these banks from foreign Governments and various firms and individuals who want to hold dollars outside USA. Banks based in Europe accept dollar denominated deposits and make dollar denominated loans to the customers. This forms the basis of Euro-currency market spread over various parts of the world. In Euro-currency market, funds are made available as loans through syndicated Euro-credit or instruments known as Floating Rate Notes FRNs/FRCDs (certificates of deposits). London has remained as the main centre for Euro-currency credit.

The creditors however insist on bank guarantees. Several multinational banks of Japanese, American, British, German and French origin - operate all over the world, extending financial assistance for trade and projects. Several multinational banks like Citi Bank, Standard Chartered bank, American Express, Bank of America, etc. are aggressive players in India and they issue specific bank guarantees to facilitate the business transactions between various parties, including government agencies, Commercial borrowings as well as Exim Bank finance. This however, constitute major cost.

2.0 INSTRUMENTS OF INTERNATIONAL FINANCE

The various financial instruments dealt with in the international market are briefly described below :

1 Euro Bonds : Euro Bonds are debt instruments denominated in a currency issued outside the country of that currency e.g. A Yen floated in Germany; a yen bond issued in France.

2 Foreign Bonds: These are debts instruments denominated in a currency which is foreign to the borrower and is sold in a country of that currency. A British firm placing \$ denominated bonds in USA is said to be selling foreign bonds.

3 Fully Hedged Bonds : In foreign bonds, the risk of currency fluctuations exist. Fully hedged bonds eliminate that risk by selling in forward markets the entire stream of interest and principal payments.

4 Floating Rate Notes : These are issued upto 7 years maturity. Interest rates are adjusted to reflect the prevailing exchange rates. They provide cheaper money than foreign loans. Currently they are not very popular.

5 Euro Commercial Papers : Euro Commercial Papers (ECPs) are short-term money market instruments. They are for maturities for less than a year. They are usually designated in US dollars.

6 Foreign Currency Options : A Foreign currency option is the right to buy or sell, spot, future or forward, a specified foreign currency. It provides a hedge against financial and economic risks.

7 Foreign Currency Futures : Foreign Currency futures are obligations to buy or sell a specified currency in the present for settlement at a future date. The most common period for a futures contract is a week, a month or two months.

3.0 FINANCIAL SECTOR REFORMS IN INDIA

The Government of India, as a part of liberalisation and de-regulation of industry and to augment the financial resources of Indian companies, has allowed the companies to directly tap foreign resources for their requirements. The Government has allowed foreign institutional investors to invest upto 24% in the secondary market. As a result of measures initiated by the Government, various foreign companies established their business and various companies are coming to do business in India. The Government has given the signals that foreign investment is now welcome and that non-priority industries are not prohibited. The reasons for the foreign investors' interest in India are the low returns prevalent in the USA and Europe. India's large middle class is even more than the population of some of the countries and provides good marketing potential. Beside this the availability of skilled and cheap labour, the wide-spread use of English language, and the Indian legal system are also some of the contributory factors for the globalisation of Indian business.

It is now possible in India that a foreign company may invest directly in a joint venture or in an Indian subsidiary. It may also route its investment through a third country by forming a subsidiary in that country, which in turn, invests in India. Most of foreign companies prefer to have joint venture with an Indian partner, who understands the local environment and is able to exploit the business opportunities. India is being used as a low cost manufacturing base for sourcing exports to third countries also, without paying much taxes. A company wanting to start operations immediately can directly set up a venture undertaking.

INDIAN DEPOSITORY RECIEPTS (IDRS):

Like ADRs and GDRs developments in financial arena have created enormous investment opportunities for Indian investors abroad and vice-versa. Indian companies are raising finance from abroad and are available on foreign exchanges to raise finance by way of American Depository Receipts (ADRs) and Global Depository Receipts (GDRs). Similarly, foreign companies are now available for investments in India in the form of Indian Depository

11.10 Strategic Financial Management

Receipts (IDRs), whereby foreign companies are available at Indian Stock Exchanges for investment by Indian investors.

The companies would however be required to fulfill a number of guidelines for listing in India through an IDRs. This opens up a new possibility for Indian investors where they can also diversify their portfolios. This kind of phenomena is common across the various markets throughout the world.

This new development would also benefit the Indian investors. They will become familiar with this kind of investment opportunities and should make the best use of the choices available to them. It will provide diversification as well as a chance to sample new companies that would otherwise not be available for investment.

The liberalised measures have boosted the confidence of foreign investors and also provided an opportunity to Indian companies to explore the possibility of tapping the European market for their financial requirements, where the resources are raised through the mechanism of Euro-issues i.e. Global Depository Receipts (GDRs) and Euro-bonds.

4.0 INTERNATIONAL FINANCIAL INSTRUMENTS AND INDIAN COMPANIES

Indian companies have been able to tap global markets to raise foreign currency funds by issuing various types of financial instruments which are discussed as follows :

5.0 FOREIGN CURRENCY CONVERTIBLE BONDS (FCCBS)

A type of convertible bond issued in a currency different than the issuer's domestic currency. In other words, the money being raised by the issuing company is in the form of a foreign currency. A convertible bond is a mix between a debt and equity instrument. It acts like a bond by making regular coupon and principal payments, but these bonds also give the bondholder the option to convert the bond into stock.

These types of bonds are attractive to both investors and issuers. The investors receive the safety of guaranteed payments on the bond and are also able to take advantage of any large price appreciation in the company's stock. (Bondholders take advantage of this appreciation by means of warrants attached to the bonds, which are activated when the price of the stock reaches a certain point.) Due to the equity side of the bond, which adds value, the coupon payments on the bond are lower for the company, thereby reducing its debt-financing costs.

FCCBs is a bond issued in accordance with the guidelines, dated 12th November, 1993 as amended from time to time and subscribed for by non-residents in foreign Currency and Convertible into ordinary / equity shares of the issuer company in any manner whether in whole or in part or on the basis of any equity related warrants attached to debt instruments.

Advantages of FCCBs

- (i) The convertible bond gives the investor the flexibility to convert the bond into equity at a price or redeem the bond at the end of a specified period, normally three years if the price of the share has not met his expectations.
- (ii) Companies prefer bonds as it leads to delayed dilution of equity and allows company to avoid any current dilution in earnings per share that a further issuance of equity would cause.
- (iii) FCCBs are easily marketable as investors enjoys option of conversion into equity if resulting to capital appreciation. Further investor is assured of a minimum fixed interest earnings.

Disadvantages of FCCBs

- (i) Exchange risk is more in FCCBs as interest on bonds would be payable in foreign currency. Thus companies with low debt equity ratios, large forex earnings potential only opt for FCCBs.
- (ii) FCCBs mean creation of more debt and a forex outgo in terms of interest which is in foreign exchange.
- (iii) In the case of convertible bonds, the interest rate is low, say around 3–4% but there is exchange risk on the interest payment as well as re-payment if the bonds are not converted into equity shares. The only major advantage would be that where the company has a high rate of growth in earnings and the conversion takes place subsequently, the price at which shares can be issued can be higher than the current market price.

6.0 GLOBAL DEPOSITORY RECEIPTS (GDRs)

A depository receipt is basically a negotiable certificate, denominated in US dollars, that represents a non US company's publicly - traded local currency (Indian rupee) equity shares. In theory, though a depository receipt can also represent a debt instrument, in practice it rarely does. DRs (depository receipts) are created when the local currency shares of an Indian company are delivered to the depository's local custodian bank, against which the Depository bank (such as the Bank of New York) issues depository receipts in US dollar. These depository receipts may trade freely in the overseas markets like any other dollar-denominated security, either on a foreign stock exchange, or in the over-the-counter market, or among a restricted group such as Qualified Institutional Buyers (QIBs). Indian issues have taken the form of GDRs to reflect the fact that they are marketed globally, rather than in a specific country or market. Rule 144A of the Securities and Exchange Commission of U.S.A permits companies from outside USA to offer their GDRs to certain institutional buyers. These are known as Qualified Institutional Buyers

11.12 Strategic Financial Management

(QIBs). There are institutions in USA which, in the aggregate, own and invest on a discretionary basis at least US \$ 100 million in eligible securities.

Through the issue of depository receipts, companies in India have been able to tap global equity market to raise foreign currency funds by way of equity. Quite apart from the specific needs that Indian companies may have for equity capital in preference to debt and the perceived advantages of raising equity over debt in general (no repayment of "principal" and generally lower servicing costs, etc.) the fact of the matter is quite simple, that no other form of term foreign exchange funding has been available. In addition, it has been perceived that a GDR issue has been able to fetch higher prices from international investors (even when Indian issues were being sold at a discount to the prevailing domestic share prices) than those that a domestic public issue would have been able to extract from Indian investors.

- **Impact of GDRs on Indian Capital Market**

Since the inception of GDRs a remarkable change in Indian capital market has been observed as follows:

- (i) Indian stock market to some extent is shifting from Bombay to Luxemburg.
- (ii) There is arbitrage possibility in GDR issues.
- (iii) Indian stock market is no longer independent from the rest of the world. This puts additional strain on the investors as they now need to keep updated with world wide economic events.
- (iv) Indian retail investors are completely sidelined. GDRs/Foreign Institutional Investors' placements + free pricing implies that retail investors can no longer expect to make easy money on heavily discounted rights/public issues.

As a result of introduction of GDRs a considerable foreign investment has flown into India.

- **Markets of GDR'S**

- (i) GDR's are sold primarily to institutional investors.
- (ii) Demand is likely to be dominated by emerging market funds.
- (iii) Switching by foreign institutional investors from ordinary shares into GDRs is likely.
- (iv) Major demand is also in UK, USA (Qualified Institutional Buyers), South East Asia (Hong kong, Singapore), and to some extent continental Europe (principally France and Switzerland).

- **Profile of GDR investors**

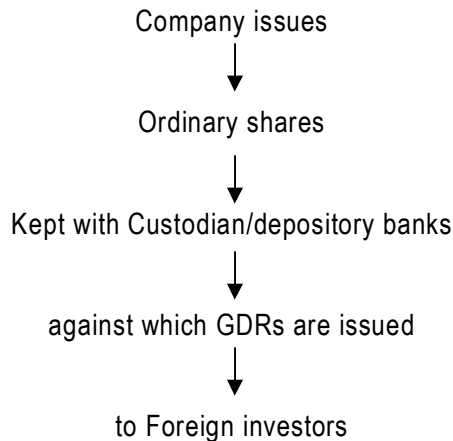
The following parameters have been observed in regard to GDR investors.

- (i) Dedicated convertible investors

- (ii) Equity investors who wish to add holdings on reduced risk or who require income enhancement.
- (iii) Fixed income investors who wish to enhance returns.
- (iv) Retail investors: Retail investment money normally managed by continental European banks which on an aggregate basis provide a significant base for Euro-convertible issues.

Global Depository Receipt with Warrant (GDR with warrant) : These receipts were more attractive than plain GDRs in view of additional value of attached warrants. The Government of India has however, prohibited Indian companies to issue GDRs with warrants as per guidelines issued on 28.10.94 (Refer to the guidelines contained in this Chapter).

The mechanics of a GDR issue may be described with the help of following diagram.



Characteristics

- (i) Holders of GDRs participate in the economic benefits of being ordinary shareholders, though they do not have voting rights.
- (ii) GDRs are settled through CEDEL & Euro-clear international book entry systems.
- (iii) GDRs are listed on the Luxemburg stock exchange.
- (iv) Trading takes place between professional market makers on an OTC (over the counter) basis.
- (v) The instruments are freely traded.
- (vi) They are marketed globally without being confined to borders of any market or country as it can be traded in more than one currency.

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- (vii) Investors earn fixed income by way of dividends which are paid in issuer currency converted into dollars by depository and paid to investors and hence exchange risk is with investor.
- (viii) As far as the case of liquidation of GDRs is concerned, an investor may get the GDR cancelled any time after a cooling off period of 45 days. A non-resident holder of GDRs may ask the overseas bank (depository) to redeem (cancel) the GDRs. In that case overseas depository bank shall request the domestic custodians bank to cancel the GDR and to get the corresponding underlying shares released in favour of non-resident investor. The price of the ordinary shares of the issuing company prevailing in the Bombay Stock Exchange or the National Stock Exchange on the date of advice of redemption shall be taken as the cost of acquisition of the underlying ordinary share.

7.0 EURO-CONVERTIBLE BONDS

A convertible bond is a debt instrument which gives the holders of the bond an option to convert the bond into a predetermined number of equity shares of the company. Usually, the price of the equity shares at the time of conversion will have a premium element. The bonds carry a fixed rate of interest. If the issuer company desires, the issue of such bonds may carry two options viz. - Call Options : (Issuer's option) - where the terms of issue of the bonds contain a provision for call option, the issuer company has the option of calling (buying) the bonds for redemption before the date of maturity of the bonds. Where the issuer's share price has appreciated substantially, i.e. far in excess of the redemption value of the bonds, the issuer company can exercise the option. This call option forces the investors to convert the bonds into equity. Usually, such a case arises when the share prices reach a stage near 130% to 150% of the conversion price, (ii) Put options - A provision of put option gives the holder of the bonds a right to put (sell) his bonds back to the issuer company at a pre-determined price and date. In case of Euro-convertible bonds, the payment of interest on and the redemption of the bonds will be made by the issuer company in US dollars.

8.0 AMERICAN DEPOSITORY RECEIPTS (ADRS)

Depository receipts issued by a company in the United States of America (USA) is known as American Depository Receipts (ADRs). Such receipts have to be issued in accordance with the provisions stipulated by the Securities and Exchange Commission of USA (SEC) which are very stringent.

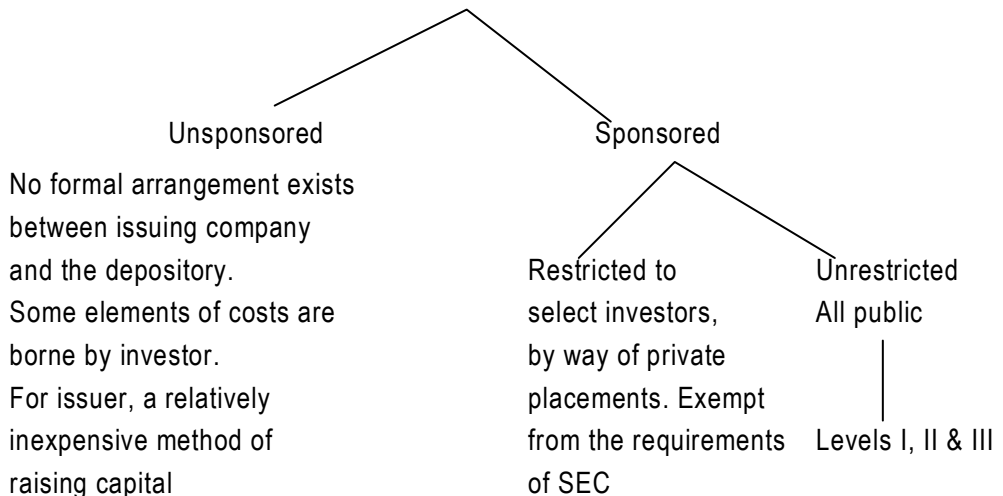
An ADR is generally created by the deposit of the securities of a non-United States company with a custodian bank in the country of incorporation of the issuing company. The custodian bank informs the depository in the United States that the ADRs can be issued. ADRs are United States dollar denominated and are traded in the same way as are the securities of United States companies. The ADR holder is entitled to the same

rights and advantages as owners of the underlying securities in the home country. Several variations on ADRs have developed over time to meet more specialised demands in different markets. One such variation is the GDR which are identical in structure to an ADR, the only difference being that they can be traded in more than one currency and within as well as outside the United States.

There are three types of ADRs:

ADRs are issued by entities incorporated in the USA in compliance with the conditions laid down by the Securities and Exchange Commission (SEC) of USA. ADRs are also denominated in US Dollars, and are traded in the same way as other listed securities are traded in the US stock markets. The holders of ADRs are entitled to rights and advantages comparable to the owners of underlying securities in the home country. Over time, a few variants of ADRs have emerged, features of which are summarized below:

ADRs



Un-sponsored ADRs are issued without any formal agreement between the issuing company and the depository, although the issuing company must consent to the creation of the ADR facility. With unsponsored ADRs, certain costs, including those associated with disbursement of dividends, are borne by the investor. For the issuing company, they provide a relatively inexpensive method of accessing the United States capital markets (especially because they are also exempt from most of reporting requirements of the Securities and Exchange Commission).

Sponsored ADRs are created by a single depository which is appointed by the issuing company under rules provided in a deposit agreement. There are two broad types of sponsored ADRs - those that are restricted with respect to the type of buyer which is allowed, and are therefore privately placed; and those that are unrestricted with respect to buyer and are publicly placed and traded. Restricted ADRs (RADRs) are allowed to be placed only among selected accredited investors and face restrictions on their resale. As

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these are not issued to the general public, they are exempt from reporting requirements of the Securities and Exchange Commission and are not even registered with it. Restricted ADR issues are sometimes issued by companies that seek to gain some visibility and perhaps experience in the United States capital markets before making an unrestricted issue.

Unrestricted ADRs (URADRs) are issued to and traded by the general investing public in United States capital markets. There are three classes of URADR, each increasingly demanding in terms of reporting requirements to the Securities and Exchange Commission, but also increasingly attractive in terms of degree of visibility provided. Level I URADRs are exempt from the requirements that the issuing company conform their financial statistics to United States Generally Accepted Accounting Principles (GAAP), as well as from full reporting requirements of the Securities and Exchange Commission. They are also therefore relatively low cost. Level II URADRs are generally issued by companies that wish to be listed on one of the United States national exchanges. The issuing company must meet the Securities and Exchange Commission's full disclosure requirements, their financial statements must conform to United States GAAP and the company must meet the listing requirements of the relevant exchange. They are therefore more costly for the issuing company, but the public listing allows much higher visibility and makes the facility more attractive to potential investors. Level III URADRs are issued by companies which seek to raise capital in the United States securities markets by making a public offering of their securities. They must also make full Securities and Exchange Commission disclosure, conform to United States GAAP and meet relevant exchange requirements, and provide the highest degree of visibility of any ADR.

Companies that apply for either listing or public issue of securities on the national exchanges of the United States must meet exchange requirements. These include specific minimum requirements with respect to the size of total assets, earnings and/or shareholders equity. These requirements, along with the reporting requirements, serve to make it difficult for small capitalization companies of emerging markets to issue either Level II or Level III URADRs. A large number of ADRs are therefore offered through private placement, especially under Rule 144A, where activity is reported to be strong. Rule 144A, passed by the Securities and Exchange Commission in 1990, eased restrictions on the resale by qualified institutional buyers of private ADR issues amongst themselves once these issues were made under this rule. Typical ADR issues appear to be relatively large. Emerging market ADR issuers tend to be large domestic companies with considerable financial resources and high international visibility. Relatively small ADR issues appear to measure in the range of between \$15 million and \$80 million, while many mid-sized issues fall within the range of \$100 million to \$300 million. Several exceptionally large issues have exceeded \$1 billion in size.

From the investor's point of view, ADRs lower the cost of trading non-United States companies' securities. Trades are settled in the United States within five working days (or

less, given the increasingly heavy volume of trading in ADRs), whereas trades overseas can take a much longer time and raise significantly settlement risk. The depository provides both settlement and clearance services. As the facilities are traded in the United States, there is a much lower information search cost, and the problems of unfamiliarity with foreign markets and foreign laws, regulations and trading practices are overcome. The difficulties associated with locating a broker and/or custodian in the foreign market and the fees charged for these services are also avoided, and so are the obstacles that foreign languages may present. A major advantage of ADRs to the investor is that dividends are paid promptly and in United States dollars. Furthermore, the facilities are registered in the United States so that some assurance is provided to the investor with respect to the protection of ownership rights. These instruments also obviate the need to transport physically securities between markets. Communication services are also provided by the depository including provision of periodic reports on the issuing company (in English) in a format familiar to United States investors. Important information pertinent to the issuing company is transmitted to the investor by the depository. Together, these advantages provide an incentive for investors in the United States capital markets to invest in the equity of emerging markets via ADRs.

For the issuing company, the main costs of ADRs are the cost of meeting the partial or full reporting requirements of the Securities and Exchange Commission and the exchange fees (for relevant classes of ADRs). However, ADRs can be useful means for issuing companies of gaining access to United States capital markets. Thus, institutional investors that are precluded by their charter from holding foreign securities are able to invest in such securities via ADRs. They can also allow foreign investors to avoid constraints that may be placed on such investments in cases where emerging markets still maintain limits on direct investment by foreigners. In general, ADRs increase access to United States capital markets by lowering the costs of investing in the securities of non-United States companies and by providing the benefits of a convenient, familiar and well regulated trading environment. Issues of ADRs can increase the liquidity of an emerging market issuer's shares, and can potentially lower the future cost of raising equity capital by raising the company's visibility and international familiarity with the company's name, and by increasing the size of the potential investors base.

Emerging-market ADRs are in many instances issued by newly privatised companies. A small number of economies in transition (the Russian Federation in particular) have started to use depository receipts as a way of attracting foreign investment, despite lingering difficulties associated with aspects of their market infrastructure, such as transparency of financial statements, long settlement periods and potentially unreliable registration practices. The limited development, or lack of, domestic debt and equity markets in these countries makes access to foreign capital markets critical. In other cases, issues have been created by large and well known companies from emerging markets that are active in the ADR market (such as Mexico, Brazil and India), or countries

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with relatively good international credit ratings and a relatively long history of accessing foreign investment (such as the Republic of Korea and China). There have been noticeably few issues from companies in low-income countries (apart from India, and to lesser extent, China), and only a handful in least developed countries. The few issues made by the latter group of countries have been mainly by companies involved in the minerals, oil, banking and utilities industries that can be expected to be able to attract foreign financing. The growth in the number of issues from transition economies between 1992 and 1996, however, is quite noticeable (especially from Russia and Hungary).

One disadvantage of depository-receipt issues for the foreign markets in which the issuing company is incorporated is the disincentive to the development of a local capital market. Companies in emerging markets may issue ADRs because the underlying share issues may represent a relatively large volume of weekly or monthly trading activity and the domestic stock market may be considered too small to absorb the issues. While individual companies may be able to attract additional financing, at the macro economic level, an increasing trend towards emerging market issue of ADRs can retard the development of domestic capital markets by denying domestic markets additional instruments in which to invest.

In a bid to bypass the stringent disclosure norms mandated by the Securities Exchange Commission (SEC) of the US for equity issues, the Indian companies have, however, chosen the indirect route to tap the vast American financial market through private debt placement of GDRs listed in London and Luxemburg stock exchanges.

The Indian companies have preferred the GDRs to ADRs (American depository receipts) because the US market exposes them to a higher level of responsibility than a European listing in the areas of disclosure costs, liability and timing.

The companies have chosen the private placement route which allows them to mobilise vast amounts of debt vide Rule 144A of Securities Exchange Commission of USA. Some of the major power companies have drawn up plans to mobilise debts through this private placement route.

Even the merchant bankers of international repute have not recommended a SEC-registered ADR issue as an alternative option for an Indian issuer due to increased responsibilities required in conjunction with a US listing.

The Securities Exchange Commission's regulations set up to protect the retail investor base, are somewhat more stringent and onerous, even for companies already listed and held by retail investors in their home country. The most onerous aspect of a US listing for the companies is the necessity to provide full and half year account in accordance with, or at least reconciled to US GAAP.

Another prohibitive aspect of an ADR issue is the cost involved. As per the estimates, the cost of preparing and filing US GAAP account only ranges from \$5,00,000 to \$10,00,000 with the ongoing cost of \$ 1,50,000 to \$ 2,00,000 per annum. Because of the additional

work involved, legal fees are considerably higher for a US listing, which ranges between \$2,50,000 to \$ 3,50,000 for the underwriters, to be reimbursed by the issuer.

In addition, the initial Securities Exchange Commission registration fees which are based on a percentage of the issue size as well as 'blue sky' registration costs (permitting the securities to be offered in all States of the US) will have to be met.

It has further been observed that while implied legal responsibility lies on a company's directors for the information contained in the offering document as required by any stock exchange, the US is widely recognised as the 'most litigious market in the world'. Accordingly, the broader the target investor base in the US (such as retail investors), the higher the potential legal liability.

The increasing legal problem is evident from the larger number of actions being taken by investors against the directors of companies whose share offerings have not performed according to expectations. That is why Indian Companies have so far preferred the route of GDRs rather than ADRs.

9.0 OTHER SOURCES

- **Euro Bonds** : Plain Euro-bonds are nothing but debt instruments. These are not very attractive for an investor who desires to have valuable additions to his investments.
- **Euro-Convertible Zero Bonds** : These bonds are structured as a convertible bond. No interest is payable on the bonds. But conversion of bonds takes place on maturity at a pre-determined price. Usually there is a 5 years maturity period and they are treated as a deferred equity issue.
- **Euro-bonds with Equity Warrants** : These bonds carry a coupon rate determined by the market rates. The warrants are detachable. Pure bonds are traded at a discount. Fixed income funds' managements may like to invest for the purposes of regular income.

A wide range of funding instruments have evolved over a period of time to raise cheaper funds from the international markets for the borrower. The following are some of the instruments used for borrowing funds :

- **Syndicated bank loans** : One of the earlier ways of raising funds in the form of large loans from banks with good credit rating, can be arranged in reasonably short time and with few formalities. The maturity of the loan can be for a duration of 5 to 10 years. The interest rate is generally set with reference to an index, say, LIBOR plus a spread which depends upon the credit rating of the borrower. Some covenants are laid down by the lending institution like maintenance of key financial ratios.
- **Euro-bonds** : These are basically debt instruments denominated in a currency issued outside the country of that currency for examples Yen bond floated in France. Primary attraction of these bonds is the refuge from tax and regulations and provide scope for arbitraging yields. These are usually bearer bonds and can take the form of
 - (i) Traditional fixed rate bonds.

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- (ii) Floating rate Notes.(FRNs)
- (iii) Convertible Bonds.
- **Foreign Bonds** : Foreign bonds are denominated in a currency which is foreign to the borrower and sold at the country of that currency. Such bonds are always subject to the restrictions and are placed by that country on the foreigners funds.
- **Euro Commercial Papers** : These are short term money market securities usually issued at a discount, for maturities less than one year.
- **Credit Instruments** : The foregoing discussion relating to foreign exchange risk management and international capital market shows that foreign exchange operations of banks consist primarily of purchase and sale of credit instruments. There are many types of credit instruments used in effecting foreign remittances. They differ in the speed, with which money can be received by the creditor at the other end after it has been paid in by the debtor at his end. The price or the rate of each instrument, therefore, varies with extent of the loss of interest and risk of loss involved. There are, therefore, different rates of exchange applicable to different types of credit instruments. The following are some of the international credit instruments in practice for the remittance of funds from one place to another.
 - (i) Telegraphic or cable transfer
 - (ii) Mail transfer
 - (iii) Banker's draft or banker's cheques
 - (iv) Personal cheques
 - (v) Bills of exchange
 - (vi) Letter of Credit
 - (vii) Other means of foreign payments
 - (a) Currency notes and coins
 - (b) bullion
 - (c) International money order

10.0 EURO-ISSUES

The term Euro-issue, in the Indian context, denotes that the issue is listed on a European Stock Exchange. However, subscription can come from any part of the world except India. Finance can be raised by Global Depository Receipts (GDRs), Foreign Currency Convertible Bonds (FCCB) and pure debt bonds. However, GDRs, and FCCBs are more popular instruments. These instruments have been described earlier :

10.1 ELIGIBILITY OF COMPANIES FOR EURO-ISSUE

The Government of India has formulated a scheme of allowing Indian companies to issue equity/convertible bonds in the international markets after Government approval.

However, companies with the following profile are the ones that may embark on a Euro-issue.

- (i) Good financial track record at least for a period of three years.
- (ii) Market price stability
- (iii) Market capitalisation
- (iv) Good industry prospects
- (v) Good company growth including EPS
- (vi) Better quality management
- (vii) Sound investment policies

10.2 ADVANTAGES OF EURO-ISSUES

It is estimated that investment flow via GDR has gone up more than 12 times during a period of three years. It is because Euro-issues offer tremendous advantages to Indian issuers. The terms of Euro-issues are far more attractive than those available in the domestic primary market. The international capital markets have tremendous absorption power.

Moreover, management control may not be immediately affected due to restrictive voting rights provision in depository agreement or through issues of convertible bonds. Euro-issues also enhance potential for future offshore fund raising.

• **For Company :** The advantages of a Euro-issue for a company are many.

- (i) First of all the attractive pricing of Euro-issues has drawn the attention of Indian companies and they have resorted to Euro-issues considerably during the recent years. Euro-issues are priced around the market price of share. In fact, in the case of Euro-convertibles, the shares eventually get issued at a premium to the ruling market price. This results in dramatic reduction in the cost of the capital to the company.

If we compare the cost of Euro issue which is generally 4.5% with the 17 to 20 per cent overdraft rate, that has to be paid to the bankers, the former seem to be quite attractive and that is why business houses are increasingly resorting to the Euro-issues. This type of pricing is just not possible in the domestic primary market because the local investors have been so used to issues which have a small premium on the par value that they do not easily accept an issue at market prices.

- (ii) Secondly, the foreign exchange fluctuations are to the account of investor and not to the company. Since the investors in Euro-issues become shareholders, a depreciation in the value of the Indian rupee only affects investor profits and does not lead to any extra outflow for the company. Whereas, if a company took a foreign currency loan, the exchange fluctuations is to the account of the company. That is why, Indian business has learnt the hard way during the last decade that a seemingly low interest rate forex loan can be a dangerous proposition when the local currency (Indian rupee) tumbles.

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- (iii) Another advantage of Euro-issues, which was earlier available and has however now been frozen by the revised guidelines, arose out of the fact that earlier there was very little monitoring over the end-use of funds collected through such issues. Companies could raise money at cheap cost and make a profit either by investing in the stock market or lending in the inter-corporate market. If for example, a company raised Rs.300 crores at 4 per cent cost and lent it at 20 per cent, it makes a profit of Rs. 48 crores. In some of the cases, this may be more than the profit it makes from its regular business. Further more, its balance sheet also looks healthier with burgeoning reserves and bonus possibilities.
- (iv) This enhances the image of the company's products, services or financial instruments in a market place outside their home country. This also provides a mechanism for raising capital or as a vehicle for an acquisition.
- **Benefits to the Investors :** Euro issues also provides a number of advantages to foreign investors. Increasingly, investors are aiming to diversify their portfolios internationally. Obstacles, however, such as undependable settlements, costly conversions, unreliable custody services, poor information flow, unfamiliar market practices, confusing tax conventions etc. may discourage institutions and private investors from venturing outside the local market. As a result, more and more investors are using GDRs route. The investors are, however, benefited since.
 - (i) GDRs are usually quoted in dollars, and interest and dividend payments are also in dollars.
 - (ii) GDRs overcome obstacles that mutual funds, pension funds and other institutions may have in purchasing and holding securities outside their domestic markets.
 - (iii) Global custodians/safe-keeping charges are eliminated, saving GDR investors 30 to 60 basis points annually.
 - (iv) GDRs are as liquid as the underlying securities because the two are interchangeable.
 - (v) GDRs are negotiable.
 - (vi) GDRs overcome foreign investment restrictions.

They, however, suffer from certain disadvantages also which may be described as follows.

10.3 DISADVANTAGES OF EURO-ISSUE

- (i) As straight equity, a GDR issue would be immediately earnings dilutive.
- (ii) Pricing of GDRs are expected to be at a discount to the local market price.
- (iii) It is sometimes necessary to use warrants with GDRs to disguise discount, which can increase dilution.
- (iv) In India, GDR issues have an uneven track record for international investors.

10.4 STRUCTURING OF EURO-ISSUE

The structuring of an Euro-issue is a tough task. The company has to decide whether it has to go for private placement with foreign institutional investors (FII's) or go for GDR or Euro-convertible bonds.

The dilution of promoters holding as a result of private placement or GDR issues or by way of conversion in Euro- Convertible Bonds(ECB) issue is a matter of paramount concern for the management.

Many companies avoid Euro Convertible issues with a convertible option to be exercised after lock-in-period at a price fixed at the time of closure of the issues. Some companies prefer ECB issues even at a higher coupon rate but without put option clause.

The companies with low equity base and high reserves built up over a long period would like to structure Euro-issues without much dilution of their equity holding strength.

Many permutations and combinations are worked out. Some companies toy with the idea of structuring ECB issues with conversion price ruling at the time of conversion with a discount of 20 per cent to 30 per cent.

Some companies may like to structure Euro-bond issue with warrants enabling investors to convert such warrants into limited equity shares without significantly diluting the existing holdings of the controlling interest. How overseas investors will react to such proposals is, however, yet to be seen.

10.5 PRICING OF THE ISSUES

Whether it is an issue of equity (GDR) or convertible Euro-bonds, the company has to carefully consider the pricing of the equity shares. A good company's shares command premium in the stock market. The price of equity shares offered through GDR or Euro bonds is usually determined with reference to the market prices which prevailed during the week and the day prior to the date of issue. If there is a demand for such securities abroad, the price may be at a premium over the market price. Finalisation of price of the Equity shares is done in consultation with the lead manager who knows the pulse of the European investment market.

10.6 METHODOLOGY FOR EURO-ISSUE

In a foreign currency issue of securities, the number of documents to be prepared by a issuing company is limited as compared to a domestic issue. Generally the issuing company prepare its accounts for the last 3-5 years (which are already audited) in a revised format to confirm to the Generally Accepted Accounting Practices (GAAP) prevalent abroad, say in the United Kingdom (U.K.). This is usually, called 'Reformatted Non-Consolidated Financial Statements'. This statements is considered to be very vital which indicates the financial soundness of issuing company.

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The success of an Euro-issue also depends upon proper planning and execution of strategic action. It is, therefore, essential to study in depth various areas involved in Euro-issue, such as the investor's market, awareness of the company amongst such investors and correct pricing of the issue. The merchant banker occupies a pivotal place in organising a Euro-issue. As a lead manager, he renders very valuable services to the company in a host of areas like:

- (i) Formulation of marketing strategy
- (ii) Designing issue structure
- (iii) Arranging syndication
- (iv) Finalising underwriting arrangements
- (v) Looking after miscellaneous activities
- (vi) Helps in selecting a team of intermediaries such as overseas underwriters, depository and custodians, bankers etc. Each of these intermediaries has its own distinct role to play.
- (vii) Organising due diligence meetings in which the lead manager, senior executives of the company, the auditors and legal advisors review the draft offer document, agreements, consent and comfort letters.
- (viii) Organising team arranges interviews and road shows. After having finalised the offer document, the lead manager helps in arranging interviews of Senior Executives of issuing company with the fund managers and potential investors to provide opportunity of interaction between them. Such meetings help in convincing and sustaining a conducive environment for the success of issue. Wide-spread distribution of pamphlets, brochure and impressive reports about the issuing company's activities and its global issue facilitates negotiations with the potential investors. Such meeting with the investors in common parlance, are known as Road Shows.

10.7 GDR'S VS. EURO-BONDS

Issue of GDR creates equity shares of the issuing company which are kept with a designated bank. GDRs are freely transferable outside India without any reference to the issuing company. The dividends in respect of the share represented by the GDRs are paid in Indian rupees only.

If a GDR holder wishes to exchange his GDR into shares of the company he can surrender his GDR with such request to the designated international depository. On receipt of the documents the depository will instruct the designated bank having the custody of the shares to release the relative shares. Depending on the nature of the request, the bank will arrange to sell the shares through the stock exchange and remit the sale proceeds to him or arrange

to get his name entered as a member of the company. Thereafter, the said shares are subject to the usual condition applicable to the company's shares.

11.0 CROSS-BORDER LEASING

In case of cross-border or international lease, the lessor and the lessee are situated in two different countries. Because the lease transaction takes place between parties of two or more countries, it is called cross-border lease. It involves relationships and tax implications more complex than the domestic lease. When the lease transactions take place between three parties manufacturer/vendor, lessor and lessee in three different countries, this type of cross border leasing is called foreign to foreign lease. The lease may be routed through a third nation known as "convenient country" for tax or equipment registration purposes. Fourth nation may be involved for debt in a particular currency required to give effect to the equipment purchase and lease transaction. Thus more nations involved in cross border lease would mean more complications in terms of different legal, fiscal, credit and currency requirements and risk involved.

Cross border lease benefits are more or less the same as are available in domestic lease viz. 100% funding off-balance sheets. Financing, matching of expenditure with earnings from the assets, the usual tax benefits on leasing, etc. In addition to these benefits, the following are the more crucial aspects which are required to be looked into: (i) appropriate currency requirements can be met easily to match the specific cash flow needs of the lessee;(ii) funding for long period and at fixed rate which may not be available in the lessee home market may be obtained internationally;(iii) maximum tax benefits in one or more regions could be gained by structuring the lease in a convenient fashion;(iv) tax benefits can be shared by the lessee or lessor accordingly by pricing the lease in the most beneficial way to the parties;(v) choice of assets for cross border lease is different than domestic lease because those assets may find here attractive bargain which are internationally mobile , have adequate residual value and enjoy undisputed title.

Note: Students may also refer to Chapter – 3, Leasing Decisions for further discussion on Cross Border Leasing.

12.0 INTERNATIONAL CAPITAL BUDGETING

12.1 COMPLEXITIES INVOLVED

Multinational Capital Budgeting has to take into consideration the different factors and variables which affect a foreign project and are complex in nature than domestic projects. The factors crucial in such a situation are:

- (a) Cash flows from foreign projects have to be converted into the currency of the parent organization.

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- (b) Parent cash flows are quite different from project cash flows
- (c) Profits remitted to the parent firm are subject to tax in the home country as well as the host country
- (d) Effect of foreign exchange risk on the parent firm's cash flow
- (e) Changes in rates of inflation causing a shift in the competitive environment and thereby affecting cash flows over a specific time period
- (f) Restrictions imposed on cash flow distribution generated from foreign projects by the host country
- (g) Initial investment in the host country to benefit from the release of blocked funds
- (h) Political risk in the form of changed political events reduce the possibility of expected cash flows
- (i) Concessions/benefits provided by the host country ensures the upsurge in the profitability position of the foreign project
- (j) Estimation of the terminal value in multinational capital budgeting is difficult since the buyers in the parent company have divergent views on acquisition of the project.

12.2 PROBLEMS AFFECTING FOREIGN INVESTMENT ANALYSIS

Multinational companies investing elsewhere are subjected to foreign exchange risk in the sense that currency appreciates/ depreciates over a span of time. To include foreign exchange risk in the cash flow estimates of any project, it is necessary to forecast the inflation rate in the host country during the lifetime of the project. Adjustments for inflation are made in the cash flows depicted in local currency. The cash flows are converted in parent country's currency at the spot exchange rate multiplied by the expected depreciation rate obtained from purchasing power parity.

Due to restrictions imposed on transfer of profits, depreciation charges and technical differences exist between project cash flows and cash flows obtained by the parent organization. Such restriction can be diluted by the application of techniques viz internal transfer prices, overhead payments. For a proper estimate of project evaluation, repatriable income through legal and open channels is considered. If positive, no additions are to be made. If negative, incomes that can be remitted through proper channels have to be added on. Adjustment for blocked funds depends on its opportunity cost, a vital issue in capital budgeting process. This is because the project cost will be lower than the local construction cost. If the opportunity cost of blocked funds is nil, the entire amount released for the project will result in the decrease of initial outlay.

In multinational capital budgeting, after tax cash flows need to be considered for project evaluation. The presence of two tax regimes along with other factors such as remittances to the parent firm in the form of royalties, dividends, management fees etc, tax provisions

with held in the host country, presence of tax treaties, tax discrimination pursued by the host country between transfer of realized profits vis-à-vis local re-investment of such profits cause serious impediments to multinational capital budgeting process. MNCs are in a position to reduce overall tax burden through the system of transfer pricing.

For computation of actual after tax cash flows accruing to the parent firm, higher of home/host country tax rate is used. If the project becomes feasible then it is acceptable under a more favourable tax regime. If infeasible, other tax saving aspects need to be incorporated in order to find out whether the project crosses the hurdle rate.

12.3 PROJECT VIS-A-VIS PARENT CASH FLOWS

There exists a big difference between the project and parent cash flows due to tax rules, exchange controls. Management and royalty payments are returns to the parent firm. The basis on which a project shall be evaluated depend on one's own cash flows, cash flows accruing to the parent firm or both.

Evaluation of a project on the basis of own cash flows entails that the project should compete favourably with domestic firms and earn a return higher than the local competitors. If not, the shareholders and management of the parent company shall invest in the equity/government bonds of domestic firms. A comparison can not be made since foreign projects replace imports and are not competitors with existing local firms. Project evaluation based on local cash flows avoid currency conversion and eliminates problems associated with fluctuating exchange rate changes.

For evaluation of foreign project from the parent firm's angle, both operating and financial cash flows actually remitted to it form the yardstick for the firm's performance and the basis for distribution of dividends to the shareholders repayment of debt/interest to lenders. An investment has to be evaluated on basis of net after tax operating cash flows generated by the project. As both types of cash flows (operating and financial) are clubbed together, it is essential to see that financial cash flows are not mixed up with operating cash flows.

An important aspect in multinational capital budgeting is to adjust cash flows or the discount rate for the additional risk arising from foreign location of the project. Earlier MNCs adjusted the discount rate upwards for riskier projects as they considered uncertainties in political environment and foreign exchange fluctuations. The MNCs considered adjusting the discount rate to be popular as the rate of return of a project should be in conformity with the degree of risk. It is not proper to combine all risks into a single discount rate. Political risk/uncertainties attached to a project relate to possible adverse effects which might occur in future but can not be foreseen at present. So adjusting discount rates for political risk penalises early cash flows more than distant cash flows. Also adjusting discount rate to offset exchange risk only when adverse exchange rate movements are expected is not proper since a MNC can gain from favourable

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currency movements during the life of the project on many occasions. Instead of adjusting discount rate while considering risk it is worthwhile to adjust cash flows. The annual cash flows are discounted at a rate applicable to the project either at that of the host country or parent country. Probability with certainty equivalent method along with decision tree analysis are used for economic and financial forecasting. Cash flows generated by the project and remitted to the parent during each period are adjusted for political risk, exchange rate and other uncertainties by converting them into certainty equivalents.

The Adjusted Present Value Approach (APV) is used in evaluating foreign projects.

Different components of the project's cash flow have to be discounted separately.

The APV method uses different discount rates for different segments of the total cash flows depending on the degree of certainty attached with each cash flow. The financial analyst tests the basic viability of the foreign project before accounting for all complexities. If the project is feasible no further evaluation based on accounting for other cash flows is done. If not feasible, an additional evaluation is done taking into consideration the other complexities.

The APV model is a value additive approach to capital budgeting process i.e. each cash flow is considered individually and discounted at a rate consistent with risk involved in the cash flow. The APV model is represented as follows.

$$I_0 + \sum_{t=1}^n \frac{X_t}{(1+k^*)^t} + \sum_{t=1}^n \frac{T_t}{(1+i_d)^t} + \sum_{t=1}^n \frac{S_t}{(1+i_d)^t}$$

where $I_0 \longrightarrow$ Present value of Investment outlay

$\frac{X_t}{(1+k^*)^t} \longrightarrow$ Present value of operating cash flow

$\frac{T_t}{(1+i_d)^t} \longrightarrow$ Present value of interest tax shields

$\frac{S_t}{(1+i_d)^t} \longrightarrow$ Present value of interest Shields.

$T_t \longrightarrow$ Tax savings in year t due to financial mix adopted

$S_t \longrightarrow$ Before tax value of interest subsidies (on home currency) in year t due to project specific financing

$i_d \longrightarrow$ Before tax cost of dollar debt (home currency)

The last two terms are discounted at the before tax cost of dollar debt to reflect the relative cash flows due to tax and interest savings.

13.0 INTERNATIONAL WORKING CAPITAL MANAGEMENT

13.1 INTERNATIONAL WORKING CAPITAL

The management of working capital in an international firm is very much complex as compared to a domestic one. The reasons for such complexity are:

(1) A multinational firm has a wider option for financing its current assets. Host country funds can be used if needed. Funds flow from different units of the same firm. Approach is made from the international financial market. However, domestic firms find it difficult to avail such funds.

(2) Interest and tax rates vary from one country to the other. A manager associated with a multinational firm has to consider the interest/ tax rate differentials while financing current assets. This is not the case for domestic firms.

(3) A multinational firm is confronted with foreign exchange risk due to the value of inflow/outflow of funds as well as the value of import/export are influenced by exchange rate variations. Restrictions imposed by the home or host country government towards movement of cash and inventory on account of political considerations affect the growth of MNCs. Domestic firm limit their operations within the country and does not face such problems.

(4) With limited knowledge of the politico-economic conditions prevailing in different host countries, a multinational manager often finds it difficult to manage working capital of different units of the firm operating in these countries. The pace of development taking place in the communication system has to some extent eased this problem but it is still there very much.

(5) Intra flow of funds is available with multinational firms as cash positioning and cash mobilization, an important aspect of international working capital management becomes easier to handle. This is not possible for domestic firms.

A study of International Working Capital Management requires knowledge of Multinational Cash Management, International Inventory Management and International Receivables Management.

13.2 MULTINATIONAL CASH MANAGEMENT

MNCs are very much concerned with effective cash management. International money managers follow the traditional objectives of cash management viz. (1) effectively managing and controlling cash resources of the company as well as (2) achieving optimum utilization and conservation of funds. The former objective can be attained by improving cash collections and disbursements and by making an accurate and timely forecast of cash flow pattern. The latter objective can be reached by making money

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available as and when needed, minimising the cash balance level and increasing the risk adjusted return on funds that is to be invested.

International Cash Management requires to follow the principles and practices of other countries. A host of factors curtail the area of operations of an international money manager e.g. restrictions on FDI, repatriation of foreign sales proceeds to the home country within a specified time limit, problem of blocked funds. Such restrictions hinder the movement of funds across national borders and the international finance manager has to plan beforehand the possibility of such situation arising on a country to country basis. Other complications in the form of multiple tax jurisdictions and currencies and absence of internationally integrated exchange facilities cause the international finance manager to shift cash from one location to another to overcome such difficulties. MNCs get higher returns overseas on short term investments and also earn a higher proportion of returns after tax from the various tax laws and treaties. All such advantages help MNCs to improve their global cash management system.

Foreign affiliates do not provide quality information to the parent firm because of language problems, local resistance, government regulation and technical difficulties. A subsidiary regards requests for information as a threat to its independence. Technical difficulties arise due to cross border data flows lacking good communications infrastructure. Government regulations ranging between transfer of information and funds.

The main objectives of an effective system of international cash management are :

- 1) To minimise currency exposure risk.
- 2) To minimise overall cash requirements of the company as a whole without disturbing smooth operations of the subsidiary or its affiliate.
- 3) To minimise transaction costs.
- 4) To minimise country's political risk.
- 5) To take advantage of economies of scale as well as reap benefits of superior knowledge.

The objectives are conflicting in nature as minimising of transaction costs require cash balance to be kept in the currency in which they are received thereby contradicting both currency and political exposure requirements.

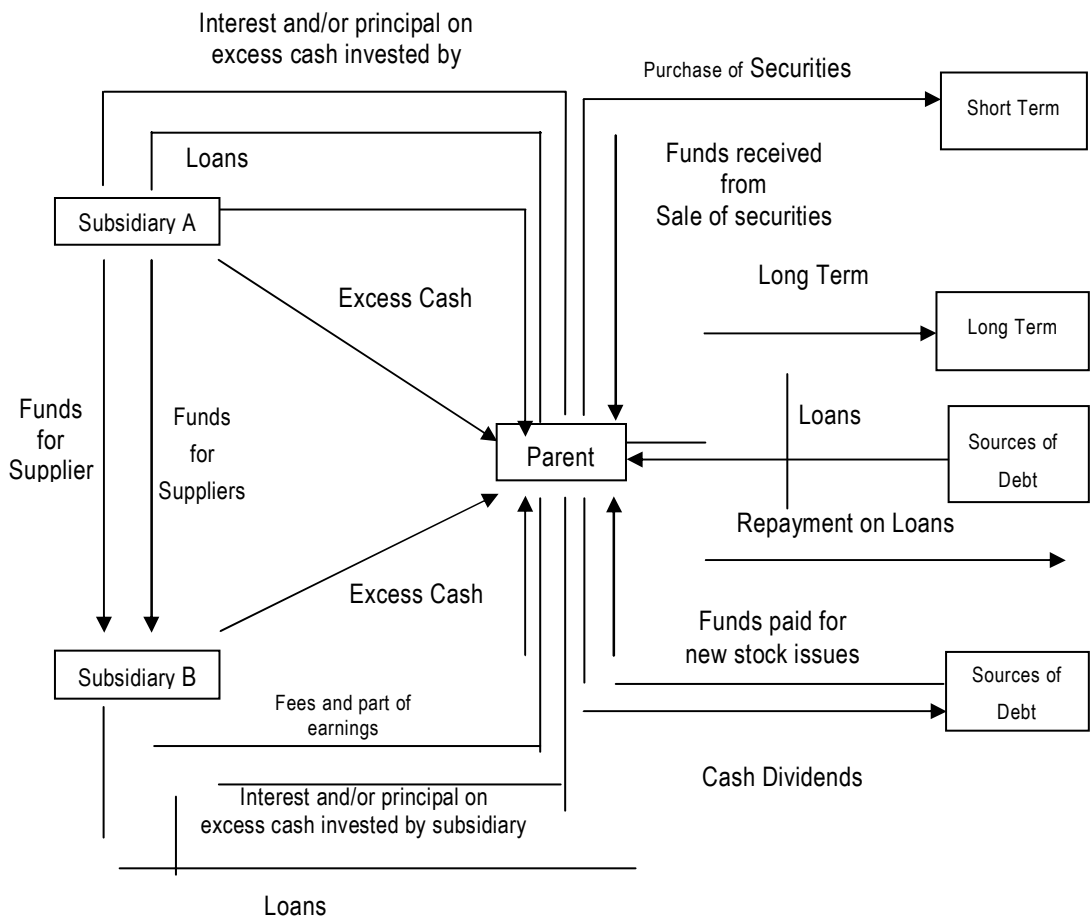
A centralized cash management group is required to monitor and manage parent subsidiary and inter-subsidary cash flows. Centralization needs centralization of information, reports and decision making process relating to cash mobilisation, movement and investment. This system benefits individual subsidiaries which require funds or are exposed to exchange rate risk.

A centralised cash system helps MNCs as follows :

- a) To maintain minimum cash balance during the year.
- b) To manage judiciously liquidity requirements of the centre.

- c) To optimally use various hedging strategies so that MNC's foreign exchange exposure is minimised.
- d) To aid the centre to generate maximum returns by investing all cash resources optimally.
- e) To aid the centre to take advantage of multinational netting so that transaction costs and currency exposure are minimised.
- f) To make maximum utilization of transfer pricing mechanism so that the firm enhances its profitability and growth.

Consider an MNC with two subsidiaries in different countries. The two subsidiaries periodically send fees and dividends to the parent as well as send excess cash – all of them represent incoming cash to the parent while the cash outflows to the subsidiaries include loans and return on cash invested by them. As subsidiaries purchase supplies from each other they have cash flows between themselves.



Cash Flow of the Overall MNC

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International Cash Management has two basic objectives :

- 1) Optimising Cash Flow movements.
- 2) Investing excess cash.

As no single strategy of international cash management can help in achieving both these objectives together, its task on such aspects becomes very challenging.

There are numerous ways of optimising cash inflows :

- 1) Accelerating cash inflows.
- 2) Managing blocked funds.
- 3) Leading and Lagging strategy.
- 4) Using netting to reduce overall transaction costs by eliminating number of unnecessary conversions and transfer of currencies.
- 5) Minimising tax on cash flow through international transfer pricing.

13.3 ACCELERATING CASH INFLOWS

Faster recovery of cash inflows helps the firm to use them whenever required or to invest them for better returns. Customers all over the world are instructed to send their payments to lockboxes set up at various locations, thereby reducing the time and transaction costs involved in collecting payments. Also, through pre-authorised payment, an organization may be allowed to charge the customer's bank account up to some limit.

13.4 MANAGING BLOCKED FUNDS

The host country may block funds of the subsidiary to be sent to the parent or make sure that earnings generated by the subsidiary be reinvested locally before being remitted to the parent so that jobs are created and unemployment reduced. The subsidiary may be instructed to obtain bank finance locally from the parent firm so that blocked funds may be utilised to pay off bank loans.

The parent company has to assess the potential of future funds blockage in a foreign country. MNCs have to be aware of political risks cropping up due to unexpected blockage of funds and devise ways to benefit their shareholders by using different methods for moving blocked funds through transfer pricing strategies, direct negotiations, leading and lagging and so on.

13.5 MINIMISING TAX ON CASH FLOWS THROUGH TRANSFER PRICING MECHANISM

Large entities having many divisions require goods and services to be transferred frequently from one division to another. The profits of different divisions are determined by

the price to be charged by the transferor division to the transferee division. The higher the transfer price, the larger will be the gross profit of the transferor division with respect to the transferee division. The position gets complicated for MNCs due to exchange restrictions, inflation differentials, import duties, tax rate differentials between two nations, quotas imposed by host country.

13.6 LEADING AND LAGGING

This technique is used by subsidiaries for optimizing cash flow movements by adjusting the timing of payments to determine expectations about future currency movements. MNCs accelerate (lead) or delay (lag) the timing of foreign currency payments through adjustment of the credit terms extended by one unit to another. The technique helps to reduce foreign exchange exposure or to increase available working capital. Firms accelerate payments of hard currency payables and delay payments of soft currency payables in order to reduce foreign exchange exposure. A MNC in the USA has subsidiaries all over the world. A subsidiary in India purchases its supplies from another subsidiary in Japan. If the Indian subsidiary expects the rupee to fall against the yen, then it shall be the objective of that firm to accelerate the timing of its payment before the rupee depreciates. Such a strategy is called Leading. On the other hand, if the Indian subsidiary expects the rupee to rise against the yen then it shall be the objective of that firm to delay the timing of its payment before the rupee appreciates. Such a strategy is called Lagging. MNCs should be aware of the government restrictions in such countries before availing of such strategies.

Leading and Lagging involve the movement of cash inflows and outflows, forward and backward in time so as to allow netting and achieve various goals. Regulations governing Leading and Lagging are subject to frequent changes and vary from country to country. So, the global finance manager has to keep himself abreast with such changed regulations before he can successfully employ this technique. The advantages associated with Leading and Lagging are :

- 1) No formal recognition of indebtedness is required and the credit terms can be altered by increase / decrease of the terms on the accounts.
- 2) It helps in minimizing foreign exchange exposure and helps in transferring liquidity among affiliates by changing credit terms and is dependent on the opportunity cost of funds to both paying and receiving units.
- 3) It is an aggressive technique aimed at taking advantage of expected revaluations and devaluations of currency movements.

For example: Affiliate X sells goods \$10 lakh to affiliate Y on 90 days credit terms. Affiliate X then would have \$ 30 lakh of Accounts Receivable from Affiliate Y and is financing \$ 30 lakh of working capital for Affiliate Y. If the credit terms are increased to

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180 days, there will be a one time shift of an additional \$ 30 lakh to Affiliate Y. On the other hand if the credit terms are reduced to 30 days, this will lead to a flow of \$ 20 lakh from Affiliate Y to Affiliate X.

Fund Transfer effects of Leading and Lagging

Affiliate X sells goods worth \$ 10 lakh to Affiliate Y.

Credit Terms

Particulars	Normal (90 days)	Leading (30 days)	Lagging (180 days)
Affiliate X (Accounts Receivable from Y)	\$ 30 lakh	\$ 10 lakh	\$ 60 lakh
Affiliate Y (Accounts Receivable from X)	\$ 30 lakh	\$ 10 lakh	\$ 60 lakh
Net Cash Transfers			
From Y to X		\$ 20 lakh	
From X to Y			\$ 30 lakh

Illustration: An MNC faces the after tax borrowing and lending rates in UK and US. Both US and UK affiliates can have surplus (+) / deficit (–) of funds. The four alternatives along with domestic interest rates (US / UK) and interest differentials (US rate – UK rate) associated with each state are given below:

	Borrowing Rate (%)	Lending Rate (%)
US	3.4	2.6
UK	3.2	2.4
	(+)	(–)

Considering both units to have excess funds, the relevant opportunity cost of funds are the US and UK lending rates of 2.6 % and 2.4% respectively and the associated interest differential is 0.2%. Again if both affiliates require funds the relevant opportunity cost of funds are the US and UK borrowing rates of 3.4% and 3.2% respectively and the associated interest differential is 0.2% also. If the US affiliate requires funds while the UK affiliate has excess funds, then the relevant rates are the US borrowing and UK lending rates of 3.4% and 2.4% respectively and the interest differential in this case is 1.0%. The following chart depicts the position.

UK

(+)

2.6% / 2.4% (0.2%)

3.4% / 2.4% (1.0%)

(–)

2.6% / 3.2% (– 0.6%)

3.4% / 3.2% (0.2%)

If the interest rate differential is positive, the corporate as a body by moving funds to the US will earn more interest on the investments or pay less on its borrowings. Such a move results in leading payments to the US and lagging payments to UK. On the other hand if the interest rate differential is negative it will be better to move funds to the UK by leading payments to UK and lagging payments to US.

13.7 NETTING

It is a technique of optimising cash flow movements with the combined efforts of the subsidiaries thereby reducing administrative and transaction costs resulting from currency conversion. There is a co-ordinated international interchange of materials, finished products and parts among the different units of MNC with many subsidiaries buying /selling from/to each other. Netting helps in minimising the total volume of inter-company fund flow.

Advantages derived from netting system includes :

- 1) Reduces the number of cross-border transactions between subsidiaries thereby decreasing the overall administrative costs of such cash transfers
- 2) Reduces the need for foreign exchange conversion and hence decreases transaction costs associated with foreign exchange conversion.
- 3) Improves cash flow forecasting since net cash transfers are made at the end of each period
- 4) Gives an accurate report and settles accounts through co-ordinated efforts among all subsidiaries

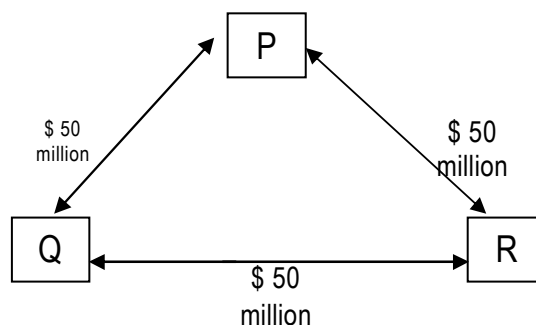
There are two types of Netting:

- 1) *Bilateral Netting System* – It involves transactions between the parent and a subsidiary or between two subsidiaries. If subsidiary X purchases \$ 20 million worth of goods from subsidiary Y and subsidiary Y in turn buy \$ 30 million worth of goods from subsidiary X, then the combined flows add up to \$ 50 million. But in a bilateral netting system subsidiary X would pay subsidiary Y only \$10 million. Thus bilateral netting reduces the number of foreign exchange transactions and also the costs associated with foreign exchange conversion. A more complex situation arises among the parent firm and several subsidiaries paving the way to multinational netting system.

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2) *Multilateral Netting System* – Each affiliate nets all its inter affiliate receipts against all its disbursements. It transfers or receives the balance on the position of it being a net receiver or a payer thereby resulting in savings in transfer / exchange costs. For an effective multilateral netting system, these should be a centralised communication system along with disciplined subsidiaries. This type of system calls for the consolidation of information and net cash flow positions for each pair of subsidiaries.

Subsidiary P sells \$ 50 million worth of goods to Subsidiary Q, Subsidiary Q sells \$ 50 million worth of goods to Subsidiary R and Subsidiary R sells \$ 50 million worth of goods to Subsidiary P. Through multilateral netting inter affiliate fund transfers are completely eliminated.



The netting system uses a matrix of receivables and payables to determine the net receipt / net payment position of each affiliate at the date of clearing. A US parent company has subsidiaries in France, Germany, UK and Italy. The amounts due to and from the affiliates is converted into a common currency viz. US dollar and entered in the following matrix.

Inter Subsidiary Payments Matrix (US \$ Thousands)

Paying affiliate

		France	Germany	UK	Italy	Total
Receiving affiliate	France	---	40	60	100	200
	Germany	60	---	40	80	180
	UK	80	60	---	70	210
	Italy	100	30	60	---	190
	Total	240	130	160	250	780

Without netting, the total payments are \$ 780 Thousands. Through multinational netting these transfers will be reduced to \$ 100 Thousands, a net reduction of 87%. Also currency conversion costs are significantly reduced. The transformed matrix after consolidation and

net payments in both directions convert all figures to US dollar equivalents to the below form :

Netting Schedule (US \$ Thousands)

	Receipt	Payment	Net Receipt	Net Payments
France	200	240	---	40
Germany	180	130	50	---
UK	210	160	50	---
Italy	190	250	---	60
			100	100

13.8 INVESTING EXCESS CASH

Euro Currency market accommodates excess cash in international money market. Euro Dollar deposits offer MNCs higher yield than bank deposits in US. The MNCs use the Euro Currency market for temporary use of funds, purchase of foreign treasury bills / commercial paper. Through better telecommunication system and integration of various money markets in different countries, access to the securities in foreign markets has become easier.

Through a centralised cash management strategy, MNCs pool together excess funds from subsidiaries enabling them to earn higher returns due to the larger deposits lying with them. Sometimes a separate investment account is maintained for all subsidiaries so that short term financing needs of one can be met by the other subsidiary without incurring transaction costs charged by banks for exchanging currencies. Such an approach leads to an excessive transaction costs. The centralised system helps to convert the excess funds pooled together into a single currency for investments thereby involving considerable transaction cost and a cost benefit analysis should be made to find out whether the benefits reaped are not offset by the transaction costs incurred. A question may arise as to how MNCs will utilise their excess funds once they have used them to meet short term financing needs. This is vital since some currencies may provide a higher interest rate or may appreciate considerably. So deposits made in such currencies will be attractive. Again MNCs may go in for foreign currency deposit which may give an effective yield higher than domestic deposit so as to overcome exchange rate risk. Forecasting of exchange rate fluctuations need to be calculated in this respect so that a comparative study can be effectively made. Lastly an MNC can go for a diversification of its portfolio in different countries having different currencies because of the exchange rate fluctuations taking place and at the same time avoid the possibility of incurring substantial losses that may arise due to sudden currency depreciation.

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13.9 INTERNATIONAL INVENTORY MANAGEMENT

An international firm possesses normally a bigger stock than EOQ and this process is known as stock piling. The different units of a firm get a large part of their inventory from sister units in different countries. This is possible in a vertical set up. For political disturbance there will be bottlenecks in import. If the currency of the importing country depreciates, imports will be costlier thereby giving rise to stock piling. To take a decision against stock piling the firm has to weigh the cumulative carrying cost vis-à-vis expected increase in the price of input due to changes in exchange rate. If the probability of interruption in supply is very high, the firm may opt for stock piling even if it is not justified on account of higher cost.

Also in case of global firms, lead time is larger on various units as they are located far off in different parts of the globe. Even if they reach the port in time, a lot of customs formalities have to be carried out. Due to these factors, re-order point for international firm's lies much earlier. The final decision depends on the quantity of goods to be imported and how much of them are locally available. Relying on imports varies from unit to unit but it is very much large for a vertical set up.

13.10 INTERNATIONAL RECEIVABLES MANAGEMENT

Credit Sales lead to the emergence of account receivables. There are two types of such sales viz. Inter firm Sales and Intra firm Sales in the global aspect.

In case of Inter firm Sales, the currency in which the transaction should be denominated and the terms of payment need proper attention. With regard to currency denomination, the exporter is interested to denominate the transaction in a strong currency while the importer wants to get it denominated in weak currency. The exporter may be willing to invoice the transaction in the weak currency even for a long period if it has debt in that currency. This is due to sale proceeds being used to retire debts without loss on account of exchange rate changes. With regard to terms of payment, the exporter does not provide a longer period of credit and ventures to get the export proceeds quickly in order to invoice the transaction in a weak currency. If the credit term is liberal the exporter is able to borrow currency from the bank on the basis of bills receivables. Also credit terms may be liberal in cases where competition in the market is keen compelling the exporter to finance a part of the importer's inventory. Such an action from the exporter helps to expand sales in a big way.

In case of Intra firm sales, the focus is on global allocation of firm's resources. Different parts of the same product are produced in different units established in different countries and exported to the assembly units leading to a large size of receivables. The question of quick or delayed payment does not affect the firm as both the seller and the buyer are from the same firm though the one having cash surplus will make early payments while the other with cash crunch will make late payments. This is a case of intra firm allocation of resources where leads and lags explained earlier will be taken recourse to.

Self-Examination Questions

- (i) Define the following:
 - (a) Foreign Direct Investment (FDI).
 - (b) Foreign Institutional Investment (FIIs).
- (ii) What are the benefits of FDI's and FIIs. Write in detail.
- (iii) Define the Global Depository Receipt (GDRs). What are major guidelines to be followed in respect of GDRs.
- (iv) Write about American Depository Receipts(ADRs). How many types of ADRs can be issued.
- (v) What do you mean by External commercial Borrowings (ECBs)? What are the major institutions included in the definition of ECBs.
- (vi) What are the various guidelines framed in respect of ECBs?
- (vii) Define Foreign Currency Convertible Bonds (FCCBs).
- (viii) Write a note on Cross Border Leasing.
- (ix) What are the various complexities involved in International Capital Budgeting?
- (x) Write about problems affecting Foreign Investment Analysis?
- (xi) What is the concept 'Adjusted present value approach(APV)? How it is used while evaluating foreign projects.
- (xii) Explain in detail International Working Capital Management and its various components like:
 - (a) Multinational Cash Management;
 - (b) International Inventory Management;
 - (c) International Receivable Management.
- (xiii) What are the techniques of leading and lagging in International Cash Management. Explain in detail by giving an illustration.
- (xiv) Write a note on netting by giving an example.
- (xxv) What is the concept known as management of blocked funds?
- (xiv) Write short notes on:-
 - (i) Euro-bond
 - (ii) Global depository receipts
 - (iii) American depository receipts.
 - (iv) External Commercial Borrowings.
- (xv) What are the benefits of Euro-issues to investors and to Company?

FOREIGN EXCHANGE EXPOSURE AND RISK MANAGEMENT

1. INTRODUCTION

Coupled with globalisation of business, the raising of capital from the international capital markets has assumed significant proportion during the recent years. The volume of finance raised from international capital market is steadily increasing over a period of years, across the national boundaries. Every day new institutions are emerging on the international financial scenario and introducing new derivative financial instruments (products) to cater to the requirements of multinational organisations and the foreign investors.

To accommodate the underlying demands of investors and capital raisers, financial institutions and instruments have also changed dramatically. Financial deregulation, first in the United States and then in Europe and Asia, has prompted increased integration of world financial markets. As a result of the rapidly changing scenario, the finance manager today has to be global in his approach.

In consonance with these remarkable changes, the Government of India has also opened Indian economy to foreign investments and has taken a number of bold and drastic measures to globalise the Indian economy. Various fiscal, trade and industrial policy decisions have been taken and new avenues provided to foreign investors like Foreign Institutional Investors (FII's) and NRI's etc., for investment especially in infrastructural sectors like power and telecommunication etc.

The basic principles of financial management i.e., efficient allocation of resources and raising of funds on most favourable terms and conditions etc. are the same, both for domestic and international enterprises. However the difference lies in the environment in which these multi-national organisations function. The environment relates to political risks, Government's tax and investment policies, foreign exchange risks and sources of finance etc. These are some of the crucial issues which need to be considered in the effective management of international financial transactions and investment decisions.

12.2 Strategic Financial Management

Under the changing circumstances as outlined above, a finance manager, naturally cannot just be a silent spectator and wait and watch the developments. He has to search for "best price" in a global market place (environment) through various tools and techniques. Sometimes he uses currency and other hedges to optimise the utilisation of financial resources at his command.

However, the problems to be faced by him in the perspective of financial management of the multinational organisations are slightly more complex than those of domestic organisations. While the concepts developed earlier in the previous chapters are also applicable here, the environment in which decisions are made in respect of international financial management is different and it forms the subject matter of this chapter for discussion. In this chapter we shall describe how a finance manager can protect his organisation from the vagaries of international financial transactions.

2. FOREIGN EXCHANGE MARKET

The foreign exchange market is the market in which individuals, firms and banks buy and sell foreign currencies or foreign exchange. The purpose of the foreign exchange market is to permit transfers of purchasing power denominated in one currency to another i.e. to trade one currency for another. For example, a Japanese exporter sells automobiles to a U.S. dealer for dollars, and a U.S. manufacturer sells machine tools to Japanese company for yen. Ultimately, however, the U.S. company will be interested in receiving dollars, whereas the Japanese exporter will want yen. Because it would be inconvenient for the individual buyers and sellers of foreign exchange to seek out one another, a foreign exchange market has developed to act as an intermediary.

Transfer of purchasing power is necessary because international trade and capital transactions usually involve parties living in countries with different national currencies. Each party wants to trade and deal in his own currency but since the trade can be invoiced only in a single currency, the parties mutually agree on a currency beforehand. The currency agreed could also be any convenient third country currency such as the US dollar. For, if an Indian exporter sells machinery to a UK importer, the exporter could invoice in pound, rupees or any other convenient currency like the US dollar.

But why do individuals, firms and banks want to exchange one national currency for another? The demand for foreign currencies arises when tourists visit another country and need to exchange their national currency for the currency of the country they are visiting or when a domestic firm wants to import from other nations or when an individual wants to invest abroad and so on. On the other hand, a nation's supply of foreign currencies arises from foreign tourist expenditures in the nation, from export earnings, from receiving foreign investments, and so on. For example, suppose a US firm exporting to the UK is paid in pounds sterling (the UK currency). The US exporter will exchange the pounds for dollars at a commercial bank. The commercial bank will then sell these pounds for dollars

to a US resident who is going to visit the UK or to a United States firm that wants to import from the UK and pay in pounds, or to a US investor who wants to invest in the UK and needs the pounds to make the investment.

Thus, a nation's commercial banks operate as clearing houses for the foreign exchange demanded and supplied in the course of foreign transactions by the nation's residents. Hence, four levels of transactor or participants can be identified in foreign exchange markets. At the first level, are tourists, importers, exporters, investors, etc. These are the immediate users and suppliers of foreign currencies. At the next, or second level are the commercial banks which act as clearing houses between users and earners of foreign exchange. At the third level are foreign exchange brokers through whom the nation's commercial banks even out their foreign exchange inflows and outflows among themselves. Finally, at the fourth and highest level is the nation's central bank which acts as the lender or buyer of last resort when the nation's total foreign exchange earnings and expenditures are unequal. The central bank then either draws down its foreign exchange reserves or adds to them.

3. EXCHANGE RATE DETERMINATION

An exchange rate is, simply, the price of one nation's currency in terms of another currency, often termed the reference currency. For example, the rupee/dollar exchange rate is just the number of rupee that one dollar will buy. If a dollar will buy 100 rupee, the exchange rate would be expressed as Rs 100/\$ and the rupee would be the reference currency.

Equivalently, the dollar/ rupee exchange rate is the number of dollars one rupee will buy. Continuing the previous example, the exchange rate would be \$0.01/Rs (1/100) and the dollar would now be the reference currency. Exchange rates can be for spot or forward delivery.

The foreign exchange market includes both the spot and forward exchange rates. The spot rate is the rate paid for delivery within two business days after the day the transaction takes place. If the rate is quoted for delivery of foreign currency at some future date, it is called the forward rate. In the forward rate, the exchange rate is established at the time of the contract, though payment and delivery are not required until maturity. Forward rates are usually quoted for fixed periods of 30, 60, 90 or 180 days from the day of the contract.

(a) The Spot Market

The most common way of stating a foreign exchange quotation is in terms of the number of units of foreign currency needed to buy one unit of home currency. Thus, India quotes its exchange rates in terms of the amount of rupees that can be exchanged for one unit of foreign currency.

12.4 Strategic Financial Management

Illustration 1: If the Indian rupee is the home currency and the foreign currency is the US Dollar then what is the exchange rate between the rupee and the US dollar?

Solution

US\$ 0.0217/Re. 1 reads "0.0217 US dollar per rupee." This means that for one Indian rupee one can buy 0.0217 US dollar.

In this method, known as the European terms, the rate is quoted in terms of the number of units of the foreign currency for one unit of the domestic currency. This is called an *indirect quote*.

The alternative method, called the American terms, expresses the home currency price of one unit of the foreign currency. This is called a *direct quote*.

This means the exchange rate between the US dollar and rupee can be expressed as:

Rs. 46.08/US\$ reads "Rs. 46.08 per US dollar."

Hence, a relationship between US dollar and rupee can be expressed in two different ways which have the same meaning:

- One can buy 0.0217 US dollars for one Indian rupee.
- Rs. 46.08 Indian rupees are needed to buy one US dollar.

(b) The Forward Market

A forward exchange rate occurs when buyers and sellers of currencies agree to deliver the currency at some future date. They agree to transact a specific amount of currency at a specific rate at a specified future date. The forward exchange rate is set and agreed by the parties and remains fixed for the contract period regardless of the fluctuations in the spot exchange rates in future. The forward exchange transactions can be understood by an example.

Illustration 2: A US exporter of computer peripherals might sell computer peripherals to a German importer with immediate delivery but not require payment for 60 days. The German importer has an obligation to pay the required dollars in 60 days, so he may enter into a contract with a trader to deliver deutsche marks for dollars in 60 days at a forward rate – the rate today for future delivery.

So, a forward exchange contract implies a forward delivery at specified future date of one currency for a specified amount of another currency. The exchange rate is agreed today, though the actual transactions of buying and selling will take place on the specified date only. The forward rate is not the same as the spot exchange rate that will prevail in future. The actual spot rate that may prevail on the specified date is not known today and only the forward rate for that day is known. The actual spot rate on that day will depend upon the supply and demand forces on that day. The actual spot rate on that day may be lower or higher than the forward rate agreed today.

3.1 EXCHANGE RATE QUOTATION

3.1.1 Direct and Indirect Quote: As indicated earlier, a currency quotation is the price of a currency in terms of another currency. For example, \$1 = Rs.44.00, means that one dollar can be exchanged for Rs.44.00. Alternatively, we may pay Rs.44.00 to buy one dollar. A foreign exchange quotation can be either a direct quotation and or an indirect quotation, depending upon the home currency of the person concerned.

A direct quote is the home currency price of one unit foreign currency. Thus, in the aforesaid example, the quote \$1 =Rs.44.00 is a direct-quote for an Indian.

An indirect quote is the foreign currency price of one unit of the home currency. The quote Re.1 = \$0.0227 is an indirect quote for an Indian. (\$1/Rs. 44.00 = \$0.0227 approximately)

Direct and indirect quotes are reciprocals of each other, which can be mathematically expressed as follows.

Direct quote = 1/indirect quote and vice versa

3.1.2 Bid, Offer and Spread: A foreign exchange quotes are two-way quotes, expressed as a 'bid' and an offer' (or ask) price. Bid is the price at which the dealer is willing to buy another currency. The offer is the rate at which he is willing to sell another currency. It must be clearly understood that while a dealer buys a currency, he at the same time is selling another currency. Thus a bid in one currency is simultaneously an offer in another currency. For example, a dealer may quote Indian rupees as Rs.43.80 - 43.90 vis-a-vis dollar. That means that he is willing to buy dollars at Rs.43.80/\$ (sell rupees and buy dollars), while he will sell dollar at Rs. 43.90/\$ (buy rupees and sell dollars). The difference between the bid and the offer is called the spread. The offer is always higher than the bid as inter-bank dealers make money by buying at the bid and selling at the offer.

$$\% \text{ Spread} = \frac{\text{Bid} - \text{Offer}}{\text{Bid}} \times 100$$

4. EXCHANGE RATE FORECASTING

The foreign exchange market has changed dramatically over the past few years. The amounts traded each day in the foreign exchange market are now huge. In this increasingly challenging and competitive market, investors and traders need tools to select and analyze the right data from the vast amounts of data available to them to help them make good decisions. Corporates need to do the exchange rate forecasting for taking decisions regarding hedging, short-term financing, short-term investment, capital budgeting, earnings assessments and long-term financing.

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4.1 TECHNIQUES OF EXCHANGE RATE FORECASTING

There are numerous methods available for forecasting exchange rates. They can be categorized into four general groups- technical, fundamental, market-based, and mixed.

(a) Technical Forecasting: It involves the use of historical data to predict future values. For example time series models. Speculators may find the models useful for predicting day-to-day movements. However, since the models typically focus on the near future and rarely provide point or range estimates, they are of limited use to MNCs.

(b) Fundamental Forecasting: It is based on the fundamental relationships between economic variables and exchange rates. For example subjective assessments, quantitative measurements based on regression models and sensitivity analyses.

In general, fundamental forecasting is limited by:

- the uncertain timing of the impact of the factors,
- the need to forecast factors that have an immediate impact on exchange rates,
- the omission of factors that are not easily quantifiable, and
- changes in the sensitivity of currency movements to each factor over time.

(c) Market-Based Forecasting: It uses market indicators to develop forecasts. The current spot/forward rates are often used, since speculators will ensure that the current rates reflect the market expectation of the future exchange rate.

(d) Mixed Forecasting: It refers to the use of a combination of forecasting techniques. The actual forecast is a weighted average of the various forecasts developed.

5. EXCHANGE RATE THEORIES

There are three theories of exchange rate determination- Interest rate parity, Purchasing power parity and International Fisher effect.

5.1 INTEREST RATE PARITY (IRP)

Interest rate parity is a theory which states that 'the size of the forward premium (or discount) should be equal to the interest rate differential between the two countries of concern'. When interest rate parity exists, covered interest arbitrage (means foreign exchange risk is covered) is not feasible, because any interest rate advantage in the foreign country will be offset by the discount on the forward rate. Thus, the act of covered interest arbitrage would generate a return that is no higher than what would be generated by a domestic investment.

The Covered Interest Rate Parity equation is given by:

$$(1 + r_D) = \frac{F}{S}(1 + r_F)$$

Where,

$(1 + r_D)$ = Amount that an investor would get after a unit period by investing a rupee in the domestic market at r_D rate of interest and $\frac{F}{S}(1 + r_F)$ is the amount that an investor by investing in the foreign market at r_F that the investment of one rupee yield same return in the domestic as well as in the foreign market.

The Uncovered Interest Rate Parity equation is given by:

$$r + r_D = \frac{S_1}{S}(1 + r_F)$$

Where,

S_1 = Expected future spot rate when the receipts denominated in foreign currency is converted into domestic currency.

Thus, it can be said that Covered Interest Arbitrage has an advantage as there is an incentive to invest in the higher-interest currency to the point where the discount of that currency in the forward market is less than the interest differentials. If the discount on the forward market of the currency with the higher interest rate becomes larger than the interest differential, then it pays to invest in the lower-interest currency and take advantage of the excessive forward premium on this currency.

5.2 PURCHASING POWER PARITY (PPP)

Why is a dollar worth Rs. 48.80, JPY 122.18, etc. at some point in time? One possible answer is that these exchange rates reflect the relative purchasing powers of the currencies, i.e. the basket of goods that can be purchased with a dollar in the US will cost Rs. 48.80 in India and ¥ 122.18 in Japan.

Purchasing Power Parity theory focuses on the 'inflation – exchange rate' relationship. There are two forms of PPP theory:-

The ABSOLUTE FORM, also called the 'Law of One Price' suggests that "prices of similar products of two different countries should be equal when measured in a common currency". If a discrepancy in prices as measured by a common currency exists, the demand should shift so that these prices should converge.

The RELATIVE FORM is an alternative version that accounts for the possibility of market imperfections such as transportation costs, tariffs, and quotas. It suggests that 'because

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of these market imperfections, prices of similar products of different countries will not necessarily be the same when measured in a common currency.' However, it states that the rate of change in the prices of products should be somewhat similar when measured in a common currency, as long as the transportation costs and trade barriers are unchanged.

In Equilibrium Form:

$$S = \alpha \frac{P_D}{P_F}$$

Where,

$S(\text{Rs./}\$)$ = spot rate

P_D = is the price level in India, the domestic market.

P_F = is the price level in the foreign market, the US in this case.

α = Sectoral price and sectoral shares constant.

The above equation implies that as the price level in India rises, Rupee depreciates against \$, because for each dollar an increased number of dollars are to be paid.

For Relative Form, Equation is given by:-

$$\Delta S = \Delta P_D - P_F$$

i.e. in equilibrium the rate of change in exchange equals interest rate differential.

Thus, it is found that PPP is more closely approximated in the long run than in the short run, and when disturbances are purely monetary in character.

5.3 INTERNATIONAL FISHER EFFECT (IFE)

International Fisher Effect theory uses interest rate rather than inflation rate differentials to explain why exchange rates change over time, but it is closely related to the Purchasing Power Parity (PPP) theory because interest rates are often highly correlated with inflation rates.

According to the International Fisher Effect, 'nominal risk-free interest rates contain a real rate of return and anticipated inflation'. This means if investors of all countries require the same real return, interest rate differentials between countries may be the result of differential in expected inflation.

The IFE theory suggests that foreign currencies with relatively high interest rates will depreciate because the high nominal interest rates reflect expected inflation. The nominal interest rate would also incorporate the default risk of an investment.

The IFE equation can be given by:

$$r_D - P_D = r_F - \Delta P_F$$

Or

$$P_D - P_F = \Delta S = r_D - r_F$$

The above equation states that if there are no barriers to capital flows the investment will flow in such a manner that the real rate of return on investment will equalize. In fact, the equation represents the interaction between real sector, monetary sector and foreign exchange market.

If the IFE holds, then a strategy of borrowing in one country and investing the funds in another country should not provide a positive return on average. The reason is that exchange rates should adjust to offset interest rate differentials on the average. As we know that purchasing power has not held over certain periods, and since the International Fisher Effect is based on Purchasing Power Parity (PPP). It does not consistently hold either, because there are factors other than inflation that affect exchange rates, the exchange rates do not adjust in accordance with the inflation differential.

5.4 COMPARISON OF PPP, IRP AND IFE THEORIES

All the above theories relate to the determination of exchange rates. Yet, they differ in their implications.

The theory of IRP focuses on why the forward rate differs from the spot rate and on the degree of difference that should exist. This relates to a specific point in time.

Conversely, PPP theory and IFE theory focuses on how a currency's spot rate will change over time. While PPP theory suggests that the spot rate will change in accordance with inflation differentials, IFE theory suggests that it will change in accordance with interest rate differentials. PPP is nevertheless related to IFE because inflation differentials influence the nominal interest rate differentials between two countries.

Theory	Key	Variables	Summary
Interest Rate Parity (IRP)	Forward rate premium (or discount)	Interest rate differential	The forward rate of one currency will contain a premium (or discount) that is determined by the differential in interest rates between the two countries. As a result, covered interest arbitrage will provide a return that is no higher than a domestic return

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Purchasing Power Parity (PPP)	Percentage change in spot exchange rate.	Inflation rate differential.	The spot rate of one currency w.r.t. another will change in reaction to the differential in inflation rates between two countries. Consequently, the purchasing power for consumers when purchasing goods in their own country will be similar to their purchasing power when importing goods from foreign country.
International Fisher Effect (IFE)	Percentage change in spot exchange rate	Interest rate differential	The spot rate of one currency w.r.t. another will change in accordance with the differential in interest rates between the two countries. Consequently, the return on uncovered foreign money market securities will on average be no higher than the return on domestic money market securities from the perspective of investors in the home country.

6. RISK MANAGEMENT

Whether it is investing, driving, or just walking down the street, everyone exposes himself or herself to risk. A person's personality and lifestyle play a big deal on how much risk he can comfortably take on. If an investor invests in stocks and has trouble sleeping at nights because of his investments, then probably he is taking on too much risk. A 'risk' is anything that can lead to results that deviate from the requirements. According to Tom Gilb, risk can be defined as "An abstract concept expressing the possibility of unwanted outcomes". Deciding what amount of risk an investor can take on while allowing him to get rest at night is his most important decision.

Risk Management is, "any activity which identifies risks, and takes action to remove or control 'negative results' (deviations from the requirements)." Effective risk management strategies have become increasingly necessary due to the dynamic nature of the business environment. Globalization is resulting in new markets, new competitors, and new

products. Technological advances are dramatically accelerating the pace of business and the volatility of financial markets. A new relationship between the public and private sectors is contributing to restructured markets and greater deregulation.

Volatility in financial markets was a natural outcome of changes in the flow of funds worldwide following the first oil crisis in the 1970s, the collapse of the fixed foreign exchange rate system, monetarist practices adopted by many central banks, the advancement of communications and technology, and the acceptance of deregulation of financial systems around the world during the 1980s.

Unpredictable changes in interest rates, yield curve structures, exchange rates, and commodity prices, exacerbated by the explosion in international expansion, have made the financial environment riskier today than it ever was in the past. For this reason, boards of directors, shareholders, and executive and tactical management need to be seriously concerned that corporate risk management activities be adequately assessed, prioritized, driven by strategy, controlled, and reported.

Organizations around the globe are therefore overwhelmingly focused on the most fundamental of financial principles: risks = returns. Executives are undertaking major initiatives to manage the risk side of this equation, and, in doing so, are examining global treasury alternatives and employing comprehensive and integrated risk management strategies.

Each organization faces a unique set of parameters with respect to, for example, industry sector, product mix, organizational goals, business culture, and risk tolerances. Consequently, an organization must tailor its risk management framework to meet its particular needs.

Organizations are now concerned with the problems faced by any firm whose performance is affected by the international environment. Indeed, even companies that operate only domestically but compete with firms producing abroad and selling in their local market are affected by international developments. For example, Indian clothing or appliance manufacturers with no overseas sales will find Indian sales and profit margins affected by exchange rates, which influence the prices of imported clothing and appliances. Similarly, bond investors holding their own government's bonds, denominated in their own currency, and spending all their money at home are affected by changes in exchange rates if exchange rates prompt changes in interest rates. Specifically, if governments increase interest rates to defend their currencies when they fall in value on the foreign exchange markets, holders of domestic bonds will find their assets falling in value along with their currencies: bond prices fall when interest rates increase. It is difficult to think of any firm or individual that is not affected in some way or other by the international environment. Jobs, bond and stock prices, food prices, government revenues and other important economic variables are all tied to exchange rates and other developments in the global financial environment.

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7. RISK CONSIDERATIONS

A multinational organization operates in more than one country. This implies that it functions in different environments. However, the degree of risk is different in different countries. It has been observed that international diversification is often more effective than domestic diversification in reducing company's risk in relation to its expected return because the economic cycles of different countries do not tend to be completely synchronized. For example, if a company is in a particular line of business, say power and telecom facilities, invests in another unit in the same country, both the existing and the new units are subjected to the same environmental risks and the return from the new plant is likely to be highly co-related with return from existing plant. This implies that there is no change in the environmental risks and perceptions in the same country both for existing and new units. However, had the management decided to invest the same money in the similar business but in a different country, there would have been change in environmental risk as well as reward perception since both the units now function in different environments. This mechanism probably reduces the risk facing the business and improves chances of rewards.

The political instability and unfavourable Government can seriously endanger the very existence and functioning of the multi-national organizations. It is therefore advisable that before making investment abroad, the organisation should realistically assess the political instability and risk of that country in which investment is proposed to be made. In other words, the company will have to forecast the political instability of the country, which is possible by assessing the degree of stability of the existing government, its attitude towards foreign investment, incentives offered and the quickness in processing foreign investment proposals. If the assessment reveals that political risks is high, the company may decide not to invest even if very high returns are expected to be made and vice-versa.

There are several types of risk that an investor should consider and pay careful attention to. Deciding the potential return while respecting risk is the age-old decision that investors must make.

7.1 Financial Risk: It is the potential loss or danger due to the uncertainty in movement of foreign exchange rates, interest rates, credit quality, liquidity position, investment price, commodity price, or equity price, as well as the unpredictability of sales price, growth, and financing capabilities. Balance sheet and cash flow hedges as well as derivatives tools mitigate financial risks by reducing uncertainty faced by firms.

However, these strategies and instruments themselves are manifestations of the different types of financial uncertainty in that further risks arise from their use.

7.2 Business Risk: On a micro scale, business risk involves the variability in earnings due to variation in the cash inflows and outflows of capital investment projects

undertaken. This risk, also known as investment risk, may materialize because of forecasting errors made in market acceptance of products, future technological changes, and changes in costs related to projects.

On an aggregated basis variability in earnings may derive from the degree of efficient diversification that the firm has achieved in its operations and its overall portfolio of assets. The firm can reduce this risk, also referred to as portfolio risk, by seeking out capital projects and merger candidates that have a low or negative correlation with its present operations.

7.3 Credit or Default Risk: This is the risk that a company or individual will be unable to pay the contractual interest or principal on its debt obligations. This type of risk is of particular concern to investors who hold bonds within their portfolio. Government bonds have the least amount of default risk and least amount of returns while corporate bonds tend to have the highest amount of default risk but also the higher interest rates. Bonds with lower chances of default are considered to be “investment grade,” and bonds with higher chances are considered to be junk bonds.

7.4 Country Risk: This refers to the risk that a country would not be able to honour its financial commitments. When a country defaults it can harm the performance of all other financial instruments in that country as well as other countries it has relations with. Country risk applies to stocks, bonds, mutual funds, options and futures that are issued within a particular country. This type of risk is most often seen in emerging markets or countries that have a severe deficit.

7.5 Interest Rate Risk: It refers to the change in the interest rates. A rise in interest rates during the term of an investor's debt security hurts the performance of stocks and bonds.

7.6 Political Risk: This represents the financial risk that a country's government will suddenly change its policies.

7.7 Market Risk: It is the day-to-day fluctuations in a stocks price. Also referred to as volatility. Market risk applies mainly to stocks and options. As a whole, stocks tend to perform well during a bull market and poorly during a bear market—volatility is not so much a cause but an effect of certain market forces. Volatility is a measure of risk because it refers to the behavior, or “temperament,” of your investment rather than the reason for this behavior. Because market movement is the reason why people can make money from stocks, volatility is essential for returns, and the more unstable the investment the more chance it can go dramatically either way.

7.8 Foreign Exchange Risk: When investing in foreign countries one must consider the fact that currency exchange rate can change the price of the asset as well. Foreign exchange risk applies to all financial instruments that are in a currency other than your domestic currency. As an example, if you are a resident of America and invest in some

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Canadian stock in Canadian dollars, even if the share value appreciates, you may lose money if the Canadian dollar depreciates in relation to the American dollar.

All businesses trading overseas and increasingly in domestic markets will have some exposure to exchange rate movements either directly or indirectly. Whilst exposure to exchange rate movements may be an inevitable part of everyday activity, the risk arising from such exposure can be controlled.

International Country Risk Guide Methodology					
Political		Financial		Economic	
Risk Factor	Weight (%)	Risk Factor	Weight (%)	Risk Factor	Weight (%)
Economic expectations versus reality	6	Loan default or unfavorable loan restructuring	5	Inflation	5
Economic planning failures	6	Delayed payment of suppliers' credit	5	Debt service as percentage of exports	5
Political leadership	6	Repudiation of contracts	5	International liquidity ratios	3
External conflict	5	Losses from exchange controls	5	Foreign trade collection experience	3
Government corruption	3	Expropriation of private investments	5	Current account as percentage of GNP	6
Military in politics	3			Parallel foreign exchange rate market indicators	3
Organized religion in politics	3				
Law and order tradition	3				
Racial and national tensions	3				
Political terrorism	3				
Civil war	3				
Political party development	3				
Quality of bureaucracy	3				
Total Political	50	Total Financial	25	Total Economic	25

8. FOREIGN EXCHANGE EXPOSURE

"An Exposure can be defined as a Contracted, Projected or Contingent Cash Flow whose magnitude is not certain at the moment. The magnitude depends on the value of variables such as Foreign Exchange rates and Interest rates."

In other words, exposure refers to those parts of a company's business that would be affected if exchange rate changes. Foreign exchange exposures arise from many different activities.

For example, travellers going to visit another country have the risk that if that country's currency appreciates against their own their trip will be more expensive.

An exporter who sells his product in foreign currency has the risk that if the value of that

foreign currency falls then the revenues in the exporter's home currency will be lower.

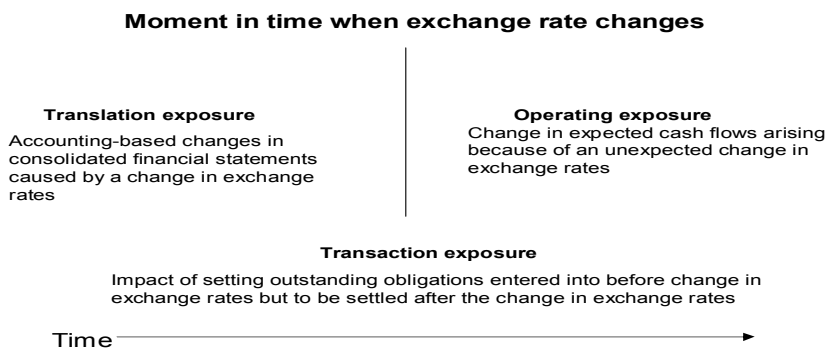
An importer who buys goods priced in foreign currency has the risk that the foreign currency will appreciate thereby making the local currency cost greater than expected.

Fund Managers and companies who own foreign assets are exposed to falls in the currencies where they own the assets. This is because if they were to sell those assets their exchange rate would have a negative effect on the home currency value.

Other foreign exchange exposures are less obvious and relate to the exporting and importing in ones local currency but where exchange rate movements are affecting the negotiated price.

9. TYPES OF EXPOSURES

The foreign exchange exposure may be classified under three broad categories:



9.1 Transaction Exposure: It measures the effect of an exchange rate change on outstanding obligations that existed before exchange rates changed but were settled after the exchange rate changes. Thus, it deals with cash flows that result from existing contractual obligations.

Illustration 3: If an Indian exporter has a receivable of \$100,000 due in six months hence and if the dollar depreciates relative to the rupee a cash loss occurs. Conversely, if the dollar appreciates relative to the rupee, a cash gain occurs.

The above example illustrates that whenever a firm has foreign currency denominated receivables or payables, it is subject to transaction exposure and their settlements will affect the firm's cash flow position.

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9.2 Translation Exposure: Also known as accounting exposure, it refers to gains or losses caused by the translation of foreign currency assets and liabilities into the currency of the parent company for accounting purposes.

9.3 Economic Exposure: It refers to the extent to which the economic value of a company can decline due to changes in exchange rate. It is the overall impact of exchange rate changes on the value of the firm. The essence of economic exposure is that exchange rate changes significantly alter the cost of a firm's inputs and the prices of its outputs and thereby influence its competitive position substantially.

Effects of Local Currency Fluctuations on Company's Economic Exposure (Cash inflow)

<i>Variables influencing the inflow of cash in Local currency</i>	<i>Revaluation impact</i>	<i>Devaluation impact</i>
<hr/>		
Local sale, relative to foreign competition in local currency	Decrease	Increase
Company's export in local currency	Decrease	Increase
Company's export in foreign currency	Decrease	Increase
Interest payments from foreign investments	Decrease	Increase

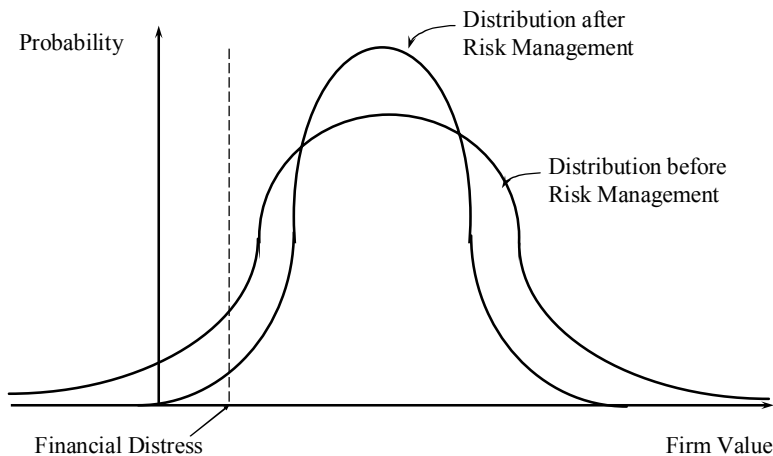
Effects of Local Currency Fluctuations on Company's Economic Exposure (Cash outflow)

<i>Variables influencing the outflow of cash in local currency</i>	<i>Revaluation impact</i>	<i>Devaluation impact</i>
<hr/>		
Company's import of material the same denoted in local currency	Remain the same	Remain
Company's import of material denoted in foreign currency	Decrease	Increase
Interest on foreign debt	Decrease	Increase

10. TECHNIQUES FOR MANAGING EXPOSURE

The aim of foreign exchange risk management is to stabilize the cash flows and reduce the uncertainty from financial forecasts. To hedge any transaction is to buy certainty to make sure that unexpected exchange rate movements will have no impact on our operations. What determines the price of this certainty?

- *Flexibility* -- Do we want to have perfect coverage?
- *Opportunity* – Do we want the chance to gain on the upside?
- *Efficiency* – How (liquid/transparent /regulated) is the market?



The above graphs show that the value of the firm increases after the risks are hedged.

There are a range of hedging instruments that can be used to reduce risk. Hedging alternatives include: Forwards, futures, options, swaps, etc.

Illustration 4: Swedish company has got a sales order to an American customer. Delivery time is in three months and price is in US dollar.

- ***Open position***

No hedging. If the Swedish Kroner (SEK) increases in value the Swedish company loses.

- ***Forward contract***

An exchange rate quoted today for settlement at a future date.

- ***Futures contract***

A standardized agreement for settlement at a future date.

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- **Money market hedge**

Borrow US dollar today and exchange the proceeds to local currency.

- **Options contract**

A contract giving the Swedish company the right, but not the obligation to sell US dollar at an agreed rate. Provides a hedge and a chance to win.

10.1 DERIVATIVES

A derivatives transaction is a bilateral contract or payment exchange agreement whose value depends on - derives from - the value of an underlying asset, reference rate or index. Today, derivatives transactions cover a broad range of underlyings - interest rates, exchange rates, commodities, equities and other indices.

In addition to privately negotiated, global transactions, derivatives also include standardized futures and options on futures that are actively traded on organized exchanges and securities such as call warrants.

The term derivative is also used to refer to a wide variety of other instruments. These have payoff characteristics, which reflect the fact that they include derivatives products as part of their make-up. While the range of products is diverse it is not complicated. Every derivatives transaction is constructed from two simple building blocks that are fundamental to all derivatives: forwards and options. They include:

- **Forwards:** forwards and swaps, as well as exchange-traded futures.
- **Options:** privately negotiated OTC options (including caps, collars, floors and options on forward and swap contracts), exchange-traded options on futures.

Diverse forms of derivatives are created by using these building blocks in different ways and by applying them to a wide assortment of underlying assets, rates or indices.

(a) Forwards-Based Derivatives

There are three divisions of forwards-based derivatives:

- forward contracts;
- swaps;
- futures contracts.

(i) The Forward Contract

The simplest form of derivatives is the forward contract. It obliges one party to buy, and the other to sell, a specified quantity of a nominated underlying financial instrument at a specific price, on a specified date in the future. There are markets for a multitude of underlyings. Among these are the traditional agricultural or physical commodities, currencies (foreign exchange forwards) and interest rates (forward rate agreements -

FRAs). The volume of trade in forward contracts is massive.

The change in value in a forward contract is broadly equal to the change in value in the underlying. Forwards differ from options in that options carry a different payoff profile. Forward contracts are unique to every trade. They are customized to meet the specific requirements of each end-user. The characteristics of each transaction include the particular business, financial or risk-management targets of the counterparties. Forwards are not standardized. The terms in relation to contract size, delivery grade, location, delivery date and credit period are always negotiated.

In a forward contract, the buyer of the contract draws its value at maturity from its delivery terms or a cash settlement. On maturity, if the price of the underlying is higher than the contract price the buyer makes a profit. If the price is lower, the buyer suffers a loss. The gain to the buyer is a loss to the seller.

(ii) Swaps

Swaps are infinitely flexible. In technical terms they are a method of exchanging the underlying economic basis of a debt or asset without affecting the underlying principal obligation on the debt or asset.

A swap transaction commits the participants to exchange cash flows at specified intervals, which are called payment or settlement dates. Cash flows are either fixed or calculated for specific dates by multiplying the quantity of the underlying by specified reference rates or prices.

The vast majority of swaps are classified into the following groups :

- Interest rate;
- Currency;
- Commodity;
- Equity.

The notional principal (i.e. the face value of a security) on all these, except currency swaps, is used to calculate the payment stream but not exchanged. Interim payments are usually netted - the difference is paid by one party to the other.

Like forwards, the main users of swaps are large multinational banks or corporations. Swaps create credit exposures and are individually designed to meet the risk-management objectives of the participants.

Interest Rate Swaps

In an interest rate swap, no exchange of principal takes place but interest payments are made on the notional principal amount. Interest payments can be exchanged between two parties to achieve changes in the calculation of interest on the principal, for example :

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- Floating to fixed;
- Fixed to floating;
- LIBOR to prime - based;
- Prime to LIBOR;
- Currency A to currency B.

In an interest rate swap both parties raise finance as they normally would in the markets where they have relative advantage. They then engage in the swap. The arrangement benefits both parties since it exploits one's comparative advantage.

Currency Swaps

These involve an exchange of liabilities between currencies. A currency swap can consist of three stages:

- A spot exchange of principal - this forms part of the swap agreement as a similar effect can be obtained by using the spot foreign exchange market.
- Continuing exchange of interest payments during the term of the swap - this represents a series of forward foreign exchange contracts during the term of the swap contract. The contract is typically fixed at the same exchange rate as the spot rate used at the outset of the swap.
- Re-exchange of principal on maturity.

A currency swap has the following benefits:

- Treasurers can hedge currency risk.
- It can provide considerable cost savings. So a strong borrower in the Deutschmark market may get a better US dollar rate by raising funds in the Deutschmark market and swapping them for US dollars.
- The swap market permits funds to be accessed in currencies, which may otherwise command a high premium.
- It offers diversification of borrowings.

A more complex version of a currency swap is a currency coupon swap, which swaps a fixed-or-floating rate interest payment in one currency for a floating rate payment in another. These are also known as **Circus Swaps**.

In a currency swap the principal sum is usually exchanged:

- At the start;
- At the end;

- At a combination of both; or
- Neither.

Many swaps are linked to the issue of a Eurobond. An issuer offers a bond in a currency and instrument where it has the greatest competitive advantage. It then asks the underwriter of the bond to provide it with a swap to convert funds into the required type.

Plain Vanilla Swaps

These are fixed-to-floating interest rate swaps between two parties in which each contracts to make payments to the other on particular dates in the future till a specified termination date.

Basis rate swaps

These are similar to plain vanilla swaps but in a basis rate swap both legs are floating rate but measured against different benchmarks.

Asset swaps

These can be either a plain vanilla or a basis rate swap. Instead of swapping the interest payments on liability, one of the parties to the swap is swapping the interest receipts on an asset.

Mortgage swaps

A mortgage swap seeks to emulate the economic process of buying a collection of mortgage-backed securities and financing the acquisition with short-term variable-rate debt. It is like an interest rate swap with a long-term forward commitment. Three factors distinguish a mortgage swap from an interest rate swap:

- A reducing principal amount;
- Periodic cash settlements for adjustments to the premium or discount resulting from prepayment;
- Settlement with cash or delivery of securities at a prearranged date.

Amortising swaps

These are swaps for which the notional principal falls over its term. They are particularly useful for borrowers who have issued redeemable debt. It enables them to match interest rate hedging with the redemption profile of the bonds.

Forward swaps

These are swaps arranged to run from some point in the future. They are similar to FRAs but are longer-term vehicles.

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Swaptions

Options on swaps, they give the buyer of the swaption the right but not the obligation to enter into a swap agreement where term, notional principal and interest rates are predetermined. They are helpful in tenders where the bidder needs to fix costs but does not know who will win the contract.

Callable swaps

These are similar to swaptions but here the swap counterparty has the right to end the swap.

Canape 'swaps

These currency swaps have no initial or final exchange of principal. Interest payments in one currency are exchanged for interest payments in another.

(iii) Futures Contracts

A basic futures contract is very similar to the forward contract in its obligation and payoff profile. The volume of newer financial futures contracts in interest rates, currencies and equity indices now far outstrips the original markets in agricultural commodities.

There are some important distinctions between futures and forwards and swaps.

- The contract terms of futures are standardized. These encompass:
 - Quantity and quality of the underlying;
 - Time and place of delivery;
 - Method of payment.

The only variable is the price. Even the credit risk is standardized: this is greatly reduced by marking the contract to market on a daily basis with daily checking of position.

- Futures are smaller in contract size than forwards and swaps, which means that they are available to a wider business market.

Financial futures comprise three principal types:

- Interest Rate Futures;
- Currency Futures;
- Stock Index Futures.

Interest rate futures centre on specific types of financial instruments, whose prices are dependent on interest rates. *Currency futures* are based on internationally significant currencies. *Stock index futures* draw on internationally recognized stock exchange indices.

A financial futures contract is purchased or sold through a broker. It is a commitment to make or take delivery of a specified financial instrument, or perform a particular service, at predetermined date in the future. The price of the contract is established at the outset.

Distinction between Futures and Forward Contracts

There are major differences between the traditional forward contract and a futures contract. These are tabulated below:

<i>Feature</i>	<i>Forward Contract</i>	<i>Futures Contract</i>
<i>Amount</i>	Flexible	Standard amount
<i>Maturity</i>	Any valid business date agreed to by the two parties	Standard date. Usually one delivery date such as the second Tuesday of every month
<i>Furthest maturity date</i>	Open	12 months forward
<i>Currencies traded</i>	All currencies	Majors
<i>Cross rates</i>	Available in one contract; Multiple contracts avoided	Usually requires two contracts
<i>Market-place</i>	Global network	Regular markets – futures market and exchanges
<i>Price fluctuations</i>	No daily limit in many currencies	Daily price limit set by exchange
<i>Risk</i>	Depends on counter party	Minimal due to margin requirements
<i>Honouring of contract</i>	By taking and giving delivery	Mostly by a reverse transaction
<i>Cash flow</i>	None until maturity date	Initial margin plus ongoing variation margin because of market to market rate and final payment on maturity date
<i>Trading hours</i>	24 hours a day	4 – 8 hours trading sessions

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(b) Options

The second of the two principal building blocks in derivatives is options. These products offer, in exchange for a premium, the right - but *not* the obligation - to buy or sell the underlying at the strike price during a period or on a specific date. So the owner of the option can choose not to exercise the option and let it expire. A buyer can benefit from favourable movements in the price of the underlying but is not exposed to corresponding losses. This represents the principal difference between forwards and options.

It is summarized neatly by IP Morgan and Arthur Andersen's *Guide to Corporate Exposure Management* (appearing in *Risk Magazine*): "The advantage of options over swaps and forwards is that options give the buyer the desired protection while allowing him to benefit from a favourable movement in the underlying price. "

Privately negotiated options exist on a multitude of underlyings such as bonds, equities, currencies and commodities, and even swaps. Options can also be structured as securities in warrants or can be embedded in products like convertible bonds, certain commodity- or equity-linked bonds with options.

An option is a contract which has one or other of two key attributes :

- to buy (**call option**);
- or to sell (**put option**).

The purchaser is called the buyer or holder; the seller is called the writer or grantor. The premium may be expressed as a percentage of the price per unit of the underlying.

The holder of an **American option** has the right to exercise the contract at any stage during the period of the option, whereas the holder of a **European option** can exercise his right only at the end of the period.

During or at the end of the contract period (depending on the 'nationality' of the option), the holder can do as he pleases. He can buy or sell (as the case may be) the underlying, let the contract expire or sell the option contract itself in the market.

Call Option

It is a contract that gives the buyer the right, but not the obligation, to buy a specified number of units of commodity or a foreign currency from the seller of option at a fixed price on or up to a specific date.

Put Option

It is a contract that gives the buyer the right, but not the obligation, to sell a specified number of units of commodity or a foreign currency to a seller of option at a fixed price on or up to a specific date.

Distinction between Options and Futures

There are certain fundamental differences between a futures and an option contract. Let us look at the main comparative features given below:

	<i>Options</i>	<i>Futures</i>
(a)	Only the seller (writer) is obliged to perform	Both the parties are obligated to perform.
(b)	Premium is paid by the buyer to the seller	No premium is paid by any party.
(c)	Loss is restricted while there is unlimited gain potential for the option buyer.	There is potential/risk for unlimited gain/loss for the futures buyer.
(d)	An options contract can be exercised any time during its period by the buyer.	A futures contract has to be honoured by both the parties only on the date specified.

Options Vs Futures: Gain and Losses in Different Circumstances

<i>Price Movement</i>	<i>Type of Position Held</i>					
	<i>Call buyer</i>	<i>Long Futures Position</i>	<i>Call Seller</i>	<i>Put Buyer</i>	<i>Short Futures Position</i>	<i>Put Seller</i>
<i>Price rises</i>	Unlimited gain	Unlimited gain	Unlimited loss	Limited loss	Unlimited loss	Limited gain
<i>Price falls</i>	Limited loss	Unlimited loss*	Limited gain	Unlimited gain*	Unlimited gain*	Unlimited loss*
<i>Price unchanged</i>	Limited loss	No gain or loss	Limited gain	Limited loss	No Gain or loss	Limited gain

Note: Transaction Costs are ignored.

*Since the price of any commodity; share or financial instrument cannot go below zero, there is technically a 'limit' to the gain/loss when the price falls. For practical purposes, this is largely irrelevant.

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As regards to using derivatives as a risk management technique, it can be said that the emergence of the market for derivatives products, forwards, futures and options, can be traced back to the willingness of risk-averse investors to guard themselves against uncertainties arising due to fluctuations in asset prices. Through the use of derivatives, it is possible to transfer price risks by locking-in asset prices. Derivatives generally do not influence the fluctuations in the underlying asset prices but by locking-in asset prices, they minimize the impact of fluctuations in asset prices on the profitability and cash flow situation of risk-averse investors.

Illustration 5

- *Commodity Price Exposure:* The purchase of a commodity futures contract will allow a firm to make a future purchase of the input at today's price, even if the market price on the item has risen substantially in the interim.
- *Security Price Exposure:* The purchase of a financial futures contract will allow a firm to make a future purchase of the security at today's price, even if the market price on the asset has risen substantially in the interim.
- *Foreign Exchange Exposure:* *The purchase of a currency futures or options contract will allow a firm to make a future purchase of the currency at today's price, even if the market price on the currency has risen substantially in the interim.*

10.2 MONEY MARKET HEDGE

A money market hedge involves simultaneous borrowing and lending activities in two different currencies to lock in the home currency value of a future foreign currency cash flow. The simultaneous borrowing and lending activities enable a company to create a home made forward contract.

10.3 FORWARD MARKET HEDGE

In a forward market hedge, a company that has a long position in a foreign currency will sell the foreign currency forward, whereas a company that has a short position in a foreign currency will buy the foreign currency forward. In this manner, the company can fix the dollar value of future foreign currency cash flow.

If funds to fulfill the contract are available on hand or are due to be received by the business, the hedge is considered to be 'covered'. In situations where funds to fulfill the contract are not available but have to be purchased in the spot market at some future date, then such a hedge is known as 'uncovered'.

10.4 NETTING

Netting involves associated companies, which trade with each other. The technique is simple. Group companies merely settle inter affiliate indebtedness for the net amount owing. Gross intra-group trade, receivables and payables are netted out. The simplest

scheme is known as bilateral netting and involves pairs of companies. Each pair of associates nets out their own individual positions with each other and cash flows are reduced by the lower of each company's purchases from or sales to its netting partner. Bilateral netting involves no attempt to bring in the net positions of other group companies.

Netting basically reduces the number of inter company payments and receipts which pass over the foreign exchanges. Fairly straightforward to operate, the main practical problem in bilateral netting is usually the decision about which currency to use for settlement.

Netting reduces banking costs and increases central control of inter company settlements. The reduced number and amount of payments yield savings in terms of buy/sell spreads in the spot and forward markets and reduced bank charges.

10.5 MATCHING

Although netting and matching are terms, which are frequently used interchangeably, there are distinctions. Netting is a term applied to potential flows within a group of companies whereas matching can be applied to both intra-group and to third-party balancing.

Matching is a mechanism whereby a company matches its foreign currency inflows with its foreign currency outflows in respect of amount and approximate timing. Receipts in a particular currency are used to make payments in that currency thereby reducing the need for a group of companies to go through the foreign exchange markets to the unmatched portion of foreign currency cash flows.

The prerequisite for a matching operation is a two-way cash flow in the same foreign currency within a group of companies; this gives rise to a potential for natural matching. This should be distinguished from parallel matching, in which the matching is achieved with receipt and payment in different currencies but these currencies are expected to move closely together, near enough in parallel.

10.6 LEADING AND LAGGING

Leading and lagging refers to the adjustment of credit terms between companies. It is mostly applied with respect to payments between associate companies within a group. Leading means paying an obligation in advance of the due date. Lagging means delaying payment of an obligation beyond its due date. Leading and lagging are foreign exchange management tactics designed to take advantage of expected devaluations and revaluations of currencies.

10.7 PRICE VARIATION

Price variation involves increasing selling prices to counter the adverse effects of exchange rate change. This tactic raises the question as to why the company has not

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already raised prices if it is able to do so. In some countries, price increases are the only legally available tactic of exposure management.

Let us now concentrate to price variation on inter company trade. Transfer pricing is the term used to refer to the pricing of goods and services, which change hands within a group of companies. As an exposure management technique, transfer price variation refers to the arbitrary pricing of inter company sales of goods and services at a higher or lower price than the fair price, arm's length price. This fair price will be the market price if there is an existing market or, if there is not, the price which would be charged to a third party customer. Taxation authorities, customs and excise departments and exchange control regulations in most countries require that the arm's length pricing be used.

10.8 INVOICING IN FOREIGN CURRENCY

Companies engaged in exporting and importing, whether of goods or services, are concerned with decisions relating to the currency in which goods and services are invoked. Trading in a foreign currency gives rise to transaction exposure. Although trading purely in a company's home currency has the advantage of simplicity, it fails to take account of the fact that the currency in which goods are invoiced has become an essential aspect of the overall marketing package given to the customer. Sellers will usually wish to sell in their own currency or the currency in which they incur cost. This avoids foreign exchange exposure. But buyers' preferences may be for other currencies. Many markets, such as oil or aluminum, in effect require that sales be made in the same currency as that quoted by major competitors, which may not be the seller's own currency. In a buyer's market, sellers tend increasingly to invoice in the buyer's ideal currency. The closer the seller can approximate the buyer's aims, the greater chance he or she has to make the sale.

Should the seller elect to invoice in foreign currency, perhaps because the prospective customer prefers it that way or because sellers tend to follow market leader, then the seller should choose only a major currency in which there is an active forward market for maturities at least as long as the payment period. Currencies, which are of limited convertibility, chronically weak or with only a limited forward market, should not be considered.

The seller's ideal currency is either his own, or one which is stable relative to it. But often the seller is forced to choose the market leader's currency. Whatever the chosen currency, it should certainly be one with a deep forward market. For the buyer, the ideal currency is usually its own or one that is stable relative to it, or it may be a currency of which the purchaser has reserves.

10.9 ASSET AND LIABILITY MANAGEMENT

This technique can be used to manage balance sheet, income statement or cash flow exposures. Concentration on cash flow exposure makes economic sense but emphasis on pure translation exposure is misplaced. Hence our focus here is on asset liability management as a cash flow exposure management technique.

In essence, asset and liability management can involve aggressive or defensive postures. In the aggressive attitude, the firm simply increases exposed cash inflows denominated in currencies expected to be strong or increases exposed cash outflows denominated in weak currencies. By contrast, the defensive approach involves matching cash inflows and outflows according to their currency of denomination, irrespective of whether they are in strong or weak currencies.

10.10 ARBITRAGE

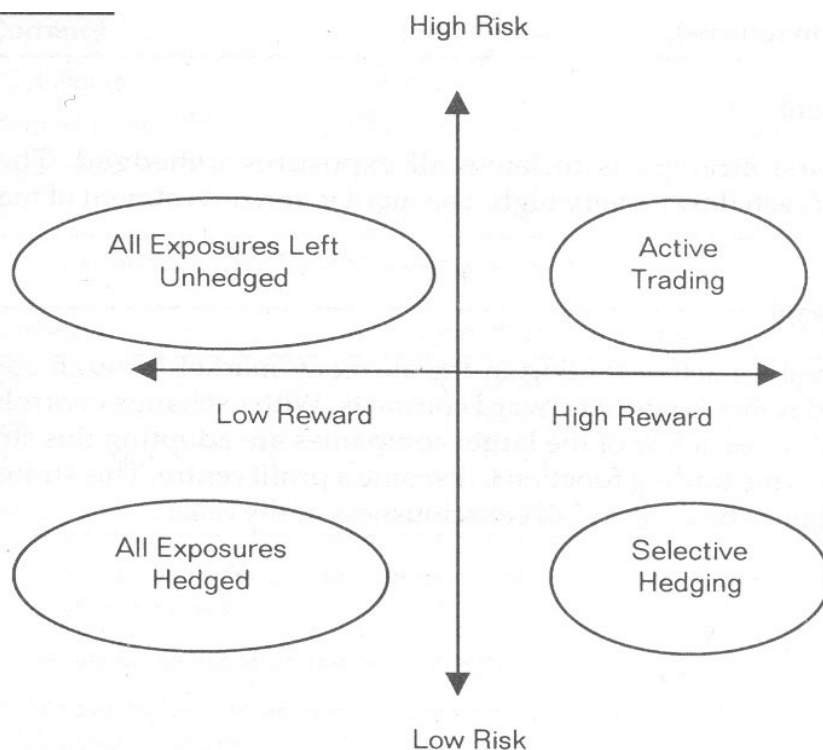
Arbitrage is not a method of hedging foreign exchange risk in a real sense. It is however a method of making profits from foreign exchange transactions. The term arbitrage is used in many areas of finance. It refers to the process of buying and selling of currencies. The sale/purchase of currencies take place within an unstable market. The prices are affected by the supply and demand of currencies and arbitrage helps in adjusting the market to equilibrium. The process of buying in one market and selling the same in another market is known as arbitrage.

Thus the simple notion in arbitrage is to purchase and sell a currency simultaneously in more than one foreign exchange markets. Arbitrage profits are the result of (i) the difference in exchange rates at two different exchange centres, (ii) the difference, due to interest yield which can be earned at different exchanges. Thus depending upon the nature of deal, arbitrage may be of space and time arbitrage. The space arbitrage is because of separation of two exchange markets due to physical dispersion wherein the rates may vary while on the other hand in the time arbitrage an investor may gain by executing a spot and forward deal to buy and sell a currency.

11. STRATEGIES FOR EXPOSURE MANAGEMENT

A company's attitude towards risk, financial strength, nature of business, vulnerability to adverse movements, etc. shapes its exposure management strategies. There can be no single strategy which is appropriate to all businesses. Four separate strategy options are feasible for exposure management.

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Exposure Management Strategies

11.1 LOW RISK: LOW REWARD

This option involves automatic hedging of exposures in the forward market as soon as they arise, irrespective of the attractiveness or otherwise of the forward rate. The merits of this approach are that yields and costs of the transaction are known and there is little risk of cash flow destabilization. Again, this option doesn't require any investment of management time or effort. The negative side is that automatic hedging at whatever rates are available is hardly likely to result into optimum costs. At least some management seems to prefer this strategy on the grounds that an active management of exposures is not really their business. In the floating rate era, currencies outside their home countries, in terms of their exchange rate, have assumed the characteristics of commodities. And business whose costs depend significantly on commodity prices can hardly afford not to take views on the price of the commodity. Hence this does not seem to be an optimum strategy.

11.2 LOW RISK: REASONABLE REWARD

This strategy requires selective hedging of exposures whenever forward rates are attractive but keeping exposures open whenever they are not. Successful pursuit of this

strategy requires quantification of expectations about the future and the rewards would depend upon the accuracy of the prediction. This option is similar to an investment strategy of a combination of bonds and equities with the proportion of the two components depending on the attractiveness of prices. In foreign exchange exposure terms, hedged positions are similar to bonds (known costs or yields) and unhedged ones to equities (uncertain returns).

11.3 HIGH RISK: LOW REWARD

Perhaps the worst strategy is to leave all exposures unhedged. The risk of destabilization of cash flows is very high. The merit is zero investment of managerial time or effort.

11.4 HIGH RISK: HIGH REWARD

This strategy involves active trading in the currency market through continuous cancellations and re-bookings of forward contracts. With exchange controls relaxed in India in recent times, a few of the larger companies are adopting this strategy. In effect, this requires the trading function to become a profit centre. This strategy, if it has to be adopted, should be done in full consciousness of the risks.

12. HEDGING CURRENCY RISK

Currency markets are highly speculative and volatile in nature. Any currency can become very expensive or very cheap in relation to any or all other currencies in a matter of days, hours, or sometimes, in minutes. This unpredictable nature of the currencies is what attracts an investor to trade and invest in the currency market.

12.1 CURRENCY EXCHANGE RISK

International investment brings with it two exposures wrapped into one—the underlying asset and the currency. Already managing the underlying asset has been discussed earlier. By developing a currency-hedging plan, one can manage the currency risk separately.

For an international company, exchange rate volatility can work against if payment in a foreign currency has to be made at a future date. There is no way to guarantee that the price in the currency market will be the same in the future—it is possible that the price will move against the company, making the payment cost more. On the other hand, the market can also move in favour of the company, making the payment cost less in terms of their home currency. Generally, firms that export goods to other countries benefit when their home currency depreciates, since their products become cheaper in other countries. Firms that import from other countries benefit when their currency becomes stronger, since it enables them to purchase more.

As discussed earlier, there are three ways investors can trade in foreign exchange market directly or indirectly - the Spot market, Forwards and futures and Options. Let us look at these transactions again taking currency into accounts.

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(a) A Spot Transaction: A spot transaction is a direct exchange of one currency for another. The spot rate is the current market price, also called the benchmark price. Spot transactions do not require immediate settlement, or payment "on the spot." The settlement date, or "value date," is the second business day after the "deal date" (or "trade date") on which the transaction is agreed to by the two traders. The two-day period provides time to confirm the agreement and arrange the clearing and necessary debiting and crediting of bank accounts in various international locations.

(b) Forwards and Futures: A forward transaction is an agreement between two parties whereby one party buys a currency at a particular price by a certain date that is greater than two business days (a spot transaction).

A future contract is a forward contract with fixed currency amounts and maturity dates. They are traded on future exchanges and not through the interbank foreign exchange market.

(c) Options: A currency option is similar to a futures contract in that it involves a fixed currency transaction at some future date in time. However the buyer of the option is only purchasing the right but not the obligation to purchase a fixed amount of currency at a fixed price by a certain date in future. The price is known as the premium and is lost if the buyer does not exercise the option.

Illustration 6: Currency Risk

Let's take a hypothetical example of Bubbles Blue, a U.S. company, imports wine from France. Bubbles Blue has to pay EUR 5,000,000 on January 2. Presently i.e. on September 4, the exchange rate is 1.19 USD/EUR.

Situation: Payment due on January 2: EUR 50,00,000.

$$S_{\text{Sep 4}} = 1.19 \text{ USD/EUR.}$$

Now, on January 2, $S_t > \text{or} < 1.19 \text{ USD/EUR}$.

At $S_{\text{Sep 4}}$, BUBBLES BLUE total payment would be:

$$\text{EUR } 5,000,000 \times 1.19 \text{ USD/EUR} = \text{USD } 5,95,000.$$

On January 2 we have two potential scenarios:

If the $S_{\text{Jan 2}} \downarrow$ (USD appreciates) \Rightarrow BUBBLES BLUE will pay less USD.

If the $S_{\text{Jan 2}} \uparrow$ (USD depreciates) \Rightarrow BUBBLES BLUE will pay more USD.

The second scenario introduces *Currency Risk*.

Currency risk arises because the value of the rupee fluctuates due to the market forces of supply and demand.

In general, an importer paying for goods or services in a foreign currency would consider an appreciating rupee favourable, but would seek protection against a depreciating rupee,

because of the potential for an increased cost in the final price of the goods or services. Similarly, an exporter receiving foreign currency as payment for goods or services would consider a depreciating rupee favourable, but would seek protection against an appreciating rupee because of the potential for loss incurred as a result of a drop in the value of the final payment received.

The primary goal of currency risk management is to protect the economic value of a business from the negative impact of exchange fluctuations, at the lowest possible cost. Because exchange rate volatility also provides opportunity for gains, a secondary goal is to strike a balance between risk and return.

12.2 TECHNIQUES OF HEDGING CURRENCY RISK

Currency Derivatives can reduce the risk in foreign exchange transactions. One can use forward transactions and options to hedge currency risk.

(a) Currency Futures or Forward Contracts

Forward/Futures are agreements that set today the price of the exchange rate in a given future date. The agreement specifies a given quantity.

Illustration 7: ABC has to pay in 90 days AUD 2.5 million to an Australian supplier. It is concerned about a depreciation of the USD against the AUD in the near future. What should it do?

Solution: ABC buys a AUD forward contract of Size = AUD 2.5 million, maturity = 90 days and $F_{t,90} = .70 \text{ USD/AUD}$

It knows that in 90 days, it will pay USD 1.75M (=AUD 2.5M*.70 USD/AUD) to the supplier. No uncertainty whatsoever about this amount.

Hedging Note:

Underlying position: Short AUD 2.5 M.

Hedging position: Long 90 days futures for AUD 2.5 M.

Illustration 8: A U.S. investor has British Pound (BP) 1 million invested in British gilts. He is uncertain about future value of USD/BP in December.

Solution:

Sell British Pound December futures.

Take a hypothetical situation to understand the hedging technique: It is September 12.

Underlying position: British bonds worth BP 10,00,000.

$F_{\text{Sep 12, Dec}} = 1.55 \text{ USD/BP}$

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Futures contract size: BP 62,500.

$S_{\text{Sep 12}}$: 1.60 USD/BP.

Number of contracts = ?

Hedging position: The investor sells

$\text{BP } 1,000,000 / (62,500 \text{ BP/contract}) = 16 \text{ contracts.}$

The U.S. investor knows that in Dec, if she decides to sell her British gilts, she will receive exactly USD 1.55M. No uncertainty whatsoever about this amount.

Hedging Note:

Underlying position: Long BP 1 million.

Hedging position: Short futures for BP 1 million.

(b) Currency Options

A currency option in its simplest form provides the buyer of the option with the right but not the obligation to buy or sell one currency amount at a specified exchange rate on a specified date. It insures the buyer against unfavourable changes in exchange rates. The buyer pays only for the right to exercise the option on expiry.

13. CONCLUSION

Thus, on account of increased globalization of financial markets, risk management has gained more importance. The benefits of the increased flow of capital between nations include a better international allocation of capital and greater opportunities to diversify risk. However, globalization of investment has meant new risks from exchange rates, political actions and increased interdependence on financial conditions of different countries.

All these factors- increase in exchange rate risk, growth in international trade, globalization of financial markets, increase in the volatility of exchange rates and growth of multinational and transnational corporations- combine to make it imperative for today's financial managers to study the factors behind the risks of international trade and investment, and the methods of reducing these risks.

Illustration 9: A company operating in a country having the dollar as its unit of currency has today invoiced sales to an Indian company, the payment being due three months from the date of invoice. The invoice amount is \$ 7,500 and at today's spot rate of \$0.025 per Re.1, is equivalent to Rs. 3,00,000.

It is anticipated that the exchange rate will decline by 10% over the three months period and in order to protect the dollar proceeds, the importer proposes to take appropriate action through foreign exchange market. The three months forward rate is quoted as \$0.0244 per Re.1.

You are required to calculate the expected loss and to show, how it can be hedged by forward contract.

Solution

Calculation of the expected loss due to foreign exchange rate fluctuation

Present Cost

US \$7,500 @ today spot rate of US \$0.025 per Re. 1 = Rs. 3,00,000

Cost after 3 months

US \$7,500 @ expected spot rate of US \$0.0225 per Re. 1 = Rs. 3,33,333

(Refer to working note)

Expected loss Rs. 33,333

Forward cover is available today at 1 Re. = US \$0.0244 for 3 months

If we take forward cover now for payment after 3 months net amount to be paid is (US \$ 7,500/0.0244) = Rs.3,07,377

Hence, by forward contract the company can cover Rs. 25,956 (Rs.33,333 – 7,377) i.e. about 78% of the expected loss.

Working Note :

Expected spot rate after 3 months

It is anticipated by the company that the exchange rate will decline by 10% over the three months period. The expected rate will be

Present rate - 10% of the present rate.

= US \$ 0.025 – 10% of US \$ 0.025

= US \$ 0.0225

Alternatively, the expected rate may also be calculated as follows:

= US \$ 0.025 × $\frac{90}{100}$ = US \$0.0225

Illustration 10: Beta Ltd. is planning to import a multi-purpose machine from Japan at a cost of 7,200 lakhs yen. The company can avail loans at 15% interest per annum with quarterly rests with which it can import the machine. However, there is an offer from Tokyo branch of an India based bank extending credit of 180 days at 2% per annum against opening of an irrevocable letter of credit.

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Other Information

Present exchange rate Rs. 100 = 360 yen.

180 days' forward rate Rs. 100 = 365 yen.

Commission charges for letter of credit at 2% per 12 months.

Advise whether the offer from the foreign branch should be accepted?

Solution

Option I (To finance the purchase by availing loan at 15% per annum):

Cost of machine Rs. in lakhs

7,200 lakhs yen as Rs.100 = 360 yen	2,000
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Add : Interest at 3.75 I Quarter	75
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Add : Interest at 3.75 II Quarter	77.81
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(on Rs. 2,075 lakhs)

Total outflow in rupees	2152.81
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Alternatively, interest may also be calculated on compounded basis, i.e.

$\text{Rs. } 2,000 \times [1.0375]^2 = \text{Rs. } 2,152.81 \text{ lakhs}$

Option II (To accept the offer from foreign branch) :

Cost of letter of credit Rs. in lakhs

at 1% on 7,200 lakhs yen as Rs.100 = 360 yen = 20.00

Add : Interest I Quater	= 0.75
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Interest IIInd Quarter	= 0.78
------------------------	--------

(A)	= 21.53
-----	---------

Payment at the end of 180 days:

Cost	7200 lakhs yen
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Interest at 2% p.a. $[7200 \times 2/100 \times 180/365]$	71.01 lakhs yen
--	-----------------

<u>7271.01</u>

Conversion at Rs. 100 = 365 yen $[7271.01/365 \times 100]$ (B) = Rs. 1,992.05

Total Cost : A + B = 2013.58 lakhs

Advise: Option No.2 is cheaper. Hence, the offer can be accepted.

Illustration 11: The following spot rates are observed in the foreign currency market.

<i>CURRENCY</i>	<i>FOREIGN CURRENCY PER U.S.\$</i>
Britain pound	00.62
Netherlands Guilder	01.90
Sweden Kroner	06.40
Switzerland Franc	01.50
Italy Lira	1,300.00
Japan Yen	140.00

On the basis of this information, compute to the nearest second decimal the number of :

- British pounds that can be acquired for \$100.
- Dollars that 50 Dutch guilders (a European Monetary Union legacy currency) will buy.
- Swedish krona that can be acquired for \$40.
- Dollars that 200 Swiss francs can buy.
- Italian lira (an EMU legacy currency) that can be acquired for \$10.
- Dollars that 1,000 Japanese yen will buy.

Solution

	<i>Question</i>	<i>Answer</i>
A	British pounds that can be acquired for \$ 100 $\$100 \times .62$	= 62 pounds
B	\$ that 50 Dutch guilders will buy $50/1.90$	= \$26.32
C	Swedish Kroner that can be acquired for \$ 40 $\$40 \times 6.40$	= 256 krona
D	Dollars that 200 Swiss francs can buy $200 / 1.50$	= \$133.33
E	Italian Lira that can be acquired for \$ 10 $\$10 \times 1,300$	= 13,000 lira
F	Dollars that 1000 Japanese yen will buy $1,000 / 140$	= \$7.14

Spot Rates and Forward Rates and Currency Appreciation

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Illustration 12: Suppose that 1 French franc could be purchased in the foreign exchange market for 20 US cents today. If the franc appreciated 10 percent tomorrow against the dollar, how many francs would a dollar buy tomorrow?

Solution

1 franc = 0.2 US\$. Currency appreciation of francs is 10% Therefore 1 franc = $0.2 \times 1.1 = .22\text{US\$}$

Therefore 1 US\$ = $1/.22 = 4.5455$ French francs

Illustration 13: Fleur du lac, a French co., has shipped goods to an American importer under a letter of credit arrangement, which calls for payment at the end of 90 days. The invoice is for \$ 124,000. Presently the exchange rate is 5.70 French francs to the \$ if the French franc were to strengthen by 5% by the end of 90 days what would be the transactions gain or loss in French francs? If it were to weaken by 5%, what would happen? (Note: may calculate in francs per \$)

Solution

The French franc strengthening by 5 percent means an exchange rate of $5.70 \times .95 = 5.415$ French francs to the dollar. The French franc weakening by 5 percent means an exchange rate of $5.70 \times 1.05 = 5.985$ French francs to the dollar.

French franc strengthens

French franc weakens

Before: $\$124,000 \times 5.70 = \text{FF } 706,800$

Before: $\$124,000 \times 5.70 = \text{FF } 706,800$

After: $124,000 \times 5.415 = \underline{671,460}$

After: $124,000 \times 5.985 = \underline{742,140}$

Transaction loss - FF 35,340

Transaction gain + FF 35,340

Illustration 14: Suppose the exchange rate between US dollars and the French franc was FF5.9 = \$1, and the exchange rate between the dollar and the British pound was 1 pound = \$1.50. What was the exchange rate between francs and pounds?

Solution

1 POUND = $1.5 \times 5.9 = 8.85$ FRANCS

Illustration 15: Six month T-bills have a nominal rate of 7 percent, while default-free Japanese bonds that mature in 6 months have a nominal rate of 5.5 percent. In the spot exchange market, 1 yen equals \$0.009. If interest rate parity holds, what is the 6 month forward exchange rate?

Solution

$(1.035 / 1.0275) \times .009 = 0.00907$

Illustration 16: U.S. Imports co., purchased 100,000 Marks worth of machines from a firm in Dortmund, Germany the value of the dollar in terms of the mark has been decreasing. The firm in Dortmund offers 2/10, net 90 terms. The spot rate for the mark is dollar 55; the 90 days forward rate is \$56.

- a. Compute the \$ cost of paying the account with in the 10 days.
- b. Compute the \$ cost of buying a forward contract to liquidate the account in 10 days.
- c. The differential between part a and part b is the result of the time value of money (the discount for prepayment) and protection from currency value fluctuation. Determine the magnitude of each of these components.

Solution

a) $(98,000) (0.55) = \$53,900$

b) $(100,000) (0.56) = \$56,000$

Differences = $56000 - 53900 = \$2100$

c) Time value of money = $(100,000 - 98,000) (0.56) = \$1,120$,

Protection from devaluation = $(98,000) (0.56 - 0.55) = \980

Illustration 17: Exporters Plc. a UK company, is due to receive 500,000 Northland dollars in six months time for goods supplied. The company decides to hedge its currency exposure by using the forward market. The short-term interest rate in the UK is 12% p.a. and the equivalent rate in Northland is 15%. The spot rate of exchange is 2.5 Northland dollars to the pound.

Calculate how much Exporters Plc. actually gains or loses as a result of the hedging transaction if, at the end of the six months, the pound, in relation to the Northland dollar, has (i) gained 4%, (ii) lost 2% or (iii) remained stable. You may assume that the forward rate of exchange simply reflects the interest differential in the two countries (i.e it reflects the Interest Rate Parity analysis of forward rates).

Solution

First calculate the forward rate of exchange at which the hedging contract is made.

UK company will receive \$500,000 in six months' time.

Assuming an interest rate of 15%, this equates to \$465,116.2 at today's date $(\$500,000 / 1.075)$.

\$465,116.2 at the spot rate of \$2.50 equates to pound 186,046.50

pound 186,046.50 at an interest rate of 12% would be worth pound 197,209.30 in six months' time $(\text{pound } 186,046.50 \times 1.06)$. The forward rate is therefore \$2.5354 $(500,000 / 197,209.30)$.

The effect on Exporters Plc. In the event of the pound moving in different ways over the six months period can now be calculated.

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- (i) If the pound gains 4%, the exchange rate will be \$2.60 (\$2.50 × 1.04). \$500,000 would therefore buy only pound 192,307.70. Hedging has saved the company pound 4,901.60 (pound 197,209.30 – pound 192,307.70).
- (ii) If the pound loses 2%, the exchange rate will be \$2.45 (\$2.50 × 0.98). \$500,000 would therefore buy pound 204,081.60. Hedging has cost the company pound 6,872.30 (pound 204,081.60 – pound 197,209.30).
- (iii) If the pound remains at \$2.50, the transaction would realise pound 200,000. Hedging has therefore cost the company pound 2,790.70 (pound 200,000 – pound 197,209.30).

Illustration 18: Following are the rates quoted at Bombay for British pound:

BP/Rs.	52.60/70	Interest Rates	India	London
3 m Forward	20/70	3 months	8%	5%
6 m Forward	50/75	6 months	10%	8%

Verify whether there is any scope for covered interest arbitrage if you borrow rupees.

Solution

Particulars	Option I (3 mths)	Option II (6mths)
Amount borrowed	100000	100000
Pound obtained by converting at spot rate	100000/52.70	
	100000/52.70	
	= 1897.53	= 1897.53
Invest pound for the period	1.25%	4%
Amount of pound received at the end of the period	1897.53 × 1.0125	1897.53 × 1.0
	= 1,92,125	= 1,97,343
Convert pounds to Rs. At forward rate	1,921.25 × 52.80	1,973.43 × 53.10
	= 1,01,441	= 1,04,789
Amount of Re. Loan to be repaid	100000 × 1.02	100000 × 1.05
	= 102000	= 105000

As the amount of Re. Received is less than the amount repaid there is no scope for covered interest arbitrage.

Illustration 19 : L.B, Inc., is considering a new plant in the Netherlands the plant will cost 26 Million Guilders. Incremental cash flows are expected to be 3 Million Guilders per year for the first 3 years, 4 Million Guilders the next three, 5 Million Guilders in year 7 through 9, and 6 Million Guilders in years 10 through 19, after which the project will terminate with no residual value. The present exchange rate is 1.90 Guilders per \$. The required rate of return on repatriated \$ is 16%.

- a. If the exchange rate stays at 1.90, what is the project net present value?
- b. If the guilder appreciates to 1.84 for years 1-3, to 1.78 for years 4-6, to 1.72 for years 7-9, and to 1.65 for years 10-19, what happens to the net present value?

Solution

(a)	<i>Cash flows (in millions)</i>				
	Years				
	0	1-3	4-6	7-9	10-19
Cash flows (in guilders)	-26.0	3.00	4.00	5.00	6.00
G/\$ exchange rate	1.90	1.90	1.90	1.90	1.90
Cash flows (in \$)	-13.68	1.58	2.11	2.63	3.16
PVF@ 16%	1	2.2459	1.4388	0.9218	1.2709
PV Cash flows (in \$)	-13.68	.3.55	3.03	2.42	4.02

NPV at 16% = -\$0.66 million. The project is not acceptable.

(b)					
Cash flows (in guilders)	-26.00	3.00	4.00	5.00	6.00
G/\$ exchange rate	1.90	1.84	1.78	1.72	1.65
Cash flows (in \$)	-13.68	1.63	2.25	2.91	3.64
PVF@ 16%	1	2.2459	1.4388	0.9218	1.2709
PV 06 Cash Flows (in \$)	-13.68	3.66	3.23	2.68	4.62

NPV at 16% = \$0.51 million. With the guilder appreciating relative to the dollar, cash flows are greater. The project is now acceptable, but not by a wide margin.

Illustration 20 : A Company's international transfer of funds amounts to about \$2 million monthly. : Presently the average transfer time is ten days. It has been proposed that the transfer of funds be turned over to one of the larger international banks, which can reduce the transfer time to an average of two days. A charge of one-half of 1 percent of the volume of transfer has been proposed for this service. In view of the fact that the firm's opportunity cost of funds is 12 percent, should this offer be accepted?

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Solution

\$2,000,000 per month = \$24,000,000 per year.

Time saved = $10 - 2 = 8$ days funds are freed for other uses.

Investing \$24,000,000 at 12% for 8 days: Yield = $24,000,000 (0.12) (8/360) = \$64,000$

% yield = $64,000/24,000,000 = 0.00267$ or 0.267%

Since the firm saves less than 0.3% and the proposed charges is 0.5%, the services would not produce commensurate savings. However, the new transfer time would shorten the exposure of the funds to various risks by an average of 8 days. The firm must decide whether or not this reduction in risk is worth the difference between the proposed fee and the savings due to the shorter transfer time, $0.5\% - 0.267\% = 0.233\%$.

Illustration 21: McDonnoughs Hamburger Company wishes to lend \$500,000 to its Japanese subsidiary. At the same time, Yasufuku Heavy Industries is interested in making a medium-term loan of approximately the same amount to its U.S. subsidiary. The two parties are brought together by an investment bank for the purpose of making parallel loans. McDonnoughs will lend \$500,000 to the U.S. subsidiary of Yasufuku for 4 years at 13 per cent. Principal and interest are payable only at the end of the fourth year with interest compounding annually. Yasufuku will lend the Japanese subsidiary of McDonnoughs 70 million yen for 4 years at 10%. Again the principal and interest (annual compounding) are payable at the end. The current exchange rate is 140 yen to the \$. However, the dollar is expected to decline by 5 yen to the dollar per year over the next 4 years.

- (a) If these expectations prove to be correct, what will be the dollar equivalent of principal and interest payments to Yasufuku at the end of 4 years?
- (b) What total dollars will McDonnoughs receive at the end of 4 years from the payment of principal and interest on its loan by the U.S. subsidiary of Yasufuku?
- (c) Which party is better off with the parallel loan arrangement? What would happen if the yen did not change in value?

Solution

- (a) Principal and interest payment due in yen with annual compounding at 10 percent interest :

$Y70 \text{ million} \times (1.10) = Y102,487,000$. Value of yen at the end of four years is 120 yen to the dollar.

Dollar equivalent of payment = $Y102,487,000 / 120 = \$854,058$

- (b) Principal and interest payment due in dollars with annual compounding at 13 percent interest:

$$\$500,000 \times (1.13) = \$ 815,237$$

- (c) Yasufuku will be better off, as it makes a dollar equivalent loan of \$500,000 and receives the dollar equivalent of \$854,058, whereas McDonnough receives only \$815,237.

If the exchange rate stays at 140 yen to the dollar, the dollar equivalent payment to Yasufuku is $Y102,487,000 / 140 = \$732,050$. McDonnough would be better off.

Assumption : The analysis above does not take account of any difference in credit risk.

14. FORWARD RATE AGREEMENTS

FRAs are cash-settled forward contracts on interest rates traded among major international banks active in the Eurodollar market. An FRA can be viewed as the OTC equivalent of a Eurodollar futures contract. Most FRAs trade for maturities corresponding to standard Eurodollar time deposit maturities, although nonstandard maturities are sometimes traded. Trading in FRAs began in 1983 (Norfield 1992).

Banks use FRAs to fix interest costs on anticipated future deposits or interest revenues on variable-rate loans indexed to LIBOR. A bank that sells an FRA agrees to pay the buyer the increased interest cost on some "notional" principal amount if some specified maturity of LIBOR is above a stipulated "forward rate" on the contract maturity or settlement date. The principal amount of the agreement is termed "notional" because, while it determines the amount of the payment, actual exchange of the principal never takes place. Conversely, the buyer agrees to pay the seller any decrease in interest cost if market interest rates fall below the forward rate. Thus, buying an FRA is comparable to selling, or going short, a Eurodollar or LIBOR futures contract.

The following example illustrates the mechanics of a transaction involving an FRA. Suppose two banks enter into an agreement specifying:

- a forward rate of 5 percent on a Eurodollar deposit with a three-month maturity;
- a \$1 million notional principal; and
- settlement in one month.

Such an agreement is termed a 1x4 FRA because it fixes the interest rate for a deposit to be placed after one month and maturing four months after the date the contract is negotiated. If the three-month LIBOR is 6 percent on the contract settlement date, the seller would owe the buyer the difference between 6 and 5 percent interest on \$1 million for a period of 90 days. Every 1 basis point change in the interest rate payable on a principal of \$1 million for a 90-day maturity changes interest cost by \$25, so that the increase in the interest cost on a three-month Eurodollar deposit over the specified forward rate in this case is $\$25 \times 100$ basis points = \$2,500. But the interest on a Eurodollar deposit is paid upon maturity (at the end of the term of the deposit), whereas FRAs are settled on the contract maturity date (which would correspond to the date the underlying hypothetical deposit would be placed). Therefore, to

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make the cash payment on the FRA equivalent to the extra interest that would have been earned on a Eurodollar deposit paying 6 percent, the \$2,500 difference in interest costs calculated above is discounted back three months using the actual three-month LIBOR prevailing on the settlement date. Thus, if 90-day LIBOR turns out to be 6 percent on the contract maturity date the buyer would receive $\$2,463.05 = \$2,500/[1 + 0.06(90/360)]$.

More generally, final settlement of the amounts owed by the parties to an FRA is determined by the formula

$$\text{Payment} = (N)(\text{LIBOR} - \text{FR})(\text{dtm}/360)/1 + \text{LIBOR}(\text{dtm}/360) ,$$

Where,

N = the notional principal amount of the agreement;

LIBOR = the value of LIBOR for the maturity specified by the contract prevailing on the contract settlement date;

FR = the agreed-upon forward rate; and

dtm = maturity of the forward rate, specified in days.

If $\text{LIBOR} > \text{FR}$ the seller owes the payment to the buyer, and if $\text{LIBOR} < \text{FR}$ the buyer owes the seller the absolute value of the payment amount determined by the above formula.

15. INTEREST RATE SWAPS

A swap is a contractual agreement between two parties to exchange, or "swap," future payment streams based on differences in the returns to different securities or changes in the price of some underlying item. Interest rate swaps constitute the most common type of swap agreement. In an interest rate swap, the parties to the agreement, termed the swap counterparties, agree to exchange payments indexed to two different interest rates. Total payments are determined by the specified notional principal amount of the swap, which is never actually exchanged. Financial intermediaries, such as banks, pension funds, and insurance companies, as well as non-financial firms use interest rate swaps to effectively change the maturity of outstanding debt or that of an interest-bearing asset.

Swaps grew out of parallel loan agreements in which firms exchanged loans denominated in different currencies. Although some swaps were arranged in the late 1970s, the first widely publicized swap took place in 1981 when IBM and the World Bank agreed to exchange interest payments on debt denominated in different currencies, an arrangement known as a currency swap. The first interest rate swap in the world was a 1982 agreement in which the Student Loan Marketing Association (Sallie Mae) of US swapped the interest payments on an issue of intermediate-term, fixed-rate debt for floating-rate payments indexed to the three-month Treasury bill yield. The interest rate swap market has grown rapidly since then.

15.1 SWAP DEALERS

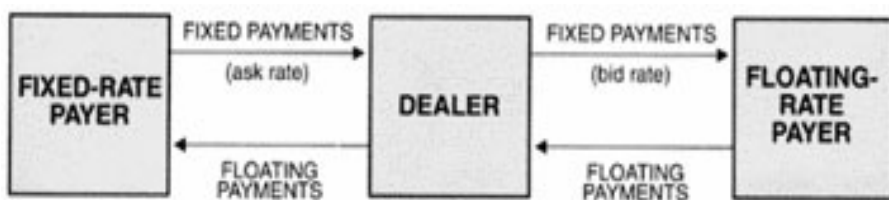
Early interest rate swaps were brokered transactions in which financial intermediaries with customers interested in entering into a swap would seek counterparties for the transaction among their other customers. The intermediary collected a brokerage fee as compensation, but did not maintain a continuing role once the transaction was completed. The contract was between the two ultimate swap users, who exchanged payments directly.

Today the market has evolved into more of a dealer market dominated by large international commercial and investment banks. Dealers act as market makers that stand ready to become counterparty to different swap transactions before a customer for the other side of the transaction is located. A swap dealer intermediates cash flows between different customers, or "end users," becoming a middleman to each transaction. The dealer market structure relieves end users from the need to monitor the financial condition of many different swap counterparties. Because dealers act as middlemen, end users need only be concerned with the financial condition of the dealer, and not with the creditworthiness of the other ultimate end user of the instrument.

Figure 1 illustrates the flow of payments between two swap end users through a swap dealer. Unlike brokers, dealers in the over-the-counter market do not charge a commission. Instead, they quote two-way "bid" and "asked" prices at which they stand ready to act as counterparty to their customers in a derivative instrument. The quoted spread between bid and asked prices allows an intermediary to receive a higher payment from one counterparty than is paid to the other.

FIGURE 1

The Dealer Market for Interest Rate Swaps



15.2 SWAP MARKET CONVENTIONS

There are many different variants of interest rate swaps. The most common is the fixed/floating swap in which a fixed-rate payer makes payments based on a long-term interest rate to a floating-rate payer, who, in turn, makes payments indexed to a short-term money market rate to the fixed-rate payer. A fixed/floating swap is characterized by:

- a fixed interest rate;
- a variable or floating interest rate which is periodically reset;
- a notional principal amount upon which total interest payments are based; and

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- the term of the agreement, including a schedule of interest rate reset dates (that is, dates when the value of the interest rate used to determine floating-rate payments is determined) and payment dates.

The fixed interest rate typically is based on the prevailing market interest rate for Treasury securities with a maturity corresponding to the term of the swap agreement. The floating rate is most often indexed to three- or six-month LIBOR, in which case the swap is termed a "generic" or "plain vanilla" swap, but can be indexed to almost any money market rate such as the Treasury bill, commercial paper, federal funds, or prime interest rate. The maturity, or "tenor," of a fixed/floating interest rate swap can vary between 1 and 15 years. By convention, a fixed-rate payer is designated as the buyer and is said to be long the swap, while the floating-rate payer is the seller and is characterized as short the swap.

15.3 TIMING OF PAYMENTS

A swap is negotiated on its "trade date" and takes effect two days later on its initial "settlement date." If the agreement requires the exchange of cash at the outset, as in the case of a "no-par" swap, the transaction takes place on the initial settlement date. Interest begins accruing on the "effective date" of the swap, which usually coincides with the initial settlement date. (Forward swaps, in which the effective date of the swap is deferred, are an exception to this rule.) Floating-rate payments are adjusted on periodic "reset dates" based on the prevailing market-determined value of the floating-rate index, with subsequent payments made on a sequence of payment dates (also known as settlement dates) specified by the agreement. Typically, the reset frequency for the floating-rate index is the term of the interest rate index itself. For example, the floating rate on a generic swap indexed to the six-month LIBOR would, in most cases, be reset every six months with payment dates following six months later. The floating rate can be reset more frequently, however, as in the case of swaps indexed to Treasury bill rates, which are reset weekly.

Fixed interest payment intervals can be three months, six months, or one year. Semiannual payment intervals are most common because they coincide with the intervals between interest payments on Treasury bonds. Floating-rate payment intervals need not coincide with fixed-rate payment intervals, although they often do. When payment intervals coincide, it is common practice to exchange only the net difference between the fixed and floating payments.

15.4 PRICE QUOTATION

The price of a fixed/floating swap is quoted in two parts: a fixed interest rate and an index upon which the floating interest rate is based. The floating rate can be based on an index of short-term market rates (such as a given maturity of LIBOR) plus or minus a given margin, or set to the index "flat"—that is, the floating interest rate index itself with no margin added. The convention in the swap market is to quote the fixed interest rate as an

All-In-Cost (AIC), which means that the fixed interest rate is quoted relative to a flat floating-rate index.

The AIC typically is quoted as a spread over Treasury securities with a maturity corresponding to the term of the swap. For example, a swap dealer might quote a price on a three-year generic swap at an All-In-Cost of "72-76 flat," which means the dealer stands ready to "buy" the swap (that is, enter into the swap as a fixed-rate payer) at 72 basis points over the prevailing three-year interest rate on Treasuries while receiving floating-rate payments indexed to a specified maturity of LIBOR with no margin, and "sell" (receive fixed and pay floating) if the other party to the swap agrees to pay 76 basis points over Treasury securities. Bid-asked spreads in the swap market vary greatly depending on the type of agreement. The spread can be as low as 3 to 4 basis points for a two- or three-year generic swap, while spreads for nonstandard, custom-tailored swaps tend to be much higher.

15.5 THE GENERIC SWAP

As an illustration of the mechanics of a simple interest rate swap, consider the example of a generic swap. Fixed interest payments on a generic swap typically are based on a 30/360 day-count convention, meaning that they are calculated assuming each month has 30 days and the quoted interest rate is based on a 360-day year. Given an All-In-Cost of the swap, the semiannual fixed-rate payment would be:

$$(N)(AIC)(180/360),$$

Where,

N denotes the notional principal amount of the agreement.

Floating-rate payments are based on an actual/360-day count, meaning that interest payments are calculated using the actual number of days elapsed since the previous payment date, based on a 360-day year. Let d_t denote the number of days since the last settlement date. Then, the floating-rate payment is determined by the formula:

$$(N)(LIBOR)(d_t/360).$$

Illustration 13: To illustrate, suppose a dealer quotes an All-In-Cost for a generic swap at 10 percent against six-month LIBOR flat. If the notional principal amount of the swap is \$1 million, then the semiannual fixed payment would be

$$\$50,000 = (\$1,000,000) (0.10) (180/360).$$

Suppose that the six-month period from the effective date of the swap to the first payment date (sometimes also termed a settlement date) comprises 181 days and that the corresponding LIBOR was 8 percent on the swap's effective date. Then, the first floating-rate payment would be

$$\$40,222.22 = (\$1,000,000) (0.08) (181/360).$$

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Often a swap agreement will call for only the net amount of the promised payments to be exchanged. In this example, the fixed-rate payer would pay the floating-rate payer a net amount of

$$\$9,777.78 = \$50,000.00 - \$40,222.22.$$

A payment frequency "mismatch" occurs when the floating-rate payment frequency does not match the scheduled frequency of the fixed-rate payment. Mismatches typically arise in the case of swaps that base floating-rate payments on maturities shorter than the six-month payment frequency common for fixed-rate payments.

15.6 DAY-COUNT CONVENTIONS

A wide variety of day-count conventions are used in the swap market. Fixed payments can be quoted either on an actual/365 (bond equivalent) basis or on an actual/360 basis. Floating-rate payments indexed to private-sector interest rates typically follow an actual/360 day-count convention commonly used in the money market. Floating-rate payments tied to Treasury bill rates are calculated on an actual/365 basis, however.

15.6 NON-GENERIC SWAPS

An interest rate swap that specifies an exchange of payments based on the difference between two different variable rates is known as a "basis swap." For example, a basis swap might specify the exchange of payments based on the difference between LIBOR and the prime rate. Other interest rate swaps include the forward swap, in which the effective date of the swap is deferred; the swaption, which is an option on an interest rate swap; and puttable and callable swaps, in which one party has the right to cancel the swap at certain times. This list is far from exhaustive—many other types of interest rate swaps are currently traded, and the number grows with each year.

15.7 SWAP VALUATION

Interest rate swaps can be viewed as implicit mutual lending arrangements. A party to an interest rate swap implicitly holds a long position in one type of interest-bearing security and a short position in another. Swap valuation techniques utilize this fact to reduce the problem of pricing an interest rate swap to a straightforward problem of pricing two underlying hypothetical securities having a redemption or face value equal to the notional principal amount of the swap. The method used to value a fixed/floating swap is outlined below:

15.8 PARTITIONING A SWAP

A fixed/floating swap can be partitioned into (1) a bond paying a fixed coupon and (2) a variable-rate note with payments tied to the variable-rate index. Let $S(0, T)$ denote the value of a T -period swap on its initial settlement date (date 0), $B(0, T)$ the value of a hypothetical T -period fixed-rate bond paying a coupon equal to the fixed-rate payments specified by the agreement, and $V(0, T)$ the value of a variable-rate note maturing at date

T. Assuming that the face or redemption value of both hypothetical securities is equal to the notional principal amount of the swap, the value of the swap to a fixed-rate payer can be expressed as

$$S(0,T) = V(0,T) - B(0,T).$$

(a) Pricing the Variable-Rate Note: A variable-rate note whose payments are indexed to market interest rates is valued at par upon issuance and just after each interest payment is made. Thus, assuming that payment dates coincide with interest rate reset dates, the value of the hypothetical variable-rate note $V(0, T)$ will just equal the notional principal amount of the swap on every reset date. On any other date the value of a variable-rate note—exclusive of accrued interest—is just the present value of the next known interest payment plus the present value of the face value of the note, the latter amount representing the value of all remaining payments on the note as of the next settlement date.

(b) Pricing the Fixed Rate Note: The hypothetical fixed-rate note $B(0, T)$ can be priced using standard bond valuation techniques. The convention in swap markets is to quote the AIC as a semiannual bond-equivalent rate. The formula for valuing a bond paying semiannual fixed coupon payments is

$$B(0, T) = \sum_{t=0}^{2T} [(C/2)/(1 + y/2)^t] + [N/(1 + y)^T],$$

Where,

C is the annual coupon payment,

T the number of years to maturity,

N the principal or face value, and

y the yield-to-maturity of the bond.

By definition, the All-In-Cost of a fixed/floating swap is the yield to maturity that just makes the value of the hypothetical fixed-rate bond equal to the notional principal amount of the swap. The annual coupon payment for this hypothetical bond is determined by the AIC and the notional principal amount of the agreement:

$$C = (AIC/100)(N),$$

Where,

AIC is expressed as a percentage rate.

It is easy to see that the value of the hypothetical bond implicit in this fixed/floating swap will be par (the notional principal amount of the swap) when

$$y = AIC/100.$$

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15.9 NON-PAR SWAPS

In most cases swaps are priced so that the initial value of the agreement is zero to both counterparties; that is, so that the value of both hypothetical component securities is just equal to the notional principal amount of the swap. Occasionally, however, a swap may be priced such that one party owes money to the other at initial settlement, resulting in a "non par" swap. Non par swaps are used to offset existing positions in swaps entered into in previous periods where interest rates have changed since the original swap was negotiated, or in cases where a given cash flow needs to be matched exactly. Valuation methods for non par swaps are somewhat more involved than the simple case discussed above.

15.10 THE EFFECT OF CHANGES IN MARKET INTEREST RATES ON SWAP VALUES

A change in market interest rates affects the value of a fixed/floating swap in much the same way that it affects the value of a corporate bond with a comparable maturity. To see why, note that a change in market interest rates will have no effect on the value of the hypothetical variable-rate note implicit in a fixed/floating swap on interest rate reset dates. Therefore, on reset dates a change in market interest rates will affect the value of the swap only through its effect on the value of the hypothetical fixed-rate bond. Since an increase in interest rates lowers the value of the bond, it increases the value of the swap position for a fixed-rate payer to the same degree it would increase the value of a short position in a fixed-rate bond.

Between interest rate reset dates the amount of the next payment due on the variable-rate note is predetermined. Thus, a change in market interest rates affects the values of both the hypothetical variable-rate note and the hypothetical fixed-rate bond. The change in the value of the variable-rate note partially offsets the change in the value of the fixed-rate note in this case. As a general rule the price behavior of a fixed/floating interest rate swap will approximate the price behavior of a fixed-rate note with a maturity equal to the term of the swap less the maturity of the variable interest rate. For example, a two-year generic swap indexed to six-month LIBOR will approximate the behavior of a fixed-rate bond with a term to maturity of between 18 and 24 months, depending on the amount of time since the last interest rate reset date.

The value of a fixed/floating swap generally changes over time when the term structure of interest rates is upward-sloping. Only when the term structure is flat and market interest rates remain unchanged will the value of an interest rate swap remain unchanged over the life of the agreement.

16. SWAPTIONS

Interest rate swaps (IRSs) have been widely used by the larger corporate for some time as an efficient off-balance sheet method to manage interest rate exposure arising from their assets and liabilities. For example, a floating-rate borrower who expects a rise in

interest rates can swap his floating rate obligation to a fixed rate obligation, thus locking in his future cost. Should he subsequently decide that rates have peaked, and that the trend is reversing, the interest obligation could be swapped back to a floating rate basis, thereby gaining advantage from the anticipated fall in rates?

By now, the more seasoned users will be fairly acquainted with these instruments.

Swaptions first came into vogue in the mid-1980s in the US on the back of structured bonds tagged with a callable option issued by borrowers. With a callable bond, a borrower issues a fixed-rate bond which he may call at par from the investor at a specific date(s) in the future. In return for the issuer having the right to call the bond issue at par, investors are offered an enhanced yield. Bond issuers often issue an IRS in conjunction with the bond issue in order to change their interest profile from fixed to floating. Swaptions are then required by the issuer as protection to terminate all or part of the original IRS in the event of the bonds being put or called.

In addition to providing protection on a callable bond issue, it is found that swaptions can be useful to achieve a particular overall interest rate or yield on a borrowing.

An interest rate swaption is simply an option on an interest rate swap. It gives the holder the right but not the obligation to enter into an interest rate swap at a specific date in the future, at a particular fixed rate and for a specified term. For an up-front fee (premium), the customer selects the strike rate (the level at which it enters the interest rate swap agreement), the length of the option period, the floating rate index (Prime, LIBOR, C.P.), and tenor.

The buyer and seller of the swaption agree on the strike rate, length of the option period (which usually ends on the starting date of the swap if swaption is exercised), the term of the swap, notional amount, amortization, and frequency of settlement. A swaption gives the buyer the right but not the obligation to pay (receive) a fixed rate on a given date and receive (pay) a floating rate index. 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. If the strike rate of the swap is more favorable than the prevailing market swap rate then the swaption will be exercised and counterparties enter into an interest rate swap as detailed in the swaption agreement. Unlike ordinary swaps, a swaption not only hedges the buyer against downside risk, it 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.

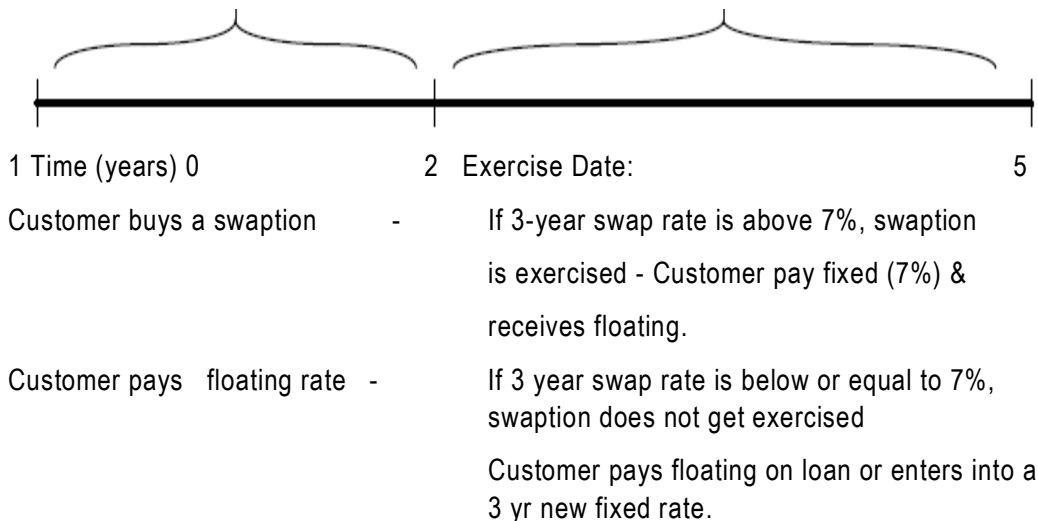
Swaptions fall into three main categories, depending upon the exercise rights of the buyer:

- a) European Swaptions give the buyer the right to exercise only on the maturity date of the option.

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- b) American Swaptions, on the other hand, give the buyer the right to exercise at any time during the option period.
- c) Bermudan Swaptions give the buyer the right to exercise on specific dates during the option period.

A customer has a \$10MM obligation due in 5 years on a non-amortizing loan with XYZ bank, paying 3 mth. LIBOR + 200 bps. LIBOR is currently at 5.75%. The company is exposed to the risk of fluctuating interest rates. The customer has reason to believe that LIBOR will stay low for the next two years. After the two years time period however, the outlook is at best uncertain. The customer would like to hedge this risk but is not sure if the current swap rate is the best available. The customer wants to lock in the swap rate in two years time for the following three years and have the flexibility to benefit from a lower swap rate should swap rates fall. This is achieved by buying a 2 year option on a 3 year pay fixed 7% swap. The decision that the customer will have to face in two years is illustrated below:



Swaptions can be priced on several indices in international market, with different interest calculation bases:

<u>Index</u>	<u>Days Basis</u>	<u>Terms</u>
Prime	Actual/360	1 - 10 Yrs. *.
LIBOR	Actual/360	
PSA/BMA	Actual/365	*On an exception
CP	Actual/360 or Actual/365	basis past 10
US Treasuries	Actual/365	Years

16.1 PRINCIPAL FEATURES OF SWAPTIONS

A swaption is effectively an option on a forward-start IRS, where exact terms such as the fixed rate of interest, the floating reference interest rate and the tenor of the IRS are established upon conclusion of the swaption contract. A 3-month into 5-year swaption would therefore be seen as an option to enter into a 5-year IRS, 3 months from now. It is also important for the calculation of the premium, whether the swaption is a fixed 'payer' or a 'receiver' type. A fixed-rate payer swaption gives the buyer of the option the opportunity to lock into a fixed rate through an IRS on an agreed future date. Such a swaption can therefore be seen as a call option on a forward swap rate.

The 'option period' refers to the time which elapses between the transaction date and the expiry date. The fixed rate of interest on the swaption is called the strike rate. The simplest type of swaption available is an option to pay or receive fixed-rate money against receiving or paying floating-rate money. As with caps and floors, the swaption has all the similarities, properties and characteristics of any conventional option. They are usually European style options. As such, at maturity of the swaption, one can decide whether to exercise the swap or to let the swaption lapse unexercised - all rights incurred by the holder will then terminate.

The underlying instrument on which a swaption is based is a forward-start IRS. An IRS is an agreement between two parties to exchange a series of future cash flows and are economically equivalent to a back-to-back offsetting loan and deposit arrangement where interest payments on the one leg are based on a fixed rate whilst interest payments on the remaining leg are based on a floating-reference interest rate. IRSs are treated as off-balance sheet instruments, as they do not represent an agreement to borrow or lend money.

The buyer of a payer/receiver swaption pays a premium for the right but not the obligation to pay/receive the fixed rate and receive/pay the floating rate of interest on a forward-start IRS. The swaption premium is expressed as basis points. These basis points are applied to the nominal principal of the forward-start IRS. A borrower would amortise the premium over the life of the option if the swaption is entered into for the reasons of hedging an underlying borrowing.

Swaptions can be cash-settled; therefore at expiry they are marked to market off the applicable forward curve at that time and the difference is settled in cash. Marking to market of a swaption depends on the strike rate of the swap and the relationship of the strike price to the underlying, where the underlying is the forward start IRS. The intrinsic value would therefore be related to a swap with a start date that coincides with the expiry date of the option. If forward swap rates fall, a fixed-rate receiver swaption will increase in value in marking such a swaption to market, and a fixed-rate payer swaption will decrease in value. In the event of the swaption being cash-settled, the counterparties end up without actually transacting an IRS with each other - the advantage here being an

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effective management of credit limits. The inherent credit element of swaption pricing can therefore be lessened to a certain extent.

16.2 PRICING OF SWAPTIONS

The full methodology of setting up the correct mathematical formulas for pricing swaptions, falls outside the ambit of most corporate treasurers' responsibility and will therefore only be touched upon briefly here. Suffice it to say that the pricing methodology depends on setting up a model of the probability distribution of the forward zero-coupon curve at the time of pricing and imposing that model on the forward-start IRSs' cash flow structure, with the aim of obtaining a probability distribution of the net present value of the cash flows. The zero-coupon curve is assumed to undergo a Markov process (which is a distinct class of stochastic process). A stochastic process literally means 'guessable' and can be described as a process which involves a random variable in which the successive values are inter-dependent in some way. The probability distribution of the forward curve depends amongst other factors on the swaption maturity, the appropriate interest rate for that period, the current forward curve and the implied volatility (the assumed rate of change of the curve). The present value of the forward swap will also obviously depend on the individual cash flows pertaining to the underlying structure of the swap, either accreting or amortising or both, on which the swaption is based. The probability distribution of the forward curve can be modelled by using a binomial numerical model, which uses binomial trees. Alternatively, it can be structured by modelling the stochastic process through one of a number of mathematical models, such as the Black and Scholes model.

The market standard tool for pricing swaptions is to simulate the route taken by the modified Black model. This is because of its ease of use and market acceptance. However, the modified Black formula has been subject to extensive criticism from various sources over the years. The more prominent shortcomings illuminated by these authors entail that the particular model looks at the underlying IRS simply as a forward rate; it does not encapsulate the structure of the swap, such as maturity, coupon frequency, etc. Indeed, the more complicated cash flow structures such as rollercoaster or accreting swaps will almost certainly yield incorrect results. In addition, it is shown to be theoretically imperfect, because of the fact that the modified Black model only allows for one stochastic. It also uses a fixed-yield curve, whereas swap traders know that the curve undergoes a stochastic process. Newer models, such as the Ho-Lee, Heath-Jarrow-Merton and Hull-White models, are called arbitrage-free models and are designed to avoid arbitrage possibilities due to changes in the yield curve. Some of the newer models also make the volatility itself a stochastic term.

16.3 CAPS AND FLOORS VERSUS SWAPTIONS

For caps/floors, the relevant stochastic variable is the implied forward rate for each time bucket. Comparatively, the underlying stochastic variable for swaptions would be the

forward-starting swap. It is also important to note that a swaption will actually only have one date of exercise compared to a cap (which is essentially a series of separate call options on forward rates). Although the cash flow dates will be similar, each caplet in a cap should be treated independently. Once a swaption is exercised, all the cash flows on the underlying IRS of the swaption will occur. There is consequently quite a big difference between a 2-year cap on 3-month instrument (a total of 7 options) and a 3-month swaption on an 18-month forward-start IRS (only a single option). This difference is reflected in the fact that swaptions attract a lower premium.

Where swaptions are used to hedge a borrowing, it would appear at first glance that the cost of the premium of swaptions would cancel any benefit. This would be the case if the hedge were priced entirely off the forward curve, as is the case when caps are used. The volatility element in the cap premium is determined by taking into account the consideration of each time bucket. As pointed out, a swaption is however an option on a forward start IRS. The volatility curve is therefore drawn around the swap and not the forward curve. The swap curve will always be below the forward curve as long as the two curves are positive. This relationship results from the fact that the swap rate is the one fixed rate that causes the sum of the net present values of the fixed cash flows to equal the sum of the net present values of the floating flows.

Another difference between the instruments is the fact that once a swaption is exercised, the holder has entered into a swap. This swap will have been entered into at a favourable rate, but the holder can still lose money if the rates move against him. When a cap is exercised, the holder can never lose money.

16.4 USES OF SWAPTIONS

Swaptions can be applied in a variety of ways for both active traders as well as for corporate treasurers. Swap traders can use them for speculation purposes or to hedge a portion of their swap books. The attraction of swaptions for corporate treasurers is that the forward element in all swaptions provides the attractions of the forward-start swap, and to the owner of the put or call, also the flexibility to exercise or not, as may be considered appropriate. It is therefore a valuable tool when a borrower has decided to do a swap but is not sure of the timing.

Swaptions have become useful tools for hedging embedded optionality which is common to the natural course of many businesses. Certainly, embedded optionality is present whenever products are sold on a 'sale-and-leaseback' basis, where the counterparty to a lease contract has the right to either to extend a lease for a five-year period or terminate a lease after an initial five-year period. The leasing company may be exposed where the lease income is less than the cost of funding the asset which is being leased. By entering into a 5-year swaption, the leasing company is able to protect itself against the lessee exercising their option to extend the lease.

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If the lessee decides not to extend, the swap will remain unexercised. A huge advantage of the swaption is that the leasing company could potentially still benefit from entering into a swaption originally if the forward swap rates have moved in his favour during the option period. In any event, the leasing company has immunised itself against loss and bought itself reasonable flexibility, whilst only paying the premium at the start.

Swaptions are useful to borrowers targeting an acceptable borrowing rate. By paying an upfront premium, a holder of a payer's swaption can guarantee to pay a maximum fixed rate on a swap, thereby hedging his floating-rate borrowings. The borrower is therefore allowed to remain in low floating-rate funds while at the same time being assured of protection should rates increase expectedly (i.e. when the yield curve is positive) or unexpectedly (i.e. when the yield curve is flat or negative).

Swaptions are also useful to those businesses tendering for contracts. Businesses need to settle the question whether to commit to borrowings in the future in their own currency in terms of a tender on a future project. A business would certainly find it useful to bid on a project with full knowledge of the borrowing rate should the contract be won.

Swaptions also provide protection on callable/puttable bond issues. Also, the perception of the value of the embedded call inherent in a callable bond issue often differs between investors and professional option traders, therefore allowing arbitrage. A callable bond issue effectively endows the borrower with an embedded receiver's swaption, which he can sell to a bank and use the premium to reduce his cost of funds. The more innovative borrowers can use this arbitrage opportunity to their advantage in order to bring down their funding cost.

16.5 CONCLUSION

Swaptions can be used as an effective tool to swap into or out of fixed-rate or floating-rate interest obligations, according to a treasurer's expectation on interest rates. Swaptions can certainly also be used for protection if a particular view on the future direction of interest rates turned out to be incorrect. Evidently, treasurers with a target interest rate different from current levels could find swaptions complementary to their range of useful interest rate hedging instruments.

Using swaptions in this way should not be seen as 'gambling'. A treasurer who does not make use of hedging tools such as swaptions, when they are available, should rather be seen as gambling if he leaves his company exposed to future unpredictable movements in interest rates. Unfortunately for them, treasurers are no longer able to hide behind excuses such as 'volatile interest rates' when taken to task for high borrowing costs. In fact, treasurers can prudently manage interest costs by using swaptions.

17. INTEREST RATE CAPS

The buyer of an interest rate cap pays the seller a premium in return for the right to receive the difference in the interest cost on some notional principal amount any time a

specified index of market interest rates rises above a stipulated "cap rate." The buyer bears no obligation or liability if interest rates fall below the cap rate, however. Thus, a cap resembles an option in that it represents a right rather than an obligation to the buyer.

Caps evolved from interest rate guarantees that fixed a maximum level of interest payable on floating-rate loans. The advent of trading in over-the-counter interest rate caps dates back to 1985, when banks began to strip such guarantees from floating-rate notes to sell to the market. The leveraged buyout boom of the 1980s spurred the evolution of the market for interest rate caps. Firms engaged in leveraged buyouts typically took on large quantities of short-term debt, which made them vulnerable to financial distress in the event of a rise in interest rates. As a result, lenders began requiring such borrowers to buy interest-rate caps to reduce the risk of financial distress. More recently, trading activity in interest rate caps has declined as the number of new leveraged buyouts has fallen. An interest rate cap is characterized by:

- a notional principal amount upon which interest payments are based;
- an interest rate index, typically some specified maturity of LIBOR;
- a cap rate, which is equivalent to a strike or exercise price on an option; and
- the period of the agreement, including payment dates and interest rate reset dates.

Payment schedules for interest rate caps follow conventions in the interest rate swap market. Payment amounts are determined by the value of the index rate on a series of interest rate reset dates. Intervals between interest rate reset dates and scheduled payment dates typically coincide with the term of the interest rate index. Thus, interest rate reset dates for a cap indexed to six-month LIBOR would occur every six months with payments due six months later. Cap buyers typically schedule interest rate reset and payment intervals to coincide with interest payments on outstanding variable-rate debt. Interest rate caps cover periods ranging from one to ten years with interest rate reset and payment dates most commonly set either three or six months apart.

If the specified market index is above the cap rate, the seller pays the buyer the difference in interest cost on the next payment date. The amount of the payment is determined by the formula

$$(N) \max(0, r - r_c)(d_t / 360),$$

where N is the notional principal amount of the agreement, r_c is the cap rate (expressed as a decimal), and d_t is the number of days from the interest rate reset date to the payment date. Interest rates quoted in cap agreements follow money market day-count conventions, so that payment calculations assume a 360-day year.

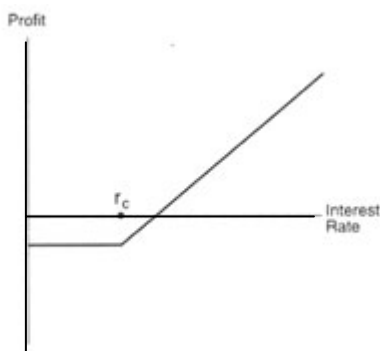
Figure 2 depicts the payoff to the buyer of a one-period interest rate cap. If the index rate is above the cap rate, the buyer receives a payment of $(N)(r - r_c)(d_t / 360)$, which is equivalent to the payoff from buying an FRA.¹ Otherwise, the buyer receives no payment

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and loses the premium paid for the cap. Thus, a cap effectively gives its buyer the right, but not the obligation, to buy an FRA with a forward rate equal to the cap rate. Such an agreement is known as a call option. A one-period cap can be viewed as a European call option on an FRA with a strike price equal to the cap rate r_c .² More generally, multi-period Caps, which specify a series of future interest rate reset and payment dates, can be viewed as a bundle of European call options on a sequence of FRAs.

FIGURE 2

The Payoff to Buying a One-Period Interest Rate Cap



¹ One difference between the payoff to an FRA and the payoff to an in-the-money cap is that an FRA pays the present value of the change in interest payable on the notional principal at settlement (which corresponds to the reset date of a cap), while payments on caps are deferred. The value of the payment has the same present value in both cases, however, so that the comparison between the payoff to a cap and a call option on an FRA remains accurate.

² A European option can be exercised only on its expiration date. Similarly, a cap buyer can only "exercise" his option if the index rate is above the cap rate on the interest rate reset date, so that the interest rate reset date corresponds to the expiration date on a European-style option.

Illustration 14: Consider the example of a one-year interest rate cap that specifies a notional principal amount of \$1 million and a six-month LIBOR cap rate of 5 percent. Assume the agreement covers a period starting January 15 through the following January 15 with the interest rate to be reset on July 15. The first period of a cap agreement typically is excluded from the agreement, so the cap buyer in this example will be entitled to a payment only if the six-month LIBOR exceeds 5 percent on the July 15 interest rate reset date. Suppose that six-month LIBOR is 5.5 percent on July 15. Then, on the following January 15 (184 days after the July 15 reset date) the seller will owe the buyer $\$2,555.56 = (\$1,000,000)(0.055 - 0.050)(184/360)$.

17.1 COMPARISON OF CAPS AND FUTURES OPTIONS

A one-period cap can be compared to a put option on a Eurodollar futures contract. To see why, note that the payoff at expiration to a put option on Eurodollar futures is

$$(N) \max(0, K - F)(90/360),$$

Where,

N is the notional principal amount of the agreement (\$1 million for a Eurodollar futures option),

K is the strike price, and

F is the price of the underlying futures contract.

The price index used for Eurodollar futures can be written as $F = 100 - r$, where r is the three-month LIBOR implied by the futures price. Now, write $K = 100 - r_k$, where r_k is the futures interest rate implied by the strike price K . Then, the payoff at expiration to a Eurodollar futures option can be expressed as

$$(N) \max[0, 100 - r_k - (100 - r)](90/360) = (N) \max(0, r - r_k)(90/360).$$

Where,

N is the notional principal amount of the agreement,

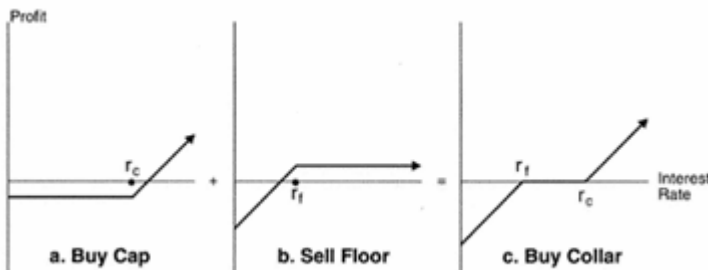
r_c is the cap rate, r_f is the floor rate, and

d_t is the term of the index in days.

Figure 3 illustrates the payoff to buying a one-period zero-cost interest rate collar. If the index interest rate r is less than the floor rate r_f on the interest rate reset date, the floor is in-the-money and the collar buyer (who has sold a floor) must pay the collar counterparty an amount equal to $(N)(r_f - r)(d_t/360)$. When r is greater than r_f but less than the cap rate r_c , both the floor and the cap are out-of-the-money and no payments are exchanged. Finally, when the index is above the cap rate the cap is in-the-money and the buyer receives $(N)(r - r_c)(d_t/360)$.

FIGURE 3

The Payoff to Buying a One-Period, Zero-Cost Collar



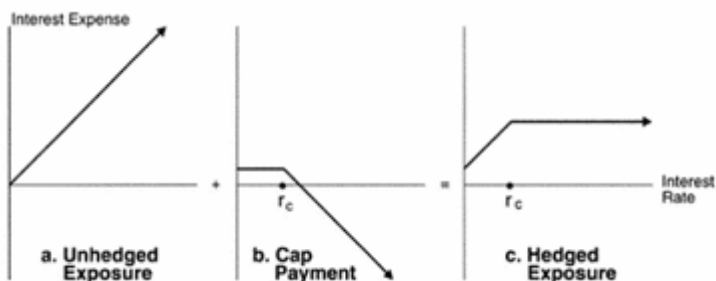
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Figure 4 illustrates a special case of a zero-cost collar that results from the simultaneous purchase of a one-period cap and sale of a one-period floor when the cap and floor rates are equal. In this case the combined transaction replicates the payoff of an FRA with a forward interest rate equal to the cap/floor rate. This result is a consequence of a property of option prices known as put-call parity.

More generally, the purchase of a cap and sale of a floor with the same notional principle, index rate, strike price, and reset dates produces the same payout stream as an interest rate swap with an All-In-Cost equal to the cap or if the index interest rate rises above the floor rate, so the most a buyer can lose is the premium paid to the seller at the outset of the agreement.

FIGURE 4

The Effect of Buying a Cap on Interest Expense



The payment received by the buyer of an interest rate floor is determined by the formula

$$(N) \max(0, r_f - r)(d_i/360),$$

Where,

N is the notional principal amount of the agreement,

r_f is the floor rate or strike price, and

d_i is the number of days from the last interest rate reset date to the payment date.

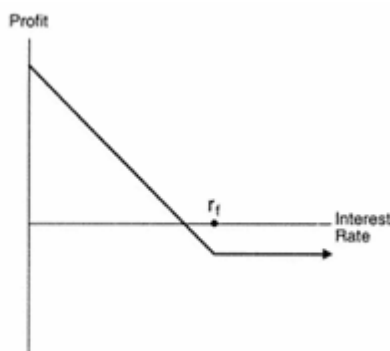
Figure 5 depicts the payoff to a one-period floor as a function of the value of the underlying index rate. If the index rate is below the floor rate on the interest rate reset date the buyer receives a payment of $(N)(r_f - r)(d_i/360)$, which is equivalent to the payoff from selling an FRA at a forward rate of r_f . On the other hand, if the index rate is above the floor rate the buyer receives no payment and loses the premium paid to the seller. Thus, a floor effectively gives the buyer the right, but not the obligation, to sell an FRA, which makes it equivalent to a European put option on an FRA. More generally, a multi-period floor can be viewed as a bundle of European-style put options on a sequence of FRAs maturing on a succession of future maturity dates.

17.2 COMPARISON OF FLOORS AND FUTURES OPTIONS

Purchasing a one-period interest rate floor yields a payoff closely resembling that of a long Eurodollar futures call option. The payoff to a call option on a Eurodollar futures contract is $(N) \max(0, F - K)(90/360)$,

FIGURE 5

The Payoff to Buying a One-Period Interest Rate Floor



Where,

$F = 100 - r$ is the index price of the underlying futures contract, and

K is the strike price.

As before, write $K = 100 - r_k$. Then, the payoff to a Eurodollar futures call option can be expressed in terms of the underlying interest rate as

$$(N) \max(0, r_k - r)(90/360),$$

which is the same as the payoff to a one-period interest rate floor indexed to 90-day LIBOR with a floor rate equal to r_k . The one noteworthy difference between the two instruments is that a Eurodollar futures option can be exercised at any time, while a floor resembles a European option that can only be exercised on its expiration date. Like caps, interest rate floors settle in arrears, whereas a futures option settles on its expiration date.

18. INTEREST RATE COLLARS

The buyer of an interest rate collar purchases an interest rate cap while selling a floor indexed to the same interest rate. Borrowers with variable-rate loans buy collars to limit effective borrowing rates to a range of interest rates between some maximum, determined by the cap rate, and a minimum, which is fixed by the floor strike price; hence, the term "collar." Although buying a collar limits a borrower's ability to benefit from a significant decline in market interest rates, it has the advantage of being less expensive than buying a cap alone because the borrower earns premium income from the sale of the floor that

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offsets the cost of the cap. A zero-cost collar results when the premium earned by selling a floor exactly offsets the cap premium.

The amount of the payment due to or owed by a buyer of an interest rate collar is determined by the expression

$$(N)[\max(0, r - r_c) - \max(0, r_f - r)](d_t / 360),$$

Where,

N is the notional principal amount of the agreement,

r_c is the cap rate, r_f is the floor rate, and

d_t is the term of the index in days.

Figure 6 illustrates the payoff to buying a one-period zero-cost interest rate collar. If the index interest rate r is less than the floor rate r_f on the interest rate reset date, the floor is in-the-money and the collar buyer (who has sold a floor) must pay the collar counterparty an amount equal to $(N)(r_f - r)(d_t/360)$. When r is greater than r_f but less than the cap rate r_c , both the floor and the cap are out-of-the-money and no payments are exchanged. Finally, when the index is above the cap rate the cap is in-the-money and the buyer receives $(N)(r - r_c)(d_t/360)$.

FIGURE 6

The Payoff to Buying a One-Period, Zero-Cost Collar

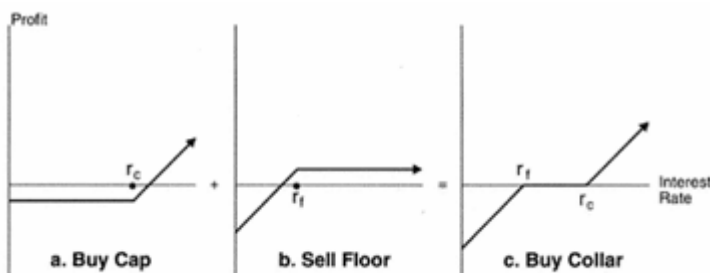


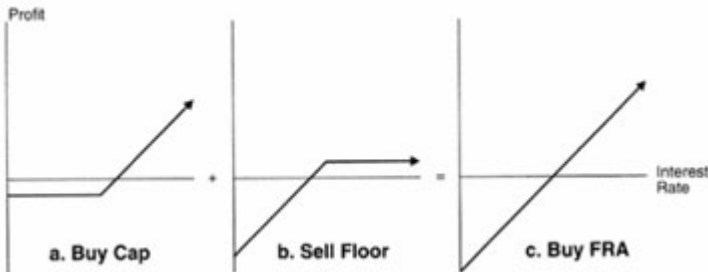
Figure 7 illustrates a special case of a zero-cost collar that results from the simultaneous purchase of a one-period cap and sale of a one-period floor when the cap and floor rates are equal. In this case the combined transaction replicates the payoff of an FRA with a forward interest rate equal to the cap/floor rate. This result is a consequence of a property of option prices known as put-call parity.

More generally, the purchase of a cap and sale of a floor with the same notional principle, index rate, strike price, and reset dates produces the same payout stream as an interest rate swap with an All-In-Cost equal to the cap or floor rate. Since caps and floors can be viewed as a sequence of European call and put options on FRAs, buying a cap and selling a floor with the

same strike price and interest rate reset and payment dates effectively creates a sequence of FRAs, all with the same forward rate. But note that an interest rate swap can be viewed as a sequence of FRAs, each with a forward rate equal to the All-In-Cost of the swap. Therefore, put-call parity implies that buying a cap and selling a floor with the same contract specifications results in the same payment stream that would be obtained by buying an interest rate swap.

FIGURE 7

Put-Call Parity



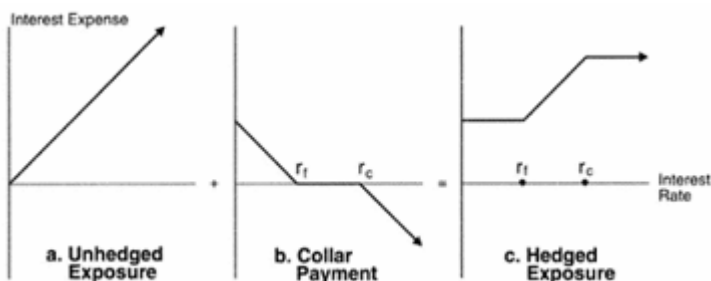
In recent years dealers in the OTC derivatives market have shown a great deal of ingenuity in devising new hybrid instruments yielding an almost endless variety of payout patterns.

18.1 HEDGING USES OF INTEREST RATE COLLARS

Figure 8 illustrates the effect that buying a one-period, zero-cost collar has on the exposure to changes in market interest rates faced by a firm with outstanding variable-rate debt. The first panel depicts the firm's inherent or unhedged interest exposure, while the second panel illustrates the effect that buying a collar has on interest expense. Finally, the third panel combines the borrower's inherent exposure with the payoff to buying a collar to display the effect of a change in market interest rates on a hedged borrower's interest expense. Note that changes in market interest rates can only affect the hedged borrower's interest expense when the index rate varies between the floor and cap rates. Outside this range, the borrower's interest expense is completely hedged.

FIGURE 8

The Effect of Buying an Interest Rate Collar on Interest Expense



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Thus, it can be summarized that in an interest rate option, the underlying asset is related to the change in an interest rate. In an interest rate cap, for example, the seller agrees to compensate the buyer for the amount by which an underlying short-term rate exceeds a specified rate on a series of dates during the life of the contract. In an interest rate *floor*, the seller agrees to compensate the buyer for a rate falling below the specified rate during the contract period. A *collar* is a combination of a long (short) cap and short (long) floor, struck at different rates. Finally, a *swap option (swaption)* gives the holder the right—but not the obligation—to enter an interest rate swap at an agreed upon fixed rate until or at some future date.

19. THE INDIAN SCENARIO

The OTC derivatives markets have witnessed rather sharp growth over the last few years, which has accompanied the modernization of commercial and investment banking and globalisation of financial activities. The recent developments in information technology have contributed to a great extent to these developments. While both exchange-traded and OTC derivative contracts offer many benefits, the former have rigid structures compared to the latter. It has been widely discussed that the highly leveraged institutions and their OTC derivative positions can lead to turbulence in financial markets.

The OTC derivatives markets have the following features compared to exchange-traded derivatives.

The management of counter-party (credit) risk is decentralized and located within individual institutions. There are no formal centralized limits on individual positions, leverage, or margining. There are no formal rules for risk and burden-sharing. There are no formal rules or mechanisms for ensuring market stability and integrity, and for safeguarding the collective interests of market participants, and the OTC contracts are generally not regulated by a regulatory authority and the exchange's self-regulatory organization, although they are affected indirectly by national legal systems, banking supervision and market surveillance.

Illustration 22: Explain the concept of interest rate swap by giving appropriate examples.

Solution

An interest rate swap is an exchange of interest rate commitments, such as a fixed-rate commitment is exchanged for a floating-rate commitment. The parties to a swap retain their obligations to the original lenders, which means that the parties must accept counter-party risk.

Example: Lockwood Company has a high credit rating. It can borrow at a fixed rate of 10% or at a variable interest rate of LIBOR + 0.3%. It would like to borrow at a variable rate. Thomas Company has a lower credit rating. It can borrow at a fixed rate of 11% or at a variable rate of LIBOR + 0.5%. It would like to borrow at a fixed rate. Using the

principle of comparative advantage, both parties could benefit from a swap arrangement, whereby.

- (i) Lockwood Company borrows at a fixed rate of 10%
- (ii) Thomas Company borrows at a variable rate of LIBOR+ 0.5%
- (iii) The parties agree a rate for swapping their interest commitments, with perhaps:

Thomas Company paying a fixed rate of 10.1% to Lockwood Company.

The outcome would be

Lockwood Company

Borrows at	10%
Receives from Thomas Company	(10.1%)

Pays to Thomas Company	<u>LIBOR</u>
------------------------	--------------

Net interest cost	LIBOR – 0.1% (a saving of 0.4%)
-------------------	---------------------------------

Thomas Company

Borrows at	LIBOR + 0.5%
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Receives from Lockwood Company	(LIBOR)
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Pays to Lockwood Company	<u>10.1%</u>
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Net interest cost	10.6% (a saving of 0.4%)
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In this example, both companies benefit from lower costs.

Self-examination Questions

1. Explain in brief the types of financial risks which is faced by businessman.
2. What are the basic problems in International Financial Management?
3. Explain in brief three main tools of exchange risk management.
4. Differentiate between currency and interest rate swap.
5. Differentiate between forward cover and option.
6. On December 27, 1992 a customer 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 effect the remittance only on January 3, 1993. The interbank market rates were as follows:

	December 27	January 3
Bombay	\$ / Rs.: 3.15 – 3.10	3.12 – 3.07
London	\$/pound: 1.7250 / 60	1.7175 / 85
DG / pound	3.9575 / 90	3.9380 / 90

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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?

7. The finance director of P Ltd., has been studying exchange rates and interest rates relevant to India and USA. P Ltd. has purchased goods from the US Co. at a cost of \$ 51 Lakhs payable in dollars in three months time. In order to maintain profit margins the finance director wishes to adopt, if possible, a risk-free strategy that will ensure that the cost of the goods to P Ltd. is no more than Rs. 22 Crores.

Exchange rates Rs / Dollar

Spot = 40 – 42; 1 month forward 41– 43; 3 months forward 42– 45

Interest rates (available to P Ltd.)

	India		USA	
	<i>Deposit</i>	<i>Borrowing</i>	<i>Deposit</i>	<i>Borrowing</i>
	<i>rate(%)</i>	<i>rate (%)</i>	<i>rate (%)</i>	<i>rate (%)</i>
1 Month	13.00	15.00	7.00	10.00
3 Months	13.00	16.00	8.00	11.00

Calculate whether it is possible for P Ltd. to achieve a cost directly associated with this transaction of no more than Rs. 22 Crores by means of a forward market hedge, or money market hedge. Transactions costs may be ignored.

8. On March 1, 2004, the B Ltd. bought from a foreign firm electronic equipment that will require the payment of LC 900,000 on May 31, 2004. The spot rate on March 1, 2004, is LC 10 per dollar; the expected future spot rate is LC 8 per dollar; and the ninety-days forward rate is LC 9 per dollar. The US interest rate is 12 percent, and the foreign interest rate is 8 percent. The tax rate for both countries is 40 percent. The B Ltd. is considering three alternatives to deal with the risk of exchange rate fluctuations.
 - a. To enter the forward market to buy LC 900,000 at the ninety-days forward rate in effect on May 31, 2004.
 - b. To borrow an amount in dollars to buy the LC at the current spot rate. This money is to be invested in government securities of the foreign country; with the interest income, it will equal LC 900,000 on May 31, 2004.
 - c. To wait until May 31, 2004, and buy LCs at whatever spot rate prevails at that time.

Which alternative should the B Ltd. follow in order to minimise its cost of meeting the future payment in LCs? Explain.

9. A company operating in a country having the dollar as its unit of currency has today invoiced sales to an Indian company, the payment being due three months from the date of invoice. The invoice amount is \$ 13,750 and at today's spot rate of \$ 0.0275 per Re. 1, is equivalent to Rs. 5,00,000.

It is anticipated that the exchange rate will decline by 5% over the three months period and in order to protect the dollar proceeds, the importer proposes to take appropriate action through foreign exchange market.

The three month forward rate is quoted as \$ 0.0273 per Re. 1.

You are required to calculate the expected loss and to show, how it can be hedged by forward contract.

10. X Ltd. an Indian company has an export exposure of 10 million (100 lakhs) yen, value September end. Yen is not directly quoted against Rupee. The current spot rates are USD/INR = 41.79 and USD/JPY = 129.75.

It is estimated that Yen will depreciate to 144 level and Rupee to depreciate against dollar to 43.

Forward rate for September 1998 USD/Yen = 137.35 and USD/INR = 42.89.

You are required to:

- (i) to calculate the expected loss if hedging is not done. How the position will change with company taking forward cover?
- (ii) If the spot rate on 30th September, 1998 was eventually USD/Yen = 137.85 and USD/INR = 42.78, is the decision to take forward cover justified?

MERGERS, ACQUISITIONS & RESTRUCTURING

1.0 INTRODUCTION

The most talked about subject of the day is Mergers & Acquisitions (M&A). In developed economies, corporate Mergers and Acquisition are a regular feature. In Japan, the US and Europe, hundreds of mergers and acquisition take place every year. In India, too, mergers and acquisition have become a corporate game today. The year 2005 has been referred as the year of mergers and acquisitions. In India, M & A deals in excess of \$13 billion were struck in 2005 as compared to \$4.5 billion in 2004. In Asia, India stands next only to China in M & A activity. There were 163 inbound acquisitions in India valued at \$2.83 billion. There will be more mergers and acquisition in the near future consequent upon the streamlining of the legal framework.

The terms 'mergers', 'acquisitions' and 'takeovers' are often used interchangeably in common parlance. However, there are differences. While merger means unification of two entities into one, acquisition involves one entity buying out another and absorbing the same. In India, in legal sense merger is known as 'Amalgamation'.

The amalgamations can be by merger of companies within the provisions of the Companies Act, and acquisition through takeovers. While takeovers are regulated by SEBI. M & A deals fall under the Companies Act. In cross border transactions, international tax considerations also arise.

Halsbury's *Laws Of England* defined amalgamation as a blending of two or more existing undertakings, the shareholders of each **amalgamating** company becoming substantially the shareholders in the **amalgamating** company. Accordingly, in a merger, two or more companies combine into a single unit.

The term "amalgamation" is used when two or more companies are amalgamated or where one is merged with another or taken over by another. In *Inland steam Navigation Workers Union vs. R.S. Navigation Company Ltd.* It was observed that in case of amalgamation, the rights and liabilities of a company are amalgamated into another so that the transferee company becomes vested with all rights and liabilities of the transferor company.

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An **acquisition** is when both the acquiring and acquired companies are still left standing as separate entities at the end of the transaction. A **merger** results in the legal dissolution of one of the companies, and a **consolidation** dissolves both of the parties and creates a new one, into which the previous entities are merged.

Corporate takeovers were started by Swaraj Paul when he tried to takeover Escorts. The other major takeovers are that of Ashok Leyland by the Hindujas Shaw Wallace, Dunlop, and Falcon Tyres by the Chabbria Group; Ceat Tyres by the Goenkas; and Consolidated Coffee by Tata Tea. The BIFR arranged for the takeover of companies by giants like ITC, McDowells, Lakshmi Machine Works, and the Somani Group.

Many new companies are being incorporated as a result of the fast growing industrialisation of the country which is mainly dependent on agriculture. With the new trends of globalisation, not only in this country but also worldwide, there has been increasing interaction of companies and persons of one country with those of other countries. Today, corporate restructuring has gained momentum and undertakings and companies are merging, demerging, divesting and taking in or taking over companies and undertakings, both unregistered and registered, in India and outside.

Against this corporate backdrop, mergers and acquisitions have to be encouraged in the interest of the general public and for the promotion of industry and trade. At the same time the government has to safeguard the interest of the people, the consumers and the investors on the one hand and the shareholders, creditors and employees/workers on the other. In fact, mergers and acquisitions may take place as a result of “reconstruction”, “compromise” or “arrangement” as envisaged by Sections 391 to 394 of the Companies Act, 1956 or “acquisition” under Section 395 or “amalgamation” under Section 396 of the Companies Act, 1956 and “reconstruction” of a sick industrial company as envisaged by Sections 17 and 18(4) of the Sick Industries (Special Provisions) Act, 1985 or “revival” of financially unviable companies as envisaged by Section 72A of the Income Tax Act, 1961. However, all such mergers and acquisition have to be governed or controlled by the relevant provisions of the Foreign Exchange Management Act, 2000; Income Tax Act, 1961; Industries (Development and Regulation) Act, 1973; the restrictions imposed by other relevant Acts including SEBI Act, 1992 as the case may be.

2.0 COMPROMISE & ARRANGEMENT

Section 391 of Companies Act, 1956 uses the words “compromise” and “arrangement” and in Section 390 (b) defines the expression “arrangement” to include “a re-organisation of the share capital of the company by the consolidation of shares of different classes, or by the division of shares of different classes, or, by both these method”. In *India Flour Mills, In Re*, AIR 1934 Sind 54, it was said that the word “arrangement” means something analogous in some sense to a compromise. But a “compromise” presupposes the existence of a dispute for, “there can be no compromise unless there is some dispute.”

“arrangement” is a term of wider connotation. Thus, in *Re, NFU Development Trust Ltd*, (1973) 1 All ER 135 (Ch. D), it was held that it is not, however, appropriate to use the expression “arrangement” when membership rights are proposed to be surrendered or otherwise terminated or confiscated without compensation. But on the other hand, the term “arrangement” means and includes all modes of reorganising the share capital, takeover of shares of one company by another including interference with preferential and other special rights attached to shares.

It was held in *Singer Manufacturing Co. v. Rainbow*, 1971 SC 11 (Scott) that an “arrangement” involves an exchange of one set of rights and liabilities for another, for example, the exchange of shares of one class for shares of a different class. Often there is a considerable difference between the things exchanged, for example, shares in one company may be exchanged for shares in another company. Thus, it has been held in *Navjivan Mills Co. Ltd, In re*, (1972) 42 Comp. Cases 265 (Guj) that the scope of the term “arrangement” is very wide and includes a situation where there is no dispute but even so there is need for readjusting the rights and liabilities of a member or class of members or of a creditor or a class of creditors, the company may resort to a scheme of arrangement with them.

2.1 CLASS OF MEMBERS AND CREDITORS

According to Section 391 (1) as the “compromise” or “arrangement” may be between the company and Members or a class of members and/or creditors or any class of them thereof, the court will call the meeting of the class or classes of members or creditors, as the case may be.

2.2 RECONSTRUCTION, AMALGAMATION & MERGER

As Section 394 deals both with reconstruction and amalgamation the difference between the two terms would have to be understood in the context of the proposed scheme. What are “reconstruction” and “amalgamation”? What differentiates “merger” from “amalgamation”? What is the difference between merger, acquisition or takeover? As none of these words have been defined in the Act, it would have to be ascertained from a reading of the scheme as a whole to decide whether it is a reconstruction or amalgamation.

2.3 RECONSTRUCTION

The expression “reconstruction” means the transfer of the undertaking and business of a company or several companies to a new company specially formed for the purpose. In other words, reconstruction involves the winding-up of an existing company and transfer of its asset and liabilities to a new company formed to take the place of the existing company. In the result, the same shareholders who agree to take equivalent shares in the new company, carry on the same enterprise through the medium of a new company. Based on the decision

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in *Brooklands Selangor Holdings Ltd. v. Commissioners of Inland Revenue (1970)* 1 WLR 429, *Stephen W. Mayson and Derek French* have clearly brought out the meaning of the term 'reconstruction' as follows :

"A company is reconstructed if it is built again; in other words, if it is dissolved and its business and property are sold to a new company which takes the business and property as capital contributed for the issue of its shares. The company may have a different capital structure from the old one, or have different objects, or be incorporated in a different country, but an essential feature of a reconstruction is that the new company's membership is substantially the same as that of the old company."

2.4 AMALGAMATION OR MERGER

Amalgamation means an amalgamation pursuant to the provisions of the Companies Act, 1956 or any other statute which may be applicable to companies. The term amalgamation in relation to companies has been defined in Section 2(1A) of the *Income-tax Act, 1961* to mean the merger of one or more companies with another company or the merger of two or more companies to form one company (the company or companies which so merge being referred to as the amalgamating company or companies and the company with which they merge or which is formed as a result of the merger, as the amalgamated company) in such a manner that:

- All the properties of the amalgamating company or companies immediately before the amalgamation become the properties of the amalgamated company by virtue of the amalgamation;
- All the liabilities of the amalgamating company or companies immediately before the amalgamation become the liabilities of the amalgamated company by virtue of the amalgamation;
- Shareholders holding not less than nine-tenths in value of the shares in the amalgamating company or companies (other than share already held therein immediately before the amalgamation by, or by a nominee for, the amalgamated company or its subsidiary) become shareholders of the amalgamated company by virtue of the amalgamation.

Further, the amalgamation should be effected in such a manner that the merger of the companies and the transfer of assets and liabilities should be brought about as aforesaid otherwise than as a result of the acquisition of the property of one company by another company pursuant to the purchase of such property by the other company or as a result of the distribution of such property to the other company after the winding up of the amalgamating company.

According to AS-14, "Accounting for Amalgamation", it means an amalgamation pursuant to the provisions of the Companies Act, 1956 or any other statute which may be applicable to companies.

Amalgamation signifies the transfer of all or some part of the assets and liabilities of one or more than one existing company to another existing company or of two or more existing companies to a new company of which transferee company or all the members of the transferor company or companies become, or have the right of becoming, members and generally, such amalgamation is accomplished by a voluntary winding-up of the transferor company or companies.

Under an amalgamation, merger or takeover, two (or more) companies are merged either de jure by a consolidation of their undertakings or de facto by the acquisition of a controlling interest in the share capital of one by the other or of the capital of both by a new company.

Amalgamation is a state of things under which either two companies are so joined to form a third entity or one is absorbed into or blended with another.”

“Generally, where only one company is involved in a scheme and the rights of the shareholders and creditors are varied, it amounts to **reconstruction or reorganisation or scheme of arrangement**. In an amalgamation, two or more companies are fused into one by merger or by one taking over the other. Amalgamation is a blending of two or more existing undertakings into one undertaking, the shareholders of each blending company become substantially the shareholders of the company which is to carry on the blended undertaking. There may be amalgamation either by the transfer of two or more undertakings to a new company, or by the transfer of one or more undertaking to an existing company. Strictly, ‘amalgamation’ does not cover the mere acquisition by a company of the share capital of the other company which remains in existence and continues its undertaking but the context in which the term is used may show that it is intended to include such an acquisition.”

A merger is generally understood to be a fusion of two companies. The term “merger” means and signifies the dissolution of one or more companies or firms or proprietorships to form or get absorbed into another company. By concept, merger increases the size of the undertakings. The two companies which have merged are in the same industry, normally the market share of the new consolidated company would be larger and it is possible that it may move closer to being a monopoly or a near monopoly. This is known as **horizontal** merger. On the other hand, **vertical** merger means the merger of two companies which are in different field altogether, the coming together of two concerns may give rise to a situation similar to a monopoly. But there is yet another type of merger known as **reverse merger**, where, in order to avail benefit of carry forward of losses which are available according to tax law only to the company which had incurred them, the profit making company is merged with companies having accumulated losses.

Conglomerate Mergers: Such mergers involve firms engaged in unrelated type of business operations. In other words, the business activities of acquirer and the target are not related to each other horizontally (i.e., producing the same or competing products) nor vertically (Having relationship of buyer and supplier). In a pure conglomerate merger, there are no

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important common factors between the companies in production, marketing, research and development and technology. There may however be some degree of overlapping in one or more of these common factors. Such mergers are in fact, unification of different kinds of businesses under one flagship company. The purpose of merger remains utilization of financial resources, enlarged debt capacity and also synergy of managerial functions.

Congeneric Merger: In these mergers, the acquirer and the target companies are related through basic technologies, production processes or markets. The acquired company represents an extension of product-line, market participants or technologies of the acquirer. These mergers represent an outward movement by the acquirer from its current business scenario to other related business activities.

3.0 REASONS AND RATIONALE FOR MERGERS AND ACQUISITIONS

The most common reasons for Mergers and Acquisition (M&A) are:

- Synergistic operating economies
- Diversification
- Taxation
- Growth
- Consolidation of production capacities and increasing market power

The following table shows the key rationale for some of the well known transactions which took place in India in the recent past.

Rationale for M & A

Instantaneous growth, Snuffing out competition, Increased market share.	• HLL-Lakme, Glaxo – Smithkline, Daimler – Chrysler.
Acquisition of a competence or a capability	• ICICI – ITC classic (retailer net work & depositor's base), IBM- Daksh
Entry into new markets/product segments	• Vodafone – Mannesman, Mannesman – Orange, Tata - Tetley
Access to funds	• TDPL – Sun Pharma since TDPL wanted to have funds to launch new products.
Tax benefits	• Ashok Leyland Information Technologies with Hinduja Finance.

It is relevant here to find out why Mergers and Acquisitions have acquired such importance today. The main reasons for Mergers and Acquisitions may be many.

“The motivation for buying and selling companies varies considerably, but it is important that both parties understand what they want from one another. First, what is the buyer looking for ? It could be :

- An opportunity to grow faster, with a ready-made market share.
- To eliminate a competitor by buying it out.
- Better integration-horizontal or vertical.
- Diversification with minimum cost and immediate profit.
- To improve dividend yield, earnings or book value.
- To forestall the company’s own takeover by a third party.
- To enjoy the prospect of turning around a sick company.

On the other hand, why are companies available for sale ? Some of the reasons are :

- Declining sales or earnings.
- An uncertain future.
- Owners wants to slow down or retire with no successor in sight.
- Desire to maximise growth under the umbrella of a larger company.
- To raise cash for a more promising line of business.
- A lack of adequate financial and management skills.
- To concentrate time and effort on what it can do best.

Amalgamation is effected basically for growth and sometimes for image. Some of the objectives for which amalgamation may be resorted to are :

- Horizontal growth to achieve optimum size, to enlarge the market share, to curb competition or to use unutilised capacity;
- Vertical combination with a view to economising costs and eliminating avoidable sales-tax and/or excise duty;
- Diversification of business;
- Mobilising financial resources by utilising the idle funds lying with another company for the expansion of business. (For example, nationalisation of banks provided this opportunity and the erstwhile banking companies merged with industrial companies);
- Merger of an export, investment or trading company with an industrial company or *vice versa* with a view to increasing cash flow;
- Merging subsidiary company with the holding company with a view to improving cash flow;

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- Taking over a 'shell' company which may have the necessary industrial licences etc., but whose promoters do not wish to proceed with the project.

An amalgamation may also be resorted to for the purpose of nourishing a sick unit in the group and this is normally a merger for keeping up the image of the group.

4.0 METHOD OF AMALGAMATION

Amalgamation may be effected through purchase of assets or shares or a merger through a holding company or by exchange of shares followed by voluntary winding up. However, purchase of assets could be very costly in terms of stamp duty and sales-tax; and purchase of shares would require compliance to Section 372 and in certain cases to Section 108A of the Companies Act. Again by virtue of Section 396, the Central Government may direct companies including foreign companies to amalgamate if public interest so requires.

Under Sections 391-394, shareholders of two companies hold meetings under the directions of the company court and may agree to a scheme of amalgamation or merger. The court is empowered to order the transfer of undertaking, properties or liabilities either wholly or in part, allotment of shares or debentures, dissolution without winding up and any consequential or incidental matters necessary to effect amalgamation.

5.0 NEED FOR AMALGAMATION

In a large number of cases, amalgamation of companies is effected when the Central Government is satisfied that amalgamation of two or more companies is essential in the public interest

Then the Central Government may by an order notified in the Official Gazette provide for the amalgamation of those companies into a single company. Amalgamation is also effected as a result of the sanction accorded by the court to the schemes of arrangement and compromise (including amalgamations) contemplated by Sections 391-396 of the *Companies Act, 1956*. In addition, there are a large number of other reasons on account of which amalgamation of companies is brought about.

For example, it is done to achieve long-term economic and financial benefits for both the companies concerned and their shareholders, tax benefits to the amalgamated company and their shareholders and for sound financial position of both amalgamating and amalgamated companies.

The amalgamation of a closely-held company with a widely-held company would help to obtain substantial tax benefit which are otherwise available only to widely-held companies. The tax benefits include lower rates of income tax besides exemption from liability to additional income tax.

6.0 GAINS FROM MERGERS OR SYNERGY

The first step in merger analysis is to identify the economic gains from the merger. There are gains, if the combined entity is more than the sum of its parts.

That is, Combined value > (Value of acquirer + Stand alone value of target)

The difference between the combined value and the sum of the values of individual companies is usually attributed to **synergy**.

$$\text{Value of acquirer} + \text{Stand alone value of target} + \text{Value of synergy} = \text{Combined value}$$

There is also a cost attached to an acquisition. The cost of acquisition is the price premium paid over the market value plus other costs of integration. Therefore, the net gain is the value of synergy minus premium paid.

$$V_A = \text{Rs. } 100$$

$$V_B = \text{Rs. } 50$$

$$V_{AB} = \text{Rs. } 175$$

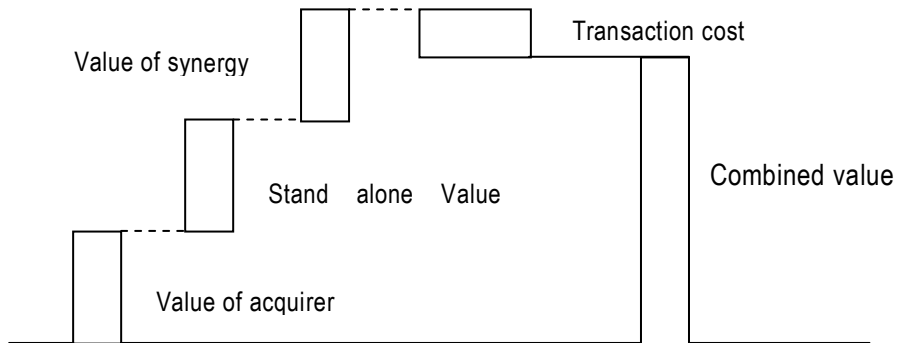
$$\text{Synergy} = V_{AB} - (V_A + V_B) = 25$$

If premium is Rs. 10, Net gain = 25 – 10 = 15

The following depicts the synergy equation. Acquisition need not be made with synergy in mind. It is possible to make money from non-synergistic acquisitions as well. As can be seen from Exhibit, operating improvements are a big source of value creation. Better post-merger integration could lead to abnormal returns even when the acquired company is in unrelated business. Obviously, managerial talent is the single most important instrument in creating value by cutting down costs, improving revenues and operating profit margin, cash flow position, etc. Many a time, executive compensation is tied to the performance in the post-merger period. Providing equity stake in the company induces executives to think and behave like shareholders.

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Exhibit : Merger gains



Source : Patricia L Anslinger and Thomas E Copeland, 'Growth Through Acquisitions : A Fresh Look', *Harvard Business Review*, Jan-Feb., 1996.

There are five principal steps in a successful M & A programme.

1. Manage the pre-acquisition phase.
2. Screen candidates.
3. Eliminate those who do not meet the criteria and value the rest.
4. Negotiate.
5. Post-merger integration.

During the pre-acquisition phase, the acquirer should maintain secrecy about its intentions. Otherwise, the resulting price increase due to rumours may kill the deal.

Scheme of Amalgamation or Merger

The scheme of any arrangement or proposal for a merger is the heart of the process and has to be drafted with care.

There is no prescribed form for a scheme and it is designed to suit the terms and conditions relevant to the proposal and should take care of any special feature peculiar to the arrangement.

An essential component of a scheme is the provision for vesting all the assets and liabilities of the transferor company in its transferee company. If the transferee company does not want to take over any asset or liability, the transferor company before finalising the draft scheme should dispose it off or settle. Otherwise, the scheme would be considered defective and incomplete and the court would not sanction it.

It is equally important to define the **effective date** from which the scheme is intended to come into operation. This would save time and labour in explaining to the court the intention

behind using several descriptions in the scheme. According to an order of the Central Government under Section 396 of the Companies Act, the entire business and undertaking of a transferor company shall be transferred to and vest with the transferee company on the day when it is notified in the Official Gazette, for accounting purposes, the amalgamation shall be effected with reference to the audited accounts and balance sheets as on a particular date (which precedes the date of notification) of the two companies and the transactions thereafter shall be pooled into a common account.

Another aspect relates to the **valuation of shares** to decide the exchange ratio. Objections have been raised as to the method of valuation even in cases where the scheme had been approved by a large majority of shareholders and the financial institutions as lenders. The courts have declared their unwillingness to engage in a study of the fitness of the mode of valuation. A High Court stated : "There are bound to be differences of opinion as to what the correct value of the shares of the company is. Simply because it is possible to value the share in a manner different from the one adopted in a given case, it cannot be said that the valuation agreed upon has been unfair." Similarly, in the case of Hindustan Lever the Supreme Court held that it would not interfere with the valuation of shares when more than 99 per cent of the shareholders have approved the scheme and the valuations having been perused by the financial institutions.

The position of employees also has to be clearly set out. The employment contract is a contract of personal service which may not be transferred by an order of court and may not have an effect of making an employee of the transferor company as an employee of the transferee company. The scheme should provide for the transfer of all employees to the transferee company on the same terms and conditions of service without any break in service. In the event of the transferee company not willing to absorb any of the employees through the merger, the transferor company should settle those employees with applicable law before the scheme is put through.

7.0 ACCOUNTING FOR AMALGAMATIONS

Accounting Standard 14 on *Accounting For Amalgamations*, issued by the Institute of Chartered Accountants of India which came into effect in respect of accounting periods commencing on or after April 1, 1995 is mandatory.

This statement deals with accounting for amalgamations and the treatment of any resultant goodwill or reserves.

The Standard prescribes two methods of accounting for amalgamations namely (a) the pooling of interest method and (b) the purchased method. The pooling of interest method is confined to circumstances which meet the criteria referred to in the definition of the amalgamation in the nature of merger. The object of the purchase method is to account for the amalgamation by applying the same principle as are applied in the normal purchase of

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assets. This method is used in accounting for amalgamations in the nature of purchase. Under the purchase method, the transferee company account for the amalgamations either by incorporating the assets and liabilities at their existing carrying amounts or by allocating the consideration to individual identifiable assets and liabilities of the transferor company on the basis of their fair value at the date of amalgamation.

The Standard prescribes that if, at the time of amalgamation, the transferor and the transferee companies have conflicting accounting policies, a uniform accounting policy must be adopted following the amalgamation. (Note: Students are advised to refer to As-14).

8.0 PROBLEMS FOR M & A IN INDIA

- Indian corporates are largely promoter-controlled and managed. The ownership stake should, in the normal course, inhibit any rational judgement on this sensitive issue. It is difficult for either of the two promoters to voluntarily relinquish management control in favour of the other, as a merger between two companies implies. The other problems in this respect may be like.
- In some cases, the need for prior negotiations and concurrence of financial institutions and banks is an added rider, besides SEBI's rules and regulations.
- The reluctance of financial institutions and banks to fund acquisitions directly.
- The BIFR route, although tedious, is preferred for obtaining financial concessions.
- Lack of Exit Policy for restructuring/downsizing.
- Absence of efficient capital market system makes the Market capitalisation not fair in some cases.
- Valuation is still evolving in India.

9.0 MERGERS IN SPECIFIC SECTORS

The Companies Act, 1956 and the SEBI's Takeover Code are the general source of guidelines governing merges. There are sector specific legislative provisions, which to a limited extent empower the regulator to promote competition. For example, the Electricity Regulatory Commission has been given powers under the Electricity Act, 2003 to promote competition. Also in the telecom and broadcasting Regulatory Authority of India (TRAI) Regulate mergers in these sectors and any dispute regarding the same is adjudicated by the Telecom Dispute Settlement Appellate Tribunal (TDSAT). Guidelines for (intra-circle mergers intra-circle mergers means mergers, of telecom service providers within the same geographical area or zone of operation) are also formulated by the TRAI.

In addition to the above authorities, approval may also be required from other sector-specific authorities. Mergers in the banking sector require approval from the RBI.

10.0 ACQUISITION AND TAKEOVER

Acquisition: This refers to the purchase of controlling interest by one company in the share capital of an existing company. This may be by:

- (i) an agreement with majority holder of Interest.
- (ii) Purchase of new shares by private agreement.
- (iii) Purchase of shares in open market (open offer)
- (iv) Acquisition of share capital of a company by means of cash, issuance of shares.
- (v) Making a buyout offer to general body of shareholders.

When a company is acquired by another company, the acquiring company has two choices either to merge both the companies into one and function as a single entity and the another is to operate the takeover company as an independent entity with changed management and policies. The first choice is termed as '**Merger**', whereas the second choice is known as '**takeover**'.

11.0 THE EVOLUTION OF TAKEOVERS, PRINCIPLES AND ENFORCEMENT – THE INDIAN SCENARIO

Takeover is generally understood to mean acquisition of substantial shares, for the purpose of seeking management control of the Company. There are essentially two major modes of takeover which are prevalent in India. These are:

- (a) Takeover, through direct negotiations with Financial Institutions (FIIs) and/or Board for Industrial and Financial Reconstruction (BIFR), or with promoters in consultation with FI's and/or BIFR to acquire the controlling interest and/or merge a sick Company with a good Acquirer Company, thus availing of benefits of tax shield (under Section 72-A of the Income Tax Act, 1961) by the Acquirer, which enables the revival of sick Company.
- (b) Takeover by acquisition of adequate shareholding and thus management control either through direct negotiations with the promoter/director(s) or foreign collaborator who owns a controlling interest in a Company or through Open Offer or market purchases of an adequate level of voting capital of a Company, whereby the Acquirer can exercise certain Voting rights and thus change the management of the Company.

In an acquisition, a company may be interested in acquiring not the whole of a company but in one of its divisions or running undertaking. In other words, the transferor company can sell outright the undertaking on a going concern basis with all its asset and liabilities. In fact, acquisition of an undertaking is more desirable when the buyer is interested in a particular business of the seller company. Generally acquisitions are carried out in two ways under the Act, i.e. either the company may adopt the method envisaged in Sections 391-394 or it may be carried out in the form of an outright sale. Sale of shares is the simplest form of acquisition or takeover. The shares are sold and registered in the name of the buyer

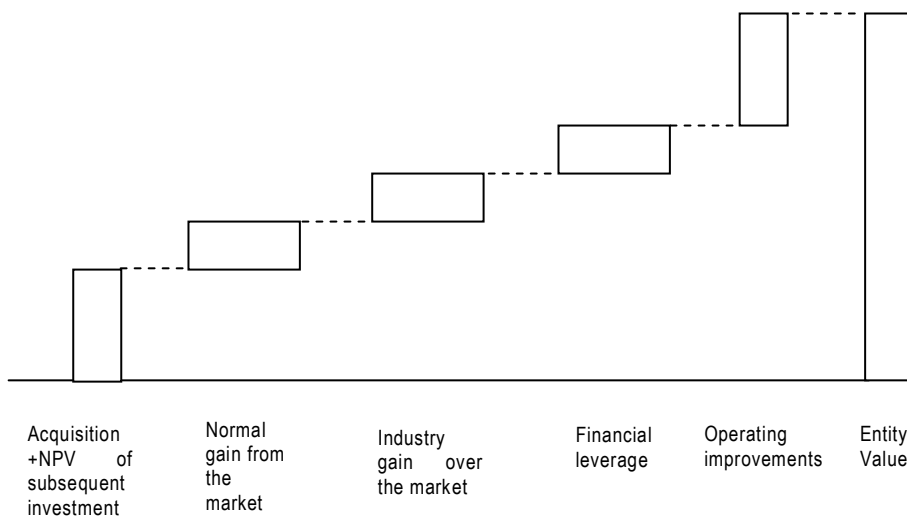
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company. The shareholders of seller company receive either **compensation or shares** in the buyer company. If **nine-tenths** of the shareholders of a class have approved the terms, the shares of the minority can be acquired under Section 395.

11.1 Acquisition or Takeover may be by way of,

- (i) Acquisition of Companies shares.
- (ii) Acquisition of business assets (ABOs).
- (iii) Acquisition of Brand's.
- (iv) Acquisition of Companies by Friendly vs. Hostile takeover.
- (v) Reverse acquisition

Exhibit : Value creation in acquisitions



Source; Patricia L Anslinger and Thomas E Copeland, "Growth through Acquisitions : A Fresh look, Harvard Business Review Jan. – Feb -1996.

Acquisition of one of the business of a company, as a going concern by an agreement need not necessarily be routed through court, if the transfer of business is to be accomplished without allotting shares in the transferee company to the shareholders of the transferor company. This would tantamount to a simple acquisition. In this case the transferor company continue to exist and no change in shareholding is expected. If the sale takes place for a lumpsum consideration without attributing any individual values to any class of assets, such sales are called slump sales. The capital gains arising on slump sales were being exempt from income tax based on a decision of the Supreme Court of India.

An acquisition by purchase of a controlling interest in the share capital of another existing company is **takeover**, another term for acquisition. The two types of takeovers are:

- **Friendly takeover.** Takeover through negotiations and with willingness and consent of the acquired company's Board of directors.
- **Hostile takeover.** An acquirer company may not offer to target company the proposal to acquire its undertaking but silently and unilaterally pursue efforts to gain control in it against the wishes of the management.

11.2 TAKE OVER STRATEGIES

Other than tender offer the acquiring company can also use the following techniques:

Street Sweep: this refers to the technique where the acquiring company accumulates larger number of shares in a target before making an open offer. The advantage is that the target company is left with no choice but to agree to the proposal of acquirer for takeover.

Bear Hug: When the acquirer threatens the target to make an open offer, the board of target company agrees to a settlement with the acquirer for change of control.

Strategic Alliance: This involves disarming the acquirer by offering a partnership rather than a buyout. The acquirer should assert control from within and takeover the target company.

Brand Power: This refers to entering into an alliance with powerful brands to displace the target's brands and as a result, buyout the weakened company.

12.0 TAKEOVER BY REVERSE BID

In ordinary case, the company taken over is the smaller company; in a 'reverse takeover', a smaller company gains control of a larger one. The concept of takeover by reverse bid, or of reverse merger, is thus not the usual case of amalgamation of a sick unit which is non-viable with a healthy or prosperous unit but is a case whereby the entire undertaking of the healthy and prosperous company is to be merged and vested in the sick company which is non-viable. A company becomes a sick industrial company when there is erosion in its net worth. This alternative is also known as taking over by reverse bid.

What tests should be fulfilled before an arrangement can be termed as a reverse takeover are specified as follows:

"... transaction will be a reverse takeover if it fulfils any one of a number of tests; if the value of the assets of Acquired Co. exceeds the value of the assets of Acquiring Co.; if the net profits (after deducting all charges except taxation and excluding extraordinary items) attributable to the assets of Acquired Co. exceeds those of Acquiring Co.; if the aggregate value of the consideration being issued by

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Acquiring Co. exceeds the value of the net assets of Acquired Co.; if the equity capital to be issued by Acquiring Co. as consideration for the acquisition exceeds the amount of the equity share capital of Acquiring Co. in issue prior to the acquisition; or if the issue of shares in Acquiring Co. would result in a change in control of Acquiring Co. through the introduction of a minority holder or group of holders." The transaction shall be termed as takeover by Reverse Bid.

The three tests in a takeover by reverse bid that are required to be satisfied are, namely, (i) the assets of the transferor company are greater than the transferee company, (ii) equity capital to be issued by the transferee company pursuant to the acquisition exceeds its original issued capital, and (iii) the change of control in the transferee company through the introduction of a minority holder or group of holders. In the case last cited, the transferee company was a subsidiary of the transferor company, since as many as 4,303 equity shares out of 5,600 equity shares issued by the transferee company were held by the transferor company. In other words, approximately 77% of the equity shares issued by the transferee company were held by the transferor company. Apart from this fact of large holding and consequent stake in the financial working of the transferee company, there were other important additional motives justifying the decision of takeover by reverse bid. For example, that of the economies of scale, trade advantage in the nature of favourable effect on the overall earnings resulting from the amalgamation which would reduce the cost of production and stabilise the business by ensuring the supply of raw materials and the advantage of a common sales organisation. Tax benefits which would have become available to the new unit on amalgamation of the transferor company with the transferee company, which was a sick unit in the sense that it has accumulated losses to the tune of Rs. 1,48,60,252 and unabsorbed depreciation of about Rs. 1,46,00,000. The stake of transferor company in the transferee company was another important motive, as the transferor company was a creditor of the transferee company and its outstandings were in the vicinity of about 14% to 15% of the total value of the liabilities. If, therefore, it was held, the transferor company had decided for a scheme of amalgamation of the two companies, it could not be said that it had been done with any ulterior purpose or with a view to secure some unfair advantages to its shareholders.

13.0 THE ACQUISITION PROCESS

The acquisition process involves the following five essential stages:

- (i) Competitive analysis;
- (ii) Search and screen.
- (iii) Strategy development.
- (iv) Financial evaluation.
- (v) Negotiation.

The competitive stage is to identify synergistic inter-relationship between the buyer and the targets business opportunities.

In search and screen stage a list of good acquisition candidates is developed. While the screening process involves identifying a few of the best candidates that meet the established criteria once best apparent candidates have been identified, more detailed analysis for each will be initiated.

The strategy development calls for the development of a blue print for the exploitation of apparent operational synergies.

The more an acquisition depends upon synergistic interrelationship, the greater is the need to develop a post-merger integration blueprint beforehand.

Next there is financial evaluation stage of the acquisition process. The central issues addressed in this stage include:

- (i) What is the maximum price that should be for the target company?
- (ii) What are the principal areas of Risk?
- (iii) What are the cash flow and balance sheet implications of the acquisition? and
- (iv) What is the best way of structuring the acquisition.

The fifth and last stage of the acquisition process is the negotiations stage. The success of negotiations will depend to a large extent on the quality of the “homework” done in the first four stages.

14.0 DEFENDING A COMPANY IN A TAKEOVER BID

The speed with which a hostile takeover is attempted puts the target Company at a disadvantage.

One of observations on the prevailing regulations pertaining to takeover is that, there is very little scope for a target company to defend itself in a takeover battle. Due to the prevailing guidelines, the target company without the approval of the shareholder cannot resort to any issuance of fresh capital or sale of assets etc., and also due to the necessity of getting approvals from various authorities. In the past most companies who wanted to resist a takeover, did so, either by getting a White Knight to support the Company or by refusing to transfer shares acquired by the Acquirer, followed by long protracted legal battle. Now under the guidelines, the target company cannot refuse transfer of shares without the consent of shareholders in a general meeting.

14.1 Defensive Tactics

A target company can adopt a number of tactics to defend itself from hostile takeover through a tender offer.

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- **Divestiture** In a *divestiture* the target company divests or spins off some of its businesses in the form of an independent, subsidiary company. Thus, reducing the attractiveness of the existing business to the acquirer.
- **Crown jewels** When a target company uses the tactic of divestiture it is said to sell the crown jewels. In some countries such as the UK, such tactic is not allowed once the deal becomes known and is unavoidable.
- **Poison pill** Sometimes an acquiring company itself becomes a target when it is bidding for another company. The tactics used by the acquiring company to make itself unattractive to a potential bidder is called poison pills. For instance, the acquiring company may issue substantial amount of convertible debentures to its existing shareholders to be converted at a future date when it faces a takeover threat. The task of the bidder would become difficult since the number of shares to having voting control of the company increases substantially.
- **Poison Put** In this case the target company issue bonds that encourage holder to cash in at higher prices. The resultant cash drainage would make the target unattractive.
- **Greenmail** Greenmail refers to an incentive offered by management of the target company to the potential bidder for not pursuing the takeover. The management of the target company may offer the acquirer for its shares a price higher than the market price.
- **White knight** In this a target company offers to be acquired by a friendly company to escape from a hostile takeover. The possible motive for the management of the target company to do so is not to lose the management of the company. The hostile acquirer may change the management.
- **White squire** This strategy is essentially the same as white knight and involves sell out of shares to a company that is not interested in the takeover. As a consequence, the management of the target company retains its control over the company.
- **Golden parachutes** When a company offers hefty compensations to its managers if they get ousted due to takeover, the company is said to offer *golden parachutes*. This reduces their resistance to takeover.
- **Pac-man defence** This strategy aims at the target company making a counter bid for the acquirer company. This would force the acquirer to defend itself and consequently may call off its proposal for takeover.

It is needless to mention that hostile takeovers, as far as possible, should be avoided as they are more difficult to consummate. In other words, friendly takeover are better course of action to follow.

15.0 LEGAL ASPECTS OF M & As

Merger control requirements in India are currently governed by the provisions of the Companies Act, 1956 and the Securities and Exchange Board of India (Substantial Acquisition of Shares and Takeovers) Regulations, 1997. ("the takeover code"). The provisions of the Takeover Code apply only to acquisition of shares in listed public companies. Although there is no definition of amalgamation or mergers in the Indian Companies Act, it is understood to mean an arrangement by which transfer of undertakings is effected. Sections 391 to 396 of the Companies Act deals with such an arrangement. Other statutes which governs merger proposals are the Industries (Development and Regulation) Act, 1951; the Foreign Exchange Management Act, 2000, the Income Tax Act, 1961 and the SEBI Act, 1992.

16.0 DUE DILIGENCE

In the past, various authors have emphasized the importance of due diligence in M&A. The concept of due diligence has many dimensions such as:

Due diligence is research, its purpose in M&A is to support the valuation process, arm negotiators, test the accuracy of representations and warranties contained in the merger agreement, fulfill disclosure requirements to investors, and inform the planners of post-merger integration. Due diligence is conducted in a wide variety of corporate finance settings, and is usually connected with the performance of a professional or fiduciary duty. It is the opposite of negligence.

Weaknesses in the due diligence process may cause an M&A to fail. In addition, buyers in M&A may find "ignorance of knowledge risks to be a weak basis for a lawsuit seeking damages from sellers".

A due diligence process should focus at least on the following issues:

- **Legal issues:** These include examining documents of asset ownership and associated liabilities; and whether the target company is in compliance with government regulations.
- **Financial and tax issues:** These include examining accounting records and reports to determine whether the target companies are in compliance with generally accepted accounting principles. In addition, the target company's compliance with tax laws and regulations should be examined.
- **Marketing issues:** These include strengths and weaknesses of products and services provided by the target company and their domestic and foreign competition.
- **Cross-border issues:** These include foreign currency exchange risks, foreign laws and regulations, investment promotional agency and investment incentives, foreign banking and credit agencies, accounting principles, and local tax rules.

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- Cultural and ethical issues: These cover cultural differences between the acquirer and target companies and how to deal with these differences; the degree of compliance with the acquirer's ethical guidelines; and the exposure to liabilities and legal proceedings on unethical conduct such as patent and copyright violations, price fixing and others.

17.0 TARGET VALUATION FOR M & A

The value of a business is a function of the business logic driving the M&A and is based on bargaining powers of buyers and sellers. Since business is based on expectations which are dynamic, valuation also tends to be dynamic and not static which means that the same transaction would be valued by the same players at different values at two different times.

Thorough **due diligence** has to be exercised in deciding the valuation parameters since these parameters would differ from sector to sector and company to company.

Because of the Competitive nature of the acquisition market, companies not only need to respond wisely but often must respond quickly as well. The growing independence of corporate boards and their demand for better information to support strategic decisions such as acquisitions have raised the general standard for acquisition analysis. Sound analysis, convincingly, communicated also yields substantial benefits in negotiations with the target company's management or, in the case of tender offers, its shareholders.

After all, shareholders value creation depends not on pre-merger market valuation of the target company but on the actual acquisition price the acquiring company pays compared with the setting company's cash flow contribution to the combined company. Only a limited supply of acquisition, candidates is available at the price that enables the acquirer to earn an acceptable economic return on investment. A well conceived valuation programme that minimizes the risk of buying an economically unattractive company or paying too much for an attractive one is particularly important in today's market. The premium that must be paid by a successful bidder case for a more careful analysis by buyer than ever before.

There are also social and cultural issues post merger. There are primarily related to work culture, management style and human resources. Synergies fructify only when these issues could be sorted out very early in the merger.

There are several techniques to value a business. Broadly, these can be classified into earnings based valuation, market based valuation and asset based valuation. **Earnings based** valuation (discounted cash-flow being the most common technique) takes into consideration the future earnings of the business and hence the appropriate value depends on projected revenues and costs in future, expected capital outflows, number of years of projection, discounting rate and terminal value of business.

In a **cost to create** approach, the cost for building up the business from scratch is taken into consideration and the purchase price is typically the cost plus a margin. This is suitable in cases like build-operate-transfer deals. The value of a business is estimated in the

capitalized earnings method by capitalizing the net profits of the business of the current year or average of three years or projected years at required rate of return.

While using **the market based valuation** for unlisted companies, comparable listed companies have to be identified and their market multiples (*such as market capitalizations to sales or stock price to earnings per share*) are used as surrogates to arrive at a value.

The asset based value considers either the book value (assets net liabilities) or the net adjusted value (revalued net assets). If the company has intangible assets like brands, copyrights, intellectual property etc., these are valued independently and added to the net asset value to arrive at the business value. Sometimes, if the business were not to be acquired on a going concern basis, the liquidation value (or the realization from sale of assets) is considered for the purpose of valuation.

Premiums and discounts are typically attached to a business valuation, based on the situation. These could be market share premium, controlling stake premium, brand value premium, small player discount or unlisted company discount. In addition, it may be required to work out various potential scenarios in each methodology and arrive at the likely probabilities of each while deriving the values.

Timing is very critical while divesting a business since valuation depends on the timing. Timing of sale is crucial keeping in mind economic cycles (deal valuation takes into consideration GDP growth rates), stock market situations (which would decide market multiples), global situations (*like a war or terrorist attacks*).

In times like the above, the price expectations between the buyer and the seller would widely vary. For example, during a stock market lull, there could be a situation where there are more buyers but not sellers due to the low valuation.

The basis for M&A is the expectation of several future benefits arising out of **synergies** between businesses. There is a risk involved in realizing this synergy value. This could be due to corporate, market, economic reasons or wrong estimation of the benefits/synergies. A key case in point here is the high valuations at which internet companies were acquired in the year 2000 (*such as Satyam's acquisition of India World for USD 100 Million*).

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It is also important to try and work out valuations from as many of the above methods as possible and then try and see which methodology is to be taken in and which are to be rejected and derive a range of values for the transaction in different situations in case one is called upon to assist in advising the transaction valuation. Some methods like Net Asset value or past earnings based methods may prove inadequate in case of growing businesses or those with intangible assets.

Some case studies are listed below based on actual Indian situations and an analysis based on published data is given below.

17.1 CASE STUDY – RATIONALE FOR M & A AND VALUATION

IBM acquisition of Daksh e-Services

The USD 89 billion IBM proposed to buy 100% stake in Daksh e-Services. Daksh is one of the leading independent third party BPO services providers in India and ranks among the top three. Daksh was estimated to have revenues of about USD 50 Million and net profits of USD 10 Million for FY 2004. The value of the deal was estimated to be between USD 130 to 170 Million. This works out to a sales multiple of 3 and earnings multiple of 15.

While the valuation could typically be considered to be on the higher side (*smaller firms in this space would command a revenue multiple of 1 to 1.5*), several factors have made the deal worth its premium. These include the larger size of Daksh, the fact that its IPO-ready and customer synergies (IBM has several existing contracts with the two large customers of Daksh-Sprint and Aetna). Also, IBM has recently increased its India focus and it currently has 4500 people working in the software services and BPO areas.

The deal proves beneficial for Daksh as well considering that it is now stronger to face the stiff competition from not only Indian third party players, but large multinational players as well. Also, the deal would provide reasonable returns for its current financial investors and give them an exit opportunity.

17.2 CASE STUDY – VALUATION ANALYSIS

Listed software company X to merge with unlisted company Y

Company X and company Y were in the software services business. X was a listed company and Y was an unlisted entity. X and Y decided to merge in order to benefit from marketing. Operational synergies and economies of scale. With both companies being mid-sized, the merger would make them a larger player, open new market avenues, bring in expertise in more verticals and wider management expertise. For company X, the benefit lied in merging with a newer company with high growth potential and for company Y, the advantage was in merging with a business with track record, that too a listed entity.

The stock swap ratio considered after valuation of the two businesses was 1:1. Several key factors were considered to arrive at this valuation. Some of them were very unique to the

businesses and the deal:

- Valuation based on book value net asset value would not be appropriate for X and Y since they are in the knowledge business, unless other intangibles assets like human capital, customer relationships etc. could be identified and valued.
- X and Y were valued on the basis of a) expected earnings b) market multiple.
- While arriving at a valuation based on expected earnings, a higher growth rate was considered for Y, it being on the growth stage of the business life cycle while a lower rate was considered for X, it being in the mature stage and considering past growth.
- Different discount factors were considered for X and Y, based on their cost of capital, fund raising capabilities and debt-equity ratios.
- While arriving at a market based valuation, the market capitalization was used as the starting point for X which was a listed company. Since X had a significant stake in Z, another listed company, the market capitalization of X reflected the value of Z as well. Hence the market capitalization of Z had to be removed to the extent of X's stake from X's value as on the valuation date.
- Since Y was unlisted, several comparable companies had to be identified, based on size, nature of business etc. and a composite of their market multiples had to be estimated as a surrogate measure to arrive at Y's likely market capitalization, as if it were listed. This value had to be discounted to remove the listing or liquidity premium since the surrogate measure was estimated from listed companies.
- After arriving at two sets of values for X and Y, a weighted average value was calculated after allotting a higher weight for market based method for X (being a listed company) and a higher weight for earnings based method for Y (being an unlisted but growing company). The final values for X and Y were almost equal and hence the 1:1 ratio was decided.

17.3 CASE STUDY – RATIONALE FOR M&A AND VALUATION

Citigroup to buy 100% stake in e-Serve International

US-based banking major Citigroup has announced that it intends to buy out the 55.6 per cent public shareholding in its publicly listed subsidiary, business process outsourcing company e-Serve International, for Rs.550 crore. Citigroup is looking at offering e-Serve's existing shareholders up to Rs.800 per share for buying their holding in the company. This puts the enterprise value of e-Serve at more than Rs.1,000 crore. Citigroup is the largest shareholder with its current stake of 44.4 per cent. Citigroup is also the sole customer of e-Serve which makes it a captive unit of the banking major. e-Serve provides back office services to Citigroup companies.

Citigroup has offered a price of Rs.800 per share as against the closing price of Rs.630 on

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the date of announcement (April 8, 2004). Also, the price is at a 26% premium over the 52 week average share price. Why would Citigroup which already owns the largest stake want to buy out all of e-Serve, that too at a premium?

Citigroup expects several potential integration benefits from the buyout. Since e-Serve caters not only to Citibank's requirements, but more importantly, to Citibank's customers requirements through its call centre and other back office operations. Citibank feels it is crucial to have full stakeholding of e-Serve to ensure operational flexibility and control.

Also, from a financial and business perspective e-Serve has grown by leaps and bounds since it started business as a small check processing centre in 1992. Today e-Serve's 5,000 employees provide services to Citibank India and Citigroup businesses in Europe, Africa, North America and South Asia. The company had a net profit of Rs.115.1 million on revenue of Rs.850 million in the quarter to Dec. 31, 2003. e-Serve is expected to grow at 30% in revenue and profits in the next two years.

This acquisition is strategic in nature considering not only internal synergies, but also the India out-sourcing story. India is becoming the preferred back office centre to the world's leading companies.

In summary, the challenge to valuing for M&As is to obtain a thorough understanding of the business dynamics of both the parties, the rationale for the merger, the industry dynamics, the resulting synergies as well as the likely risks of the transaction are required in order to ensure that the valuation is such that it is a 'win-win' for both the parties and is financially viable. It is also important to understand that there are no hard and fast rules since one is projecting the future which is 'unknown' based on current understanding. **Therefore, experience, good judgment and diligence are important in working out values.**

Valuation Techniques

Earnings based valuation	Market based valuation	Asset based
<ul style="list-style-type: none">Discounted Cashflow/Free cashflow	<ul style="list-style-type: none">Market capitalization for listed companies.	<ul style="list-style-type: none">Net Adjusted Asset Value or economic book value
<ul style="list-style-type: none">Cost to create approach.	<ul style="list-style-type: none">Market multiples of comparable companies for unlisted company.	<ul style="list-style-type: none">Intangible Asset Valuation.
<ul style="list-style-type: none">Capitalised earnings method.		<ul style="list-style-type: none">Liquidation Value.

As stated above one of the essential steps in Mergers & Acquisitions is determining the value of the target company. There are several valuation frameworks for measuring the value of the target firm. One of the popular approaches is the Discounted Cash Flow Technique (DCF). In the DCF approach, the value of the business is the future expected

cash flow discounted at a rate that reflects the riskiness of the projected cash flows. This methodology is used to value companies since firms are essentially collection of projects. There are six steps involved in the valuation

Step 1: Determine Free Cash Flow

Free cash flow is the cash flow available to all investors in the company — both shareholders and bondholders after consideration for taxes, capital expenditure and working capital investment.

Free cash flow = NOPAT + Depreciation – (Capital expenditure + Working capital investment)

Estimate the most likely incremental cash flows to be generated by the target company with the acquirer as owner (and not on as-is basis). Note that financing is not incorporated in the cash flows. Suitable adjustments for the specific financing of the acquisition will be made in the discount rate.

Step 2 : Estimate a suitable Discount Rate for the Acquisition

The acquiring company can use its weighted average cost of capital based on its target capital structure only if the acquisition will not affect the riskiness of the acquirer. If the acquirer intends to change the capital structure of the target company, suitable adjustments for the discount rate should be made. The discount rate should reflect the capital structure of the company after the acquisition.

Step 3 : Calculate the Present Value of Cash Flows

Since the life of a going concern, by definition, is infinite, the value of the company is,

$$= \text{PV of cash flows during the forecast period} + \text{Terminal value}$$

We can set the forecast period in such a way that the company reaches a stable phase after that. In other words, we are assuming that the company will grow at a constant rate after the forecast period.

Step 4 : Estimate the Terminal Value.

The terminal value is the present value of cash flows occurring after the forecast period. If we assume that cash flows grow at a constant rate after the forecast period, the terminal value,

$$TV = [CF_t (1 + g)] / k - g$$

where,

CF_t = Cash flow in the last year

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g = Constant growth rate

k = Discount rate

Step 5 : Add Present Value of Terminal Value.

Step 6 : Deduct the Value of Debt and Other Obligations Assumed by the Acquirer.

Illustration

XYZ Ltd. is a paints manufacturer. Analysts expect the company to grow at 15 per cent per annum. The analyst's forecast of free cash flow is shown below :

Free cash flow forecast for XYZ Ltd.

(Rs in crores)

	Years							
	2002	2003	2004	2005	2006	2007	2008	2009
Sales	178.13	204.85	235.58	270.92	311.56	358.29	412.03	473.83
EBIT	16.33	17.25	17.19	19.58	22.17	24.95	27.89	30.95
NOPAT	10.61	11.21	11.17	12.73	14.41	16.22	18.13	20.12
+ Depreciation	3.14	2.13	2.68	2.82	2.96	3.11	3.26	3.42
Less :								
Capital exp.	0	0.63	2.36	1.79	1.88	1.97	2.07	2.17
Increase in working capital	0	6.44	4.12	6.10	9.45	11.67	12.97	14.32
Free cash flow	13.75	6.27	7.37	7.66	6.04	5.69	6.35	7.05

The cost of capital of the company is 15 per cent. The present value of cash flows discounted at 15% cost of capital works out to Rs. 36.09 crores. We are assuming that the company acquiring XYZ Ltd. will not make any operating improvements or change the capital structure.

Analyst expect the cash flows to grow at 10 per cent forever after 2009.

Approach I : Terminal Value is a Growing Perpetuity

Terminal value = $FCF, (1 + g) / (k - g)$

$$= \frac{7.05(1.10)}{0.15 - 0.10} = \frac{7.775}{0.05}$$

= Rs. 155.5 crores

$$\begin{aligned}\text{Present value of terminal value} &= 155.5 \times \text{PVIF} (15, 7) \\ &= 155.5 \times 0.376 = 58.47 \text{ crores}\end{aligned}$$

$$\text{Total value} = \text{Rs. } (36.09 + 58.47) = \text{Rs. } 94.56 \text{ crores}$$

Since we are interested in buying only the shares of the firm, the value of outstanding debt should be deducted from the firm value to arrive at the value of equity. XYZ Ltd. has debt amounting to Rs. 7.92 crores

$$\text{Value of equity} = 94.56 - 7.92 = \text{Rs. } 86.64 \text{ crores}$$

As is evident, much of the target company's value comes from terminal value, which is sensitive to the assumption made about the growth rate of cash flows in perpetuity. There are three other ways in which terminal value can be estimated.

Approach 2 : Terminal Value is a Stable Perpetuity

If there is no capital expenditure or capital expenditure exactly equals depreciation after the forecast period, meaning that the total capital does not grow anymore, cash flow equals profit after tax. In other words, when we assume that the company earns a rate of return on capital equal to the cost of capital irrespective of growth in sales,

$$\begin{aligned}\text{Terminal value} &= \left[\frac{\text{Free cash flow}}{\text{Discount rate}} \right] = \text{FCF} / k \\ &= \left[\frac{7.05}{0.15} \right] = \text{Rs. } 47 \text{ crores}\end{aligned}$$

$$\text{Value of the firm} = 36.09 + 47.00 = \text{Rs. } 83.09 \text{ crores.}$$

The difference in value is almost Rs. 12.71 crores.

Approach 3 : Terminal Value as a Multiple of Book Value

The terminal value can also be estimated by multiplying the forecasted book value of capital by an appropriate market-to-book ratio (P/BV). Normally, the current M/B ratio is taken as proxy for future.

Consider the following example.

	Market value	Book value	M/B
Debt	7.92	7.92	1.0
Equity	15.0	10.0	1.50
Total Capital	22.92	17.92	1.28

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The current M/B ratio is 1.28. If the book value of capital at the end of forecast period is Rs. 30 crores, Terminal value = $30 \times 1.28 = \text{Rs. } 38.40$ crores.

Approach 4 : Terminal Value as a Multiple of Earnings

The terminal value under this method is established by multiplying the forecasted terminal year profits by an appropriate price minus the earning multiple. As usual, the current P/E multiple can be used as proxy for future.

Current P/E multiple = Current market value of company/Current profit after tax

To illustrate, if the current market value is Rs. 57.62 crores and profit after tax is Rs. 8.23 crores, $P/E = 57.62/8.23 = 7$

Terminal value = Last year profits \times P/E multiple

$$= 20.12 \times 7 = \text{Rs. } 140.84 \text{ crores}$$

Obviously, the method adopted by the analyst affects the final value placed on the company's equity. These four methods might give four different answers. The DCF approach can capture the value of assets in place. Some components of the acquisition are hard to quantify. Consequently, the final price paid by the acquirer might be much higher than the DCF value obtained. But the premium paid for the so-called synergy should not be out of proportion. We could think of the target company's value as,

Value of buyer = Value of seller + Value added by buyer + Change in value to buyer if target firm is acquired by competitor.

The first component is the DCF value of the target firm in its current form with the current growth rate, current financial plan, etc.

The second component, value added by acquirer comprises of synergy to acquirer, cost savings, value of new strategy after the acquisition, proceeds from sale of redundant assets adjusted for taxes benefits from improvement in credit-rating and other financing side-effects.

The third component is the gain or loss to the acquirer if the competitor manages to acquire the target. The sum total of these three components gives the maximum value of the target.

A sensitivity analysis may be conducted for pessimistic and optimistic values of key financial variables like sales growth rate, profit margin, working capital investment, capital expenditure, period of high growth, etc. The end product of such an analysis is a range of prices within the acquisition price may lie. Obviously, the acquirer would want to lower the price as much as possible and the opposite is true for the target. The important message is that the acquirer should consider not only what the target may be worth to the buyer but also what the target's next best alternative is likely to be. For example, suppose that when valued as a stand alone, a target is worth Rs. 100, whereas, due to synergies, the target is worth Rs. 150 as part of the buying firm. A key element in the negotiation process is the

value of the target to another bidder. If the synergy is unique to the buyer, the buyer may purchase the company for one rupee more than the stand-alone value (Rs. 101). On the other hand, if the synergy is available to other bidders as well, the buyer may have to raise the bid closer to Rs. 150. In other words, the valuation must take into account the uniqueness of synergy and the likely range of prices affordable by other bidders. To sum up, valuation has three elements — estimation of cash flows, estimation of discount rate, and sensitivity analysis.

Once the value of the firm has been determined, the next stage is the method of making payment for the acquired firm. The choice of financial instruments and techniques of acquiring a firm usually have an effect on the purchasing agreement. The payment may take the form of either cash or securities i.e. ordinary shares, convertible shares, deferred payment plans and tender offer.

18.0 CORPORATE RESTRUCTURING

Restructuring of business is an integral part of modern business enterprises. The globalization and liberalization of Control and Restrictions has generated new waves of competition and free trade. This requires Restructuring and Re-organisation of business organization to create new synergies to face the competitive environment and changed market conditions.

Restructuring usually involves major organizational changes such as shift in corporate strategies. Restructuring can be internally in the form of new investments in plant and machinery, Research and Development of products and processes, hiving off of non-core businesses, divestment, sell-offs, de-merger etc. Restructuring can also take place externally through mergers and acquisition (M&A) and by forming joint-ventures and having strategic alliances with other firms.

The topic of Mergers and Acquisition has already been discussed in previous section. It is now proposed to focus on Corporate Restructuring.

The aspects relating to expansion or contraction of a firm's operations or changes in its assets or financial or ownership structure are known as corporate re-structuring. While there are many forms of corporate re-structuring, mergers, acquisitions and takeovers, financial restructuring and re-organisation, divestitures de-mergers and spin-offs, leveraged buyouts and management buyouts are some of the most common forms of corporate restructuring. These forms are discussed herein as follows:

18.1 DEMERGERS OR DIVISIONS

There are various reasons for divestment or demerger viz.,

- (i) To pay attention on core areas of business;

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- (ii) The Division's/business may not be sufficiently contributing to the revenues;
- (iii) The size of the firm may be too big to handle;
- (iv) The firm may be requiring cash urgently in view of other investment opportunities.

Different ways of divestment or demerger are as follows:

Sell off: A sell off is the sale of an asset, factory, division, product line or subsidiary by one entity to another for a purchase consideration payable either in cash or in the form of securities.

Spin-off: In this case, a part of the business is separated and created as a separate firm. The existing shareholders of the firm get proportionate ownership. So there is no change in ownership and the same shareholders continue to own the newly created entity in the same proportion as previously in the original firm. The management of spun-off division is however, parted with. Spin-off does not bring fresh cash. The reasons for spin off may be:

- (i) Separate identity to a part/division.
- (ii) To avoid the takeover attempt by a predator by making the firm unattractive to him since a valuable division is spun-off.
- (iii) To create separate Regulated and unregulated lines of business.

Split-up: This involves breaking up of the entire firm into a series of spin off (by creating separate legal entities). The parent firm no longer legally exists and only the newly created entities survive. For instance a corporate firm has 4 divisions namely A, B, C, D. All these 4 division shall be split-up to create 4 new corporate firms with full autonomy and legal status. The original corporate firm is to be wound up. Since de-merged units are relatively smaller in size, they are logistically more convenient and manageable. Therefore, it is understood that spin-off and split-up are likely to enhance shareholders value and bring efficiency and effectiveness.

Carve outs: This is like spin off however, some shares of the new company are sold in the market by making a public offer, so this brings cash. In carve out, the existing company may sell either majority stake or minority stake, depending upon whether the existing management wants to continue to control it or not.

Sale of A Division: In the case of sale of a division, the seller company is demerging its business whereas the buyer company is acquiring a business. For the first time the tax laws in India propose to recognise demergers. The broad principles of the tax principles relating to demerger are :

- Demergers should be tax neutral and should not attract any additional liability to tax.
- Tax benefits and concessions available to any undertaking should be available to the said undertaking on its transfer to the resulting company.
- Tax benefits should be limited to the transfer of business as a going concern and not to the transfer of specific assets.

- The accumulated losses and unabsorbed depreciation should be allowed to be carried forward by the resulting company if these are directly relatable to the undertaking proposed to be transferred. Where it is not possible to relate these to the undertaking such losses and depreciation shall be apportioned between the demerged company and the resulting company in proportion of the assets coming to the share of each.
- The Central Government may prescribe certain guidelines or conditions to ensure that demergers are made for genuine business purposes.
- The benefits available for demergers will be extended to Authorities or Boards set up by Central or State Governments.
- The transfer of assets will not attract capital gains tax if the demerged company is an Indian company.
- The book value of the transferred assets will be deducted from the block for the purpose of depreciation.
- Depreciation on the assets transferred will be allowed pro-rata, on the basis of the number of days of use.
- No profit or loss will be recognised on transfer of patent rights or copyrights or telecom licence.
- Demerger expenses shall be allowed as a deduction equally over five years.
- A new ship acquired by a shipping company from a tax free reserve will be permitted to be transferred without attracting tax.
- Any transfer or issue of shares by the resulting company to the shareholders of the demerged company will not attract capital gains tax.
- The deduction for amortisation of know-how or preliminary expenses will continue in the hands of the resulting company.
- The resulting company will be liable for tax in respect of recoupment of loss or remission of liability incurred by the demerged company.
- If oil prospecting or exploration business is acquired, the special deduction for such business will be allowed to the resulting company
- The actual cost of any transferred capital assets will be the same as in the case of the demerged company but shall not exceed the written down value in the hands of the demerged company.
- The written down value of any block of assets will be the book value in the accounts of the demerged company, but shall not exceed the written down value in the hands of the demerged company.

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- The holding period of shares acquired on demerger shall include the holding period of the shares in the demerged company.
- The cost of acquisition of shares in the demerged company will be spread over the shares in the demerged company and the shares in the resulting company, proportionate to the net book value of the assets transferred.
- In the case of GDRs and FCCBs, the concessional tax provisions will continue to apply.
- Any distribution of shares by the resulting company will not be considered as dividend.

The brought forward losses will not lapse in spite of change in shareholding, subject to certain conditions.

18.2 DEMERGER OR DIVISION OF FAMILY-MANAGED BUSINESS

Around 80 per cent of private sector companies in India are family-managed companies. The family-owned companies are, under extraordinary pressure to yield control to professional managements, as, in the emerging scenario of a liberalised economy the capital markets are broadening, with attendant incentives for growth. So, many of these companies are arranging to hive off their unprofitable businesses or divisions with a view to meeting a variety of succession problems.

Even otherwise, a group of such family-managed companies may undertake restructuring of its operations with a view also to consolidating its core businesses. For this, the first step that may need to be taken is to identify core and non-core operations within the group. The second step may involve reducing interest burden through debt restructuring along with sale of surplus assets. The proceeds from the sale of assets may be employed for expanding by acquisitions and rejuvenation of its existing operations. The bottomline is that an acquisition must improve economies of scale, lower the cost of production, and generate and promote synergies. Besides acquisitions, therefore, the group may necessarily have to take steps to improve productivity of its existing operations.

18.3 CORPORATE CONTROLS

Going Private: This refers to the situation wherein a listed company is converted into a private company by buying back all the outstanding shares from the markets.

Equity buyback: This refers to the situation wherein a company buys back its own shares back from the market. This results in reduction in the equity capital of the company. This strengthen the promoter's position by increasing his stake in the equity of the company.

Restructuring of an existing business: An existing business in the face of impending onslaught of international competition, or even otherwise, may require restructuring. Such restructuring may involve, for instance, downsizing and closing down of some unprofitable departments. So also, trimming the number of personnel. There may also arise a case of

restructuring of a company where for instance, there has been a failure of management, or, for the matter of that, to overcome a wrong business or financial decision. In such a situation, the company may sell or close certain divisions, pay off debt, focus on more promising lines of business and focus hard to enhance shareholder value. Restructuring may also involve a long-drawn process. The interesting part is that the process of change has affected stock prices of these companies. And the same can be expected of their domestic subsidiaries after a while unless business dynamics or holding structure widely differ.

Buy-outs: This is also known as Management buyouts (MBO). In this case, the management of the company buys a particular part of the business from the firm and then incorporates the same as a separate entity. Sometimes, the existing management is short of funds to pay for buyout and therefore resort to heavy debt financing nearly 90-95% from investors, banks, Financial Institutions etc. In such a situation the buyout is termed as leveraged Buy-out (LBO). The LBO involves participation by third party (lenders) and the management no longer deals with different shareholders, but instead with the lenders only. However, heavy debt financing in LBO leads to dramatic increase in the debt ratio posing heavy risk. However, LBO is still acceptable in view of Tax benefits accrued on interest, it being tax deductible.

A very important phenomenon witnessed in recent times is one of buy-outs. The majority of buy-outs are management buy-outs and involve the acquisition by incumbent management of the business where they are employed. Typically, the purchase price is met by a small amount of their own funds and the rest from a mix of venture capital and bank debt.

Management buy-ins are a similar form of transaction but differs in that the entrepreneurs leading the transaction come from outside the company. The Buy-ins is a hybrid form involving both existing and new managements. The late 1990s saw the developments of investor buy-outs where venture capital groups initiated and lead transactions, with managements playing a marginal role.

Internationally, the two most common sources of buy-out operations are divestment of parts of larger groups and family companies facing succession problems. Corporate groups may seek to sell subsidiaries as part of a planned strategic disposal programme or more forced reorganisation in the face of parental financing problems. Public companies have, however, increasingly sought to dispose of subsidiaries through an auction process partly to satisfy shareholder pressure for value maximisation.

In recessionary periods buy-outs can play a big part in restructuring of failed or failing businesses and in an environment of generally weakened corporate performance often represent the only viable purchasers when parents wish to dispose of subsidiaries.

Buy-outs are one of the most common forms of privatisation, offering opportunities for enhancing the performances of parts of the public sector, widening employee ownership and giving managers and employees incentives to make best use of their expertise in particular sectors.

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Buy-outs will typically be financed by a mixture of senior secured debt and a range of equity and quasi-equity instruments. For larger buy-outs, especially when auctions and buoyant conditions mean that prices well in excess of the security value of assets have to be paid, subordinated (mezzanine debt) may be used. Quasi-equity instruments, such as cumulative convertible participating preferred ordinary shares, are important both in ensuring the venture capitalist obtains a regular dividend and in putting pressure on managers to perform and/or seek to realise an investment in a timely fashion.

Interestingly, capital markets have generally shown an obvious bias in favour of large companies; small and medium-sized companies, the chief generators of jobs in the economy, have suffered neglect by investors. While smaller companies produce superior earnings and higher share prices during bull markets, there is usually, during bear markets, a flight to quality. Investors divert funds towards the large, more stable companies that tend to have stronger balance sheets. The recent development is that private individuals are increasingly reducing their direct exposure to equities in order to take advantages of tax-privileged forms of ownership in favour of an institutionalised market. This results in concentration of funds in the hands of professional managers. But they, too, are biased in favour of large-cap stocks. This anomaly in the capital market needs to be corrected urgently if restructuring of various industrial sectors has to be completed with quicker pace.

Full buy-out : The Bhagwati Committee noted, in its Final Report, that the new 1997 Takeover Code has finally created a transparent environment for taking over the ownership and control of companies. This is to be welcomed, because takeovers play an important role in building corporate synergy, in raising shareholder value and in keeping companies on their toes. However, there is an important element that has been missed out by the new code, which ought to be rectified as soon as possible. This has to do with full buy-out. Since the term 'full buy-out' is not well understood in India, it requires, according to the Bhagwati Panel, some explanation. In many OECD countries, when a person, group, or body corporate acquires over 90% or 95% of the equity of a public listed company, it is incumbent upon the residual shareholders to sell their shares to the buyer at a fair price that is set by the regulatory authority. This is not legislated in India.

A key feature of shareholder democracy is that all shareholders who own a given class of equity are alike. Without full buy-out provisions, the residual shareholders face one of two options, both of which are inimical to this aspect of shareholder democracy. First, they may hold out for a higher offer, which is probably unfair *vis-a-vis* the other shareholders who sold their stake. Or, second (and more likely if the company gets delisted) these shareholders may get squeezed by the buyer to accept a lower price, which is unfair to them. Therefore, in the interest of shareholders and companies, the Bhagwati Panel has recommended that, in the event of any person, group or body corporate acquiring 95% of the shares of a public listed company — either through a takeover or otherwise — and the company getting delisted, residual shareholders should sell their shares to the 95% owner at a price based upon SEBI guidelines.

Seller's Perspective: It is necessary to remember that for every buyer there must be a seller. Although the methods of analysis for selling are the same as for buying, the selling process is termed **divestiture**. The decision to sell a company is at least as important as buying one. But selling generally lacks the kind of planning that goes into buying. Quite often, the decision and the choice of the buyer is arbitrary, resulting in a raw deal for the selling company's shareholders. It is important to understand that selling needs the same set of skills required for buying. At some point of time the executives of a company may have to take the decision to divest a division. There is nothing wrong in selling a division if it is worth more to someone else. The decision to sell may be prompted by poor growth prospects for a division or consolidation in the industry. Given the fact that the need to sell may arise any time, it makes sense for executives to be prepared. More specifically, executives need to know their company's worth. Consideration may be given to strengths and weakness in production, marketing, general management, value of synergy to potential buyers, value of brand equity, skill base of the organisation, etc.

19.0 FINANCIAL RESTRUCTURING

Financial restructuring refers to a kind of internal changes made by the management in Assets and Liabilities of a company with the consent of its various stakeholders. This is a suitable mode of restructuring for corporate entities who have suffered from sizeable losses over a period of time. Consequent upon losses the share capital or networth of such companies get substantially eroded. In fact, in some cases, the accumulated losses are even more than the share capital and thus leading to negative networth, putting the firm on the verge of liquidation. In order to revive such firms, financial restructuring is one of the technique to bring into health such firms who are having potential and promise for better financial performance in the years to come. To achieve this desired objective, such firms need to re-start with a fresh balance sheet free from losses and fictitious assets and show share capital at its real true worth.

To nurse back such firms a plan of restructuring need to be formulated involving a number of legal formalities (which includes consent of court, and other stake-holders viz., creditors, lenders and shareholders etc.). An attempt is made to do Refinancing and rescue financing while Restructuring. Normally equity shareholders make maximum sacrifice by foregoing certain accrued benefits, followed by preference shareholders and debenture holders, lenders and creditors etc. The sacrifice may be in the form of waving a part of the sum payable to various liability holders. The foregone benefits may be in the form of new securities with lower coupon rates so as to reduce future liabilities. The sacrifice may also lead to the conversion of debt into equity. Sometime, creditors, apart from reducing their claim, may also agree to convert their dues into securities to avert pressure of payment. This measures will lead to better financial liquidity. The financial restructuring leads to significant changes in the financial obligations and capital structure of corporate firm, leading to a change in the financing pattern, ownership and control and payment of various financial changes.

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In nutshell it may be said that financial restructuring (also known as internal re-construction) is aimed at reducing the debt/payment burden of the corporate firm. This results into (i) Reduction/Waiver in the claims from various stakeholders; (ii) Real worth of various properties/assets by revaluing them timely; (iii) utilizing profit accruing on account of appreciation of assets to write off accumulated losses and fictitious assets (such as preliminary expenses and cost of issue of shares and debentures) and creating provision for bad and doubtful debts. In practice, the financial re-structuring scheme is drawn in such a way so that all the above requirements of write off are duly met. The following illustration is a good example of financial restructuring.

Illustration

The following is the Balance-sheet of XYZ Company Ltd as on March 31st, 2006.

(Rs. in lakhs)

Liabilities		Assets	
6 lakhs equity shares of Rs.100/- each	600	Land & Building	200
2 lakhs 14% Preference shares of Rs.100/- each	200	Plant & Machinery	300
13% Debentures	200	Furnitures & Fixtures	50
Debenture Interest accrued and Payable	26	Inventory	150
Loan from Bank	74	Sundry debtors	70
Trade Creditors	300	Cash at Bank	130
		Preliminary Expenses	10
		Cost of Issue of debentures	5
		Profit & Loss A/c	485
	<u>1,400</u>		<u>1,400</u>

The XYZ Company did not perform well and has suffered sizable losses during the last few years. However, it is now felt that the company can be nursed back to health by proper financial restructuring and consequently the following scheme of reconstruction has been devised:

- (i) Equity shares are to be reduced to Rs.25/- per share, fully paid up;
- (ii) Preference shares are to be reduced (with coupon rate of 10%) to equal number of shares of Rs.50 each, fully paid up.
- (iii) Debentureholders have agreed to forego interest accrued to them. Beside this, they have agreed to accept new debentures carrying a coupon rate of 9%.
- (iv) Trade creditors have agreed to forgo 25 per cent of their existing claim; for the balance sum they have agreed to convert their claims into equity shares of Rs.25/- each.
- (v) In order to make payment for bank loan and augment the working capital, the company issues 6 lakh equity shares at Rs.25/- each; the entire sum is required to be paid on application. The existing shareholders have agreed to subscribe to the new issue.

- (vi) While Land and Building is to be revalued at Rs.250 lakhs, Plant & Machinery is to be written down to Rs.104 lakhs. A provision amounting to Rs.5 lakhs is to be made for bad and doubtful debts.

You are required to show the impact of financial restructuring/re-construction. Also, prepare the new balance sheet assuming the scheme of re-construction is implemented in letter and spirit.

Solution

Impact of Financial Restructuring

- (i) Benefits to XYZ Ltd.

(a) Reduction of liabilities payable

	<i>Rs. in lakhs</i>
Reduction in equity share capital (6 lakh shares x Rs.75 per share)	450
Reduction in preference share capital (2 lakh shares x Rs.50 per share)	100
Waiver of outstanding debenture Interest	26
Waiver from trade creditors (Rs.300 lakhs x 0.25)	<u>75</u>
	<u>651</u>

(b) Revaluation of Assets

Appreciation of Land and Building (Rs.250 lakhs- Rs.200 lakhs)	<u>50</u>
	<u>701</u>

- (ii) Amount of Rs.701/- lakhs utilized to write off losses, fictitious assets and over- valued assets.

Writing off profit and loss account	485
Cost of issue of debentures	5
Preliminary expenses	10
Provision for bad and doubtful debts	5
Revaluation of Plant and Machinery	196
(Rs.300 lakhs – Rs.104 lakhs)	<u> </u>
	<u>701</u>

13.38 Strategic Financial Management

Balance sheet of XYZ Ltd as at _____ (after re-construction)

(Rs. in lakhs)

Liabilities	Amount	Assets	Amount
12 lakhs equity shares of Rs.25/- each	300	Land & Building	250
2 lakhs 10% Preference shares of Rs.50/- each	100	Plant & Machinery	104
9% debentures	200	Furnitures & Fixtures	50
Trade creditors	225	Inventory	150
		Sundry debtors	70
			<u>-5</u>
		Cash-at-Bank	65
		(Balancing figure)*	206
	<u>825</u>		<u>825</u>

*Opening Balance of Rs.130/- lakhs + Sale proceeds from issue of new equity shares Rs.150/- lakhs – Payment of bank loan of Rs.74/- lakhs = Rs.206 lakhs.

It is worth mentioning that financial restructuring is unique in nature and is company specific. It is carried out, in practice when all shareholders sacrifice and understand that the restructured firm (reflecting its true value of assets, capital and other significant financial parameters) can now be nursed back to health. This type of corporate restructuring helps in the revival of firms that otherwise would have faced closure/liquidation.

20.0 MARGER FAILURES OR POTENTIAL ADVERSE COMPETITIVE EFFECTS

Academic studies indicate that success in creating value through acquisitions in a competitive market is extremely difficult. Jensen and Ruback (1983) highlighted this point by summarising results from mergers and acquisitions over a period of 11 years. They found that in case of a merger, the average return, around the date of announcement, to shareholders of the acquired company is 20 per cent, whereas the average return to the acquiring company is 0 per cent. Another study by McKinsey indicates that 61 per cent of the 116 acquisitions studied were failures, 23 per cent were successes. Despite such statistics why do companies acquire ? Why do mergers fail ? The reasons for merger failures can be numerous. Some of the key reasons are :

- Acquirers generally overpay;
- The value of synergy is over-estimated;
- Poor post-merger integration; and
- Psychological barriers.

Companies often merge in the fear that the bigger competitors have economies of scale and may destroy them by exercising a stranglehold on raw material supply, distribution etc. What they don't realise is the drawbacks of being big. The acquiring company's executives would have drawn up elaborate plans for the target without consulting its executives which leads to resentment and managerial attrition. This can be avoided by honest discussions with the target company's executives.

Most companies merge with the hope that the benefits of synergy will be realised. Synergy will be there only if the merged entity is managed better after the acquisition than it was managed before. It is the quality of the top management that determines the success of the merger. Quite often the executives of the acquiring company lose interest in the target company due to its smallness. The small company executives get bogged down repairing vision and mission statements, budgets, forecasts, profit plans which were hitherto unheard of. The elaborateness of the control system depends on the size and culture of the company. To make a merger successful,

- Decide what tasks need to be accomplished in the post-merger period;
- Choose managers from both the companies (and from outside);
- Establish performance yardstick and evaluate the managers on that yardstick; and
- Motivate them.

21.0 MAXIMUM PURCHASE CONSIDERATION

Maximum purchase consideration is value of vendor's business from the viewpoint of the purchaser. This is given by present value incremental cash flow accruing to the purchaser on acquisition of vendor's business. This cash flow can be different from cash flow generated by vendor's business due to synergy. The discounting rate should reflect risk associated with the business of the vendor. The following additional points should be noted.

- (a) The discounting rate represents the rate of return desired from the operating activities. This means, the cash flows to be discounted should be the operating cash flow.
- (b) The operating cash flow of a business is the aggregate of cash flows generated by the operating assets. The present value of operating cash flow therefore, is the aggregate value of net operating assets of the vendor. Where the purchaser takes over non-operating assets of the vendor, the agreed value of the non-operating assets taken over should be added with present value of operating cash flows.
- (c) the acquisition of business can give rise to certain additional liabilities. For example, the purchaser may wish to retrench some of the existing employees of the vendor. The compensation payable on retrenchment of employees is an additional liability arising on acquisition. These liabilities should be deducted from present value of operating cash flows.

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- (d) In theory, a business has infinite life. Yet, in reality it is very difficult to project cash flows to eternity. It is, therefore, usual to assume that the business shall be disposed off after the forecast period. The expected disposal value of the business, called the terminal or horizon value, is a cash flow in the terminal year. The present value of terminal value is added with the present value of operating cash flows.

Acquiring for Shares: The acquirer can pay the target company in cash or exchange shares in consideration. The analysis of acquisition for shares is slightly different. The steps involved in the analysis are:

- Estimate the value of acquirer's (self) equity;
- Estimate the value of target company's equity;
- Calculate the maximum number of shares that can be exchanged with the target company's shares; and
- Conduct the analysis for pessimistic and optimistic scenarios.

Exchange ratio is the number of acquiring firm's shares exchanged for each share of the selling firm's stock. Suppose company A is trying to acquire company B's 100,000 shares at Rs.230. So the cost of acquisition is Rs.230,00,000. Company A has estimated its value at Rs.200 per share. To get one share of company B, A has to exchange $(230/200)$ 1.15 share, or 115,000 shares for 100,000 shares of B. The relative merits of acquisition for cash or shares should be analysed after giving due consideration to the impact on EPS, capital structure, etc.

Impact of Price Earning Ratio: The reciprocal of cost of equity is price-earning (P/E) ratio. The cost of equity, and consequently the P/E ratio reflects risk as perceived by the shareholders. The risk of merging entities and the combined business can be different. In other words, the combined P/E ratio can very well be different from those of the merging entities. Since market value of a business can be expressed as product of earning and P/E ratio ($P/E \times E = P$), the value of combined business is a function of combined earning and combined P/E ratio. A lower combined P/E ratio can offset the gains of synergy or a higher P/E ratio can lead to higher value of business, even if there is no synergy. In ascertaining the exchange ratio of shares due care should be exercised to take the possible combined P/E ratio into account.

Illustration

Firm A is studying the possible acquisition of Firm B by way of merger. The following data are available:

Firm	After-tax earnings	No. of equity shares	Market price per share
A	Rs.10,00,000	2,00,000	Rs.75
B	Rs.3,00,000	50,000	Rs.60

- (i) If the merger goes through by exchange of equity shares and the exchange ratio is set according to the current market prices, what is the new earnings per share for Firm A.
- (ii) Firm B wants to be sure that its earning per share is not diminished by the merger. What exchange ratio is relevant to achieve the objective?

Solution

- (i) the current market price is the basis of exchange of equity shares, in the proposed merger, shareholders of Firm B will get only 40,000 shares in all or 4 shares of Firm A for every 5 shares held by them, i.e.,

$$\frac{50,000 \times 60}{75} = 40,000$$

The total number of shares in Firm A will then be 2,40,000 and, ignoring any synergistic effect, the profit will be Rs.13,00,000. The new earning per share (EPS) of Firm A will be Rs.5.42, i.e., Rs.13,00,000/2,40,000.

- (ii) The present earnings per share of firm B is Rs.6/- i.e., Rs.3,00,000 ÷ 50,000 and that of Firm A Rs.5/-, i.e., Rs.10,00,000 ÷ 2,00,000. If Firm B wants to ensure that, even after merger, the earning per share of its shareholders should remain unaffected, then the exchange ratio will be 6 shares for every 5 shares.

The total number of shares that will produce Rs.3,00,000 profit is 60,000, i.e., 3,00,000 ÷ 5, the EPS in Firm A. 60,000 shares of A will be distributed among, shareholders of Firm B, giving a ratio of 6 shares in A for 5 shares in B.

Proof: The shareholders of Firm B will get in all 60,000 share for 50,000 shares. It means after merger, their earning per share will be Rs.5/-, i.e. $\frac{13,00,000}{2,60,000}$. In all they will get Rs.3,00,000, i.e., 60,000 × 5, as before.

Illustration

The Board of Directors of X Ltd. are considering the possible acquisition (by way of merger) of firm Y. The following data are available in respect of both the companies:

Company	Earnings after Tax (Rs.)	No. of Equity shares	Market value per share (Rs.)
X	4,00,000	80,000	15
Y	1,20,000	20,000	12

- (a) What shall be the new earning per share for Company X, if the proposed merger takes place by exchange of equity share and the exchange ratio is based on the current market prices?

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- (b) Company Y wants to be sure that earnings available to its shareholders will not be diminished by the Merger. What should be the exchange ratio in that case?

Solution

(a)

	Company	
	X	Y
E.A.T. (Rs.)	4,00,000	1,20,000
No. of Equity Shares	80,000	20,000
Market Value (Rs.)	15	12

Firm Y will get $\frac{12}{15} \times 20,000 = 16,000$ shares

i.e., 4 shares of X Ltd. for every 5 shares of Y Ltd.

Then, total number of shares of X Ltd., shall be

$$80,000 + 16,000 = 96,000$$

Total earnings after tax shall be = 4,00,000 + 1,20,000

$$= \text{Rs. } 5,20,000$$

$$\text{Therefore, E.P.S.} = \frac{5,20,000}{96,000} = 5.42 \text{ per share}$$

- (b) Present Earnings per share (E.P.S.)

$$\text{Company X} = \frac{4,00,000}{80,000} = \text{Rs. } 5$$

$$\text{Company Y} = \frac{1,20,000}{20,000} = \text{Rs. } 6$$

Thus, exchange ratio should be 6 shares of X Ltd. for every 5 shares of Y Ltd.

Number of shares to be issued to Y Ltd.

$$= 20,000 \times \frac{6}{5} = 24,000$$

Total number of shares of X Ltd. after merger, shall be:

$$80,000 + 24,000 = 1,04,000$$

$$\text{E.P.S. after merger, shall be} = 4,00,000 + 1,20,000$$

$$= \frac{5,20,000}{1,04,000}$$

$$= \text{Rs.5}$$

Total earnings available to shareholders of Y Ltd., after merger, shall be

$$24,000 \times 5 = \text{Rs. } 1,20,000$$

Therefore, exchange ratio based on Earnings per share is recommended.

Illustration

Company X is contemplating the purchase of Company Y, Company X has 3,00,000 shares having a market price of Rs.30 per share, while Company Y has 2,00,000 shares selling at Rs.20 per share. The EPS are Rs.4.00 and Rs.2.25 for Company X and Y respectively. Managements of both companies are discussing two alternative proposals for exchange of shares as indicated below:

- (i) in proportion to the relative earnings per share of two companies.
- (ii) 0.5 share of Company X for one share of Company Y (.5:1).

You are required:

- (i) to calculate the Earnings Per share (EPS) after merger under two alternatives; and
- (ii) to show the impact of EPS for the shareholders of two companies under both the alternatives.

Solution

Working Notes

Calculation of total earnings after merger

Particulars	Company X	Company Y	Total
Outstanding shares	3,00,000	2,00,000	
EPS (Rs.)	4	2.25	
Total earnings (Rs.)	12,00,000	4,50,000	16,50,000

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- (i) (a) Calculation of EPS when exchange ratio is in proportion to relative EPS of two companies

Company X		3,00,000
Company Y	$2,00,000 \times 2.25/4$	1,12,500
Total number of shares after merger		4,12,500

Company X

EPS before merger	=	Rs.4
EPS after merger = Rs. 16,50,000/4,12,500 shares	=	Rs.4
Company Y		
EPS before merger	=	Rs.2.25
EPS after merger		
= EPS before merger/Share Exchange ratio on EPS basis		
$= \frac{2.25}{2.25/4} = \frac{2.25}{0.5625}$	=	Rs.4

- (b) Calculation of EPS when share exchange ratio is 0.5:1

$$\begin{aligned}
 \text{Total earnings after merger} &= \text{Rs.16,50,000} \\
 \text{Total number of shares after merger} &= 3,00,000 + (2,00,000 \times 0.5) \\
 &= 4,00,000 \text{ shares} \\
 \text{EPS after merger} &= \text{Rs.16,50,000/4,00,000} = \text{Rs.4.125}
 \end{aligned}$$

- (ii) Impact of merger on EPS for shareholders of Company X and Company Y

- (a) Impact on Shareholders of Company X (Rs.)

EPS before merger	4.000
EPS after merger	4.125
Increase in EPS	0.125

- (b) Impact on Shareholders of Company Y (Rs.)

Equivalent EPS before merger (2.25/0.5)	4.500
EPS after merger	4.125
Decrease in EPS	0.375

Illustration

Simpson Ltd. is considering a merger with Wilson Ltd. The data below are in the hands of both Board of Directors. The issue at hand is how many shares of Simpson should be exchanged for Wilson Ltd. Both boards are considering three possibilities 20,000, 25,000 and 30,000 shares. You are required to construct a table demonstrating the potential impact of each scheme on each set of shareholders:

	<i>Simpson Ltd.</i>	<i>Wilson Ltd.</i>	<i>Combined Post merger Firm 'A'</i>
1. Current earnings per year	2,00,000	1,00,000	3,50,000
2. Shares outstanding	50,000	10,000	?
3. Earnings per share (Rs.) ($1 \div 2$)	4	10	?
4. Price per share (Rs.)	40	100	?
5. Price-earning ratio [$4 \div 3$]	10	10	10
6. Value of firm (Rs.)	20,00,000	10,00,000	35,00,000
7. Expected Annual growth rate in earnings in foreseeable future	0	0	0

Solution

In a merger, in which shares are issued in payment to the selling company's shareholders, stockholders will find the merger desirable only if the value of their shares is higher with the merger than without the merger. The number of shares that the buying company (Simpson Ltd.) will issue in acquiring the selling company (Wilson Ltd.) is determined as follows:

- (1) The acquiring company (Simpson Ltd.) will compare its value per share with and without the merger.
- (2) The selling company (Wilson Ltd.) will compare its value with the value of shares that they would receive from Simpson Ltd. under the merger.
- (3) The managements of Simpson Ltd. and Wilson Ltd. will negotiate the final terms of the merger in the light of (1) and (2); the ultimate terms of the merger will reflect the relative bargaining position of the two companies.

The fewer of Simpson Ltd.'s shares that Simpson Ltd. must pay to Wilson Ltd., the better off are the shareholders of Simpson Ltd. and worse off are the shareholders of Wilson Ltd. However, for the merger to be effected, the shareholders of both the buying and selling company will have to anticipate some benefits from the merger. The following table

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demonstrates the potential impact of the three possible schemes, on each set of shareholders:-

Number of Simpson Ltd.'s shares issued to shareholders of Wilson Ltd.	Exchange ratio [(1)/10,000 shares of Wilson Ltd.]	Number of Simpson Ltd.'s shares outstanding after merger [50,000+(1)]	Fraction of Firm A (Post merger) owned by Wilson Ltd.'s shareholders [(1)/(3)]	Value of shares owned by Wilson Ltd.'s shareholders [(4)x35,00,000]	Fraction of Firm A (combined Post-merger owned by Simpson Ltd.'s shareholders [50,000/(3)]	Value of shares owned by Simpson Ltd.'s shareholders [(6) x 35,00,000]
(1)	(2)	(3)	(4)	(5)	(6)	(7)
20,000	2	70,000	2/7	10,00,000	5/7	25,00,000
25,000	2.5	75,000	1/3	11,66,667	2/3	23,33,333
30,000	3	80,000	3/8	13,12,500	5/8	21,87,500

22.0 M&As : TREAD WITH CAUTION

The past couple of years have been an eventful phase for medium-sized companies in the software industry. The competitive churn that began in this segment few years ago in the form of IPOs, acquisitions, hive-offs and restructuring have intensified. Realising the inherent limitations of organic growth, medium-sized software companies have been quick to seize acquisition opportunities on a large scale. The year 2000-01 was a highly eventful, with the industry witnessing 'highs' and 'lows' in the acquisition process. The acquisitions put through in 2000 and 2001 were mainly driven by the need :

- To bolster revenues by acquiring an established client base;
- To use offshore capabilities to offer customers a cost-effective solution;
- To broadbase/enhance existing vertical domain expertise of new verticals;
- To gain access or strengthen their presence in new geographic markets such as Europe and the Asia-Pacific;
- To offer more value-added services such as e-commerce or move up the value chain by entering into Internet consulting.

The key acquisitions put through by medium-sized companies had aimed to achieve some or all of the objectives outlined above.

Prima facie, the moves to acquire medium-sized software companies were initiated with specific objectives in mind. However, in the course of their execution, several issues/problems have come to the fore. Some of these issues demand the attention of the shareholders:

Integration issues: Culture is important in intercultural business communication as explained by Chaney and Martin (2000):

Whereas communication is a process, culture is the structure through which the communication is formulated and interpreted. Culture deals with the way people live. When cultures interact, adaptation has to take place in order for the cultures to communicate effectively. In dealing with intercultural business communication, awareness of the symbols of each culture, how they are the same, and how they are different, is important.

Another important M&A issue is integration planning and post-merger integration. Integration is probably the most important issue after a deal is signed between the acquirer and a seller in a cross-border M&A. The areas that need to be integrated include the following: (1) organization and staffing plans; (2) product strategies; purchasing and supply chain management strategies; (4) production strategies and plans; (5) marketing strategies and sales forces; (6) information systems; (7) finance and accounting systems; and (8) human resource management systems. Integration plans of the earlier and other areas should be formulated by various management teams and assisted by experienced consulting firms. The integration teams should also work closely with the teams that conducted the due diligence process. After the integration plan is approved for implementation, it should be communicated, and explained to employees impacted by the plan.

One way to avoid failures is to study failed cross-border mergers and joint ventures, and discover why they failed. For example, in the 1998 merger between Daimler-Benz and Chrysler, the “Daimler Chrysler post-merger integration project was ultimately built around a list of a dozen or so major tasks, derived from a list of almost 100 potential pitfalls in the post-merger integration process” (Habeck et al. 2000). This list was developed from studying 50 failures in cross-border mergers and joint ventures.

For specific due diligence and integration issues related to M&A activity in an Asian country, the M&A partners can study a guide such as the Baker and McKenzie Guide to Mergers and Acquisitions by countries or other similar publications. Alternatively, the M&A partners may hire an M&A attorney or investment bank to assist with the due diligence and integration processes.

The success of an acquisition lies in handling complex integration issues associated with the acquisition within a prescribed time frame. Given the fact that acquisitions have been a new experience for medium-sized software companies in India, quite a few of these

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acquisitions have been bogged down by post-acquisition integration and restructuring issues. To some extent, this has led some of these companies to perform indifferently for a few quarters in the post-acquisition phase.

For example, in a Securities and Exchange Commission(SEC) filing, Silverline Technologies indicated that the integration with SeraNova had been complex and time consuming. Silverline has also added that its financial performance could be affected if the operations of SeraNova were not integrated quickly. Other acquisitions such as SSI's acquisition of Indigo Technologies, BFL's acquisition of *MphasiS and Leading Edge Systems* takeover of Capital Solutions have also had several integration issues that had to be ironed out before the acquisition could start yielding the desired dividends.

- **Low clinch to completion rates :** While medium-sized companies have been quick to identify and clinch acquisition targets, the rate of completion/consummation have been fairly low. The consummation rates have dropped sharply in recent times mainly due to improper due diligence processes and poor market conditions.

For example, after proceeding with its acquisition of the New Jersey-based Data Inc to an advanced stage, Polaris Software called it off citing objections raised by its audit committee. However, Data Inc's promoter has filed a lawsuit against Polaris in the US on the grounds that the latter had reneged on the terms and conditions of the acquisition agreement.

Similarly, the acquisition of San Vision Technology initiated by DSQ Software in appears to be hanging fire over purchase considerations. At the time of the initial agreement, DSQ Software had planned to pay \$30 million in an all-stock deal to acquire San Vision. Following a deterioration in market conditions, DSQ has been attempting to renegotiate the agreement's terms, but has not made much headway. San Vision has claimed that the deal has been called off, while DSQ has held that the deal is still being renegotiated. In a related development, SEBI has asked DSQ Software to cancel its acquisition of US-based Fortuna Technologies over alleged irregularities in the acquisition process. DSQ Software has also been barred from accessing the capital market for another year.

Owing to the complex and dynamic nature of the software industry, it may be desirable for SEBI to make it mandatory for companies planning an acquisition to declare overriding acquisition 'objectives'. In addition, in the interests of encouraging good corporate governance, it may also consider making mandatory the following minimum disclosure requirements on acquisitions to help shareholders make meaningful investment decisions :

Hidden liabilities: As a harsh reminder of the downside to acquisition, in the high profile acquisition of SeraNova Inc by Silverline Technologies, the former may have to pay a tax liability of \$60-\$65 million to its former parent, Intelligroup Inc. The New Jersey-based Sera Nova Inc had been spun off from the Intelligroup Inc in July, 2000 and merged into Silverline Technologies' US subsidiary. Silverline Acquisition Corp in an all-stock deal valued at \$39.2 million in March 2001. Obviously future acquirers will have to tread with caution.

- Sharing of vision among the two companies;
- Cultural compatibility;
- Geographical and other synergies;
- Short-term/medium-term plans for retention of manpower;
- Antecedents of the acquired company — minimum information on revenues, employee profile, key focus areas and projected revenues and post-tax earnings;
- Existing clientele and how the synergies will drive future client profiles;
- Total outlay (cash or stock swaps, or a combination of the above) for the acquirer;
- Risks — short-and long-term;
- Continuing disclosures on the execution/integration of the acquisition by the acquirer.

23.0 CROSS-BORDER M&A

Cross-border M&A is a popular route for global growth and overseas expansion. Cross-border M&A is also playing an important role in global M&A. This is especially true for developing countries such as India. As explained by Eiteman et al. (2006):

The 1992 completion of the European Union's Internal Market stimulated many of these investments, as European, Japanese, and US firms jockeyed for stronger market positions within the EU. However, the long-run US growth prospects and political safety in the United States motivated more takeovers of US firms by foreign firms, particularly from the United Kingdom and Japan, than vice versa.

Other major factors that motivate multinational companies to engage in cross-border M&A in Asia include the following:

- Globalization of production and distribution of products and services.
- Integration of global economies.
- Expansion of trade and investment relationships on International level.
- Many countries are reforming their economic and legal systems, and providing generous investment and tax incentives to attract foreign investment.
- Privatisation of state-owned enterprises and consolidation of the banking industry.

24.0 DECADE OF CORPORATE CHURNING AND CHANGE

Despite the churning and change that has taken place over the past decade, the corporate sector has still to go a long way in improving its image and become globally competitive. The successes and failures have not been industry-specific but company-specific. But at the macro-level, the overall efficiency of industry has not shown much improvement.

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The internal and external liberalisation measures introduced over the last decade and the dramatic changes that have taken place in the international business environment have had a far-reaching impact on Indian business. The face of Corporate India has changed more over the past decade than in the preceding four decades thanks to the U-turn in the Government's economic policy in 1991.

Major policy changes: The major policy changes introduced since July, 1991 include : (a) abolition of industrial licensing; (b) lifting of restrictions on the size of firms; (c) a drastic reduction in the areas reserved for the public sector; (d) disinvestments of Government equity in public sector undertakings (PSUs) aimed at eventual privatisation of most of them; (e) liberalisation of foreign investment regulations; (f) substantial liberalisation of import tariffs; (g) removal of all quantitative restrictions on imports; (h) abolition of the office of the Controller of Capital Issues (CC) and freedom to companies to set premia on their share issues; (i) freedom to companies to raise capital abroad; (j) rationalisation and lowering of excise and Customs duties and (k) a substantial reduction in corporate and personal income tax rates.

In large measure, these reforms met the longstanding demands of the Indian industry to free it from the plethora of controls and regulations, exorbitantly high rates of direct and indirect taxes and severe restrictions on foreign exchange transactions. All the internal liberalisation measures provided greater freedom and opportunities to the Indian companies and entrepreneurs to expand their existing businesses and enter new areas hitherto reserved exclusively for the public sector.

However, the corporate sector was not quite prepared for the other side of reforms, namely, the external liberalisation and the movement towards globalisation, which opened the Indian economy to competition from abroad. Although India was not strictly a closed economy even before the launch of the reforms process, Indian industry was generally insulated from external competition thanks to a variety of import restrictions and high tariff walls, the peak level import duty being some 300 per cent.

Companies are now obliged to offer better quality products at increasingly competitive prices, their profit margins are constantly under pressure. Under the earlier regime of protection, 'cost-plus' pricing was the norm in most cases. In the majority of cases, it was possible to pass on the burden of higher costs and inefficiencies to the customer by charging a higher price for the product.

To succeed in the new environment, companies are required to bring : New insights into understanding the customer who is becoming increasingly demanding; the ability to design, develop and produce new and more customer-friendly products of better quality; skills to develop exclusive positions in the minds of the consumer; new processes, techniques and technologies to ensure that costs are being continuously reduced, ways to restructure organisations so that trained and talented people stay to give their best efforts; and considerable funds to invest in marketing and building brand franchises.

Churning and restructuring: It is not surprising, therefore, that the Indian corporate sector is undergoing a process of churning and restructuring. The fortunes of the once renowned family business houses such as the Dalmia-Jain group, Sriram group, Walchands, Thapars, Singhanias, Somanis, Wadias, Mafatlals, Khaitans and Modis have witnessed an unprecedented decline. With much erosion in their wealth, they lie scattered because of family splits and mismanagement. However, Mr. Dhirubhai Ambani's Reliance Group has been an exception. It managed to prosper and grow despite all odds by seizing the opportunities provided by liberalisation and globalisation. Reliance Industries and Reliance Petroleum are now among the top five companies in the country in terms of market capitalisation.

The decade also witnessed the phenomenal growth of the so-called New Economy companies such as Infosys, Wipro and Satyam Computers which started creating more wealth than the Tatas and Birlas. Mr Azim Premji of Wipro and Mr. Narayan Murthy of Infosys are the new breed of entrepreneurs known for very high standards of corporate governance and global outlook.

It must be said to the credit of at least some of the family business houses and leading individual companies that they have not been silent spectators allowing the events to overtake them. For instance, Mr. Ratan Tata has initiated measures since 1998 to restructure the Tata empire with the help of management consultants McKinsey & Co. with a view to eventually reduce the number of companies in the group from the existing 80 to 30 and cut down the portfolio from 25 to just a dozen core businesses.

The restructuring exercises also include financial restructuring — restructuring of debt and equity. Many companies have been retiring the earlier high cost debt with the new low interest bearing loans. The threat of hostile takeovers following the big slump in share values of Old Economy companies has prompted managements to hike their equity stake. Gone are the days when business families could exercise control on the management of companies with a small equity stake, often less than 10 per cent.

Consolidation of market power: While the first wave of mergers and joint ventures was driven primarily by competitive compulsions and as an outcome of business restructuring, of late, the larger and more aggressive companies have been buying out the smaller ones to assume market leadership. Till 1999, the biggest mergers and acquisitions deals were in the FMCG industries that are traditionally intensely competitive and have become more so with the entry of well-known international brands. A classic example of the extensions and consolidation of market power is the Hindustan Lever's acquisition and restructuring spree over the last few years. By 1998, it wrapped up five acquisitions (Tomco, Dollop's, Kwality, Milkfood and Kissan) and effected a host of mergers — Doom Dooma with Brooke Bond, Brooke Bond with Lipton, Pond's with Quest International, and finally Brooke Bond Lipton India Ltd (BBLIL) with Hindustan Lever Ltd (HLL). It acquired a 74 percent stake in Modern Foods and turned it into a profitable venture.

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M&As also took place in cement, aluminium, steel, chemicals and pharmaceuticals. Incidentally, the biggest merger in India Inc took place in the telecom sector with BPL Communications and the Birla-Tata-AT&T combine, two of the nation's biggest cellular players, announcing an agreement to merge operations.

Where mergers were not convenient, companies tried to form strategic alliances. Pharmaceutical companies such as Ranbaxy and Lupin Laboratories entered into strategic alliances with some MNCs. Another strategy was to form joint ventures with foreign majors, notably in automobile and consumer durable sectors. Unfortunately, most of these joint ventures did not last long. Some of the prominent joint ventures between Indian and foreign partners, particularly in the high-tech and high capital intensity automobile sectors, failed to mature and the foreign partners assumed full control.

Despite the churning and change that has taken place over the past decade, the Indian corporate sector has still to go a long way in improving its image and become globally competitive. True, there have been notable winners across industries such as HLL, Reliance Industries, Hindalco, Tisco, Hero Honda, Asian Paints, Sundram Fasteners, Ranbaxy, Dr. Reddy's Laboratories, and the public sector companies BHEL and Punjab Tractors. The successes and failures have not been industry specific but company specific. But at the macro level, the overall efficiency of Indian industry has not shown much improvement.

While there has been some increase in expenditure on R&D and brand building, the Indian companies are still lagging far behind their foreign counterparts. Here again, there are a few exceptions. Naushad Forbes finds two major changes in corporate R&D. One is the emergence of new companies, particularly in the pharma sector, as substantial spenders in R&D.

With India recognising the foreign product patents, companies have begun acquiring innovation capacity. Ranbaxy & Dr. Reddy's have recently licensed out their discoveries to MNCs earning fat royalties. Nicholas Piramal bought the R&D laboratory of Hoechst Marion Roussel. Second, and more important, is the change in the character of R&D. While earlier the R&D expenditure was mostly on import substitution and diversification, today a part of it is on reaching the international technological frontier.

Unfortunately, the large public sector and the small-scale industries sector still lagging behind in reforms. Unless the Government is able to push ahead vigorously with reforming these sectors, along with a viable exit policy and labour reforms, they will continue to act as major impediments to competitiveness.

Self-examination Questions

1. Distinguish between Mergers, Acquisition and Takeovers by giving suitable examples.
2. What is horizontal, vertical and conglomerate merger?
3. What are the advantages and Disadvantages of mergers and takeovers?
4. Outline the legal framework relating to mergers and takeovers in India what are the basic objectives behind such a legal framework?
5. What are the various defensive tactics which a target company can adopt to defend itself from hostile takeover?