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FINANCIAL AND STRATEGIC MANAGEMENT

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CS Vikas Vohra CA CS Harish A. Mathariya

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On behalf of **TEAM YES**

CS Vikas Vohra CA CS Harish A. Mathariya
Founders

CA.CMA. Suraj Tatiya is a very young and dynamic faculty blessed with exceptional communication skills.

- Being a CA, CMA himself, he is also an All Infia Ranker (AIR 4)

-His strong Analytical and logical Approach towards the subject, makes student know the beautiful logic behind Mathematical concepts and better understand practical subjects like maths, costing, financial management.

-Rather than making students mug up formulae, he provides derivation of every single formula in the class and thus focuses on Smart Learning.

-He is best known amongst students for providing FEELINGS of difficult concepts.

-Indicative of his strong Mathematical background and past records , he show cases his subject so strongly in the class that students Understand, Learn, and memorize the subject in the class itself.

-His consize , up to date notes and CHART format of learning, leaves students with handy tools for revision and recapitulation.

- Having taught 9000+ students till date he has to his credit 70+ All India Rankers.

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Financial Management

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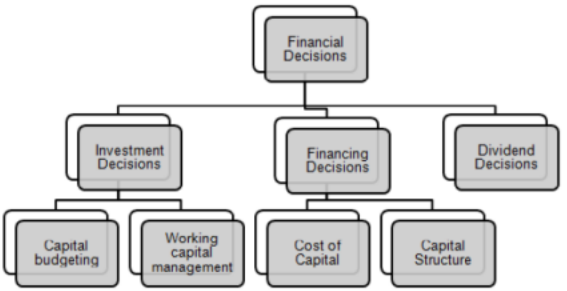
1. Introduction

MEANING OF FINANCE	MEANING OF BUSINESS FINANCE	DEFINITION OF FINANCIAL MANAGEMENT
Finance may be defined as an art or a science of managing money. It includes financial service and financial instruments. Finance is also referred as the provision of money at the time when it is needed. Finance function is the procurement of funds and their effective utilization in business concerns.	**Wheeler,** "Business finance is that business activity which concerns with the acquisition and conversion of capital funds in meeting financial needs and overall objectives of a business enterprise".	Financial management is an integral part of overall management. It is concerned with the duties of the financial managers in the business firm.
Webster's Ninth New Collegiate Dictionary defines finance as 'the Science on study of the management of funds' and the management of fund as the system that includes the circulation of money, the granting of credit, the making of investments, and the provision of banking facilities.	**Guthumann and Dougall,** "Business finance can broadly be defined as the activity concerned with planning, raising, controlling, administering of the funds used in the business".	"It is concerned with the efficient use of an important economic resource namely, capital funds". – **Solomon**
	Parhter and Wert, "Business finance deals primarily with raising, administering and disbursing funds by privately owned business units operating in nonfinancial fields of industry".	Financial management "as an application of general managerial principles to the area of financial decision-making. – **Howard and Upton**
	Corporate finance is concerned with budgeting, financial forecasting, cash management, credit administration, investment analysis and fund procurement of the business needs to adopt modern technology and application suitable to the dynamic global environment.	Financial management "is an area of financial decision-making, harmonizing individual motives and enterprise goals". – **Weston and Brigham**
		Financial management "is the operational activity of a business that is responsible for obtaining and effectively utilizing the funds necessary for efficient operations. – **Joseph and Massie**

NATURE, SIGNIFICANCE AND SCOPE OF FINANCIAL MANAGEMENT.

money is the life-blood of business in the present day world becasue all our economic activities are carried out through the use of money. Financial Management is concerned with investment, financing and dividend decisions in relation to objectives of the company. Such decisions have to take care of the interests of the shareholders. They are upheld by maximisation of shareholders' wealth which depends upon increase in the net worth of capital invested in the business plus ploughed back profits for growth and prosperity of the company. It is for such reasons that the market is prepared to pay a lower or higher price for the shares of some company or the other. Nature of

Financial Management therefore can be judged by the study of the nature of investment, financing and dividend decisions.



INVESTING DECISIONS.

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

.

The company likes to avail of the economic opportunity for which investment decisions are taken viz.,

(1) expansion of the productive process to meet the existing excessive demand in local market, exploit the global market, and to avail of the advantages and economies of the expanded scale of production.
(2) replacement of an existing asset, plant and machinery or building, necessary for taking advantages of technological innovations, minimising cost of production by replacing obsolete and worn out plants, increasing efficiency of labour, etc.
(3) The choice of equipment establishes the need for investment decisions based on the question of quality and latest technology.
(4) Re-allocation of capital is another area of investment, to ensure asset allocation in tune with the production policy.
(5) Mergers, acquisitions, re-organisations and rehabilitation are all concerned with economic and financial involvement and are governed by investment decisions.

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

– capital budgeting	– cost of capital	– measuring risk	– management of liquidity and current assets
– expansion and contraction involving business failure and re-	– buy or hire or lease an asset.	Optimal investment decisions need to be made taking into	consideration such factors as are given below viz.

organisations			
Estimation of capital outlays and the future earnings of the proposed project focusing on the task of value engineering and market forecasting;			
availability of capital and considerations of cost of capital focusing attention on financial analysis;			
a set of standards by which to select a project for implementation and maximising returns therefrom focusing attention on logic and arithmetic.			

FINANCING DECISION

financing decision , has become fully integrated with top-management policy formulation via capital budgeting, long-range planning, evaluation of alternate uses of funds, and establishment of measurable standards of performance in financial terms.	Financial decision making is concerned more and more with the questions as to how cost of funds be measured, proposals for capital using projects be evaluated, or how far the financing policy influences cost of capital or should corporate funds be committed to or withheld from certain purposes and how the expected returns on projects be measured.

Financial decisions, as discussed earlier, encompass determination of the proportion of equity capital to debt to achieve an optimal capital structure, and to balance the fixed and working capital requirements in the financial structure of the company. This important area of financing decision making, aims at maximising returns on investment and minimising the risk. The risk and return analysis is a common tool for investment and financing decisions for designing an optimal capital structure of a corporate unit. It may be mentioned that debt adds to the riskiness of the capital structure of a firm. This part of financial management is the analysis of company through earnings before interest and taxes, variable costs, contribution.

DIVIDEND DECISIONS

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

DECISION CRITERION

A fair decision criterion should distinguish between acceptable and unacceptable proposals and solve the problem of selection of the best alternatives from amongst the various alternatives available in a given situation to achieve the above objectives. A fair decision criterion should follow the following two fundamental principles i.e.

(1) the "Bigger and Better" principle; (2) "A Bird in Hand is Better than Two in the Bush" principle.

The first principle suggests that bigger benefits are preferable to smaller ones; whereas the second one suggests that early benefits are preferable to later benefits. Both the above principles are based on the assumption "other things being equal" which is a rare reality.

Decision criteria in financial management can be studied under two separate heads viz. The criteria for investment decisions; and the criteria for the financing decisions. Criteria for investment decisions are mainly concerned with planning and control of capital expenditure through budgeting process following the tools of analysis viz. pay back period, accounting rate of return, discounted cash flow methods e.g., net present value method, etc.

URGENCY:	PAY-BACK	RATE OF RETURN	UNDISCOUNTED BENEFIT-COST RATIO.
Urgency is assessed on the following basis: (a) it provides sufficient justification for undertaking a project; (b) it provides immediate contribution for attainment of objectives of the project; and (c) it maximises profits.	The decision is taken on the basis of quickness in pay off of the investments. Pay back simply measures the time required for cash flows from the project to return the initial investment to the firm's account. Projects, on the basis of this criterion, having quicker pay backs are preferred.	Rate of return is arrived at following two different methods for treating income in the analysis which give different results. In the first case, average income generated from investment is taken after deduction of depreciation charge. In second case, the original cost is taken as denominator rather than average investment. This gives the simple yearly rate of return. This is based on "bigger and better" principle. This criterion can be applied either against average investment in the year selected for study or simply against initial cost.	It is the ratio between the aggregate benefits and the cost of project. Benefits are taken at face value. The ratio may be "gross" or "net". It is "gross" when calculated with benefits without deducting depreciation. In the neT version, depreciation is deducted from benefits before computing the results. Both ratios give identical ranking. Net ratio equals the gross ratio minus 1.
urgency as criterion lacks objectivity, being non-quantifiable, yet it definitely provides an ordinal ranking scale for selection of projects on preferential pre-exemption basis.	Pay back decision criterion does not follow the principles "the bigger and better" and "bird in hand". It ignores the first principle completely as it does not take into account the cash flows after investment has been recovered. It also does not satisfy entirely the second principle as it assigns zero value to the receipts, subsequent to recovery of the amount.		is compatible with the "bigger and better" principle. But it does not follow the second principle of "bird in hand" as early receipts are given identical weights to later receipts in the project's life.

DISCOUNTED BENEFIT COST RATIO	PRESENT VALUE METHOD	INTERNAL RATE OF RETURN (IRR)
This ratio is more reliable as it is based on present value of future benefits and costs. It may also be gross or net like the one discussed earlier. It takes into account all incomes whenever received and to this extent complies with "bigger and better" principle. Early receipts are given more weight than late receipts on account of introduction of discount factor. This ratio satisfies the requirements of both the principles and is a good criterion for decision making.	it reveals the fact that the value of money is constantly declining as a rupee received today is more in value than the rupee at the end of a year. Another off-shoot of this criterion is net present value method which is closely related to cost-benefit ratio. It takes into account all income and its timing with appropriate weights. It can be used for choosing between mutually exclusive projects by considering whether incremental investment yields a positive net present value.	It takes interest factor into account. It is known as marginal efficiency of capital or rate of return over cost. It stipulates rate of discount which will equate the present value of the net benefits with the cost of the project. This method satisfies both these principles. The capital structure of a corporate unit contains two important parameters viz., the owners' capital known as equity and the debt which represents interest of debenture holders in the assets of the company. The factors responsible for inclusion of debt in the capital structure of a company are tax-savings, easier to sell, lower cost of floatation and services, lower cost of capital, the advantage of leverage, no dilution of equity and probable loss of control, logical to consolidate and fund short-term indebtedness by a bond issue, advantageous in the inflationary trends of rising interest rates and improvement in financial ratios.

OBJECTIVES OF FINANCIAL MANAGEMENT

PROFIT MAXIMIZATION	SHAREHOLDER WEALTH MAXIMIZATION
Price system directs managerial efforts towards more profitable goods or services. Profit maximization means that a firm either produces maximum output for a given amount of input, or uses minimum input for producing a given output. The underlying rationale of profit maximization is efficiency. It is assumed that profit maximisation causes the efficient allocation of resources under the competitive market condition, and profit is considered as the most appropriate measure of a firm's performance.	shareholder wealth maximization means maximizing the net present value of a course of action to shareholders. Net present value (NPV) or wealth of a course of action is the difference between the present value of its benefit and the present value of its costs.
But in recent years, under the changed corporate environment, profit maximisation is regarded as unrealistic, difficult, inappropriate and socially not much preferred goal for business organisation. It is argued that profit maximisation assumes perfect competition, and in the face of imperfect modern markets, it cannot be a legitimate objective of the firm.	The management of an organisation tries to maximises the present value not only for shareholders but for all including employees, customers, suppliers and community at large.
Profit maximisation as corporate goal is criticised by scholars mainly on the following grounds:	This goal for the maximum present value is generally justified on the following grounds: (i) It is consistent with the object of maximising owners economic welfare. (ii) It focuses on the long run picture. (iii) It considers risk. (iv) It recognises the value of regular dividend payments. (v) It takes into account time value of money. (vi) It maintains market price of its shares. (vii) It seeks growth in sales and earnings.

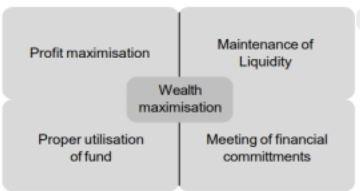
(i) It is vague conceptually. (ii) It ignores timing of returns. (iii) It ignores the risk factor. (iv) It may tempt to make such decisions which may in the long run prove disastrous. (v) Its emphasis is generally on short run projects. (vi) It may cause decreasing share prices. (vii) The profit is only one of the many objectives and variables that a firm considers.	profit maximisation can be part of a wealth maximisation strategy. Quite often two objectives can be pursued simultaneously but the maximisation of profit should never be permitted to overshadow the objectives of wealth maximisation.

PROFIT MAXIMIZATION V/S SHAREHOLDER WEALTH MAXIMIZATION

Profit Maximisation Vs. Shareholder Wealth Maximisation

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

The finance manager has to try and



maximise profit without in any way affecting the shareholders wealth because primary goal of financial decision making is to achieve wealth maximisation. Profit maximisation is the narrow objective of financial management because profit is a test of economic efficiency but wealth maximisation is comprehensive objective of financial management, it goes beyond the quantitative aspects as it also considers qualitative benefits in a firm. Wealth maximisation objective is therefore, superior to the profit maximisation concept.

Economic Value-Added (EVA) – Means to Measure Shareholders Value Criteria

Economic value added (EVA) is the after tax cash flow generated by a business minus the cost of the capital it has deployed to generate that cash flow. Representing real profit versus paper profit, EVA underlines shareholder value, increasingly the main target of leading companies strategies.

There is difference between EVA,earnings per share, return on assets, and discounted cash flow, as a measure of performance. Earnings per share tells nothing about the cost of generating those profits. Return on assets is a more realistic measure of economic performance, but it ignores the cost of capital. Leading firms can obtain capital at low costs, via favourable interest rates and high stock prices, which they can then invest in their operations at decent rates of return on assets. This tempts them to expand without paying attention to the real return, economic value-added. Discounted cash flow is very close to economic value-added, with the discount rate being the cost of capital.	There are two key components to EVA. The net operating profit after tax (NOPAT) and the capital charge, which is the cost of capital times the amount of capital. In other words, it is the total pool of profits available to provide cash return to those who provided capital to the firm. The capital charge is the product of the cost of capital times the capital tied up in the investment. In other words, the capital charge is the cash flow required to compensate investors for the riskiness of the business given the amount of capital invested. On the one hand, the cost of capital is the minimum rate of return on capital required to compensate debt and equity investors for bearing risk-a cut-off rate to create value and capital is the amount of cash invested in the business, net of depreciation.

EVA = (Operating Profit) – (A Capital Charge)

EVA = NOPAT – (Cost of Capital x Capital)

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

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

EVA will increase if:

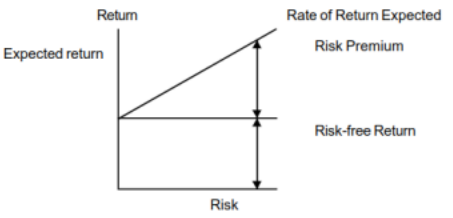
Operating profits grow without employing additional capital i.e., through greater efficiency.
Additional capital is invested in the projects that give higher returns than the cost of procuring new capital,
Unproductive capital is liquidated i.e., curtailing the unproductive uses of capital. Unproductive capital is liquidated i.e., curtailing the unproductive uses of capital.

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

The financial manager as a measure of performance also function to find out return on equity, market captialisation and earning per share by adding the concept of Market Value Added (MVA). This works in close nexus to the economic value added concept. This concept shows the management the increase or decrease in the value of capital. Through this principle, the finance manager will be able to make the conflicting areas of conflict of the shareholders, debt investors and manager complementary.

VALUE OF FIRM-RISK & RETURN

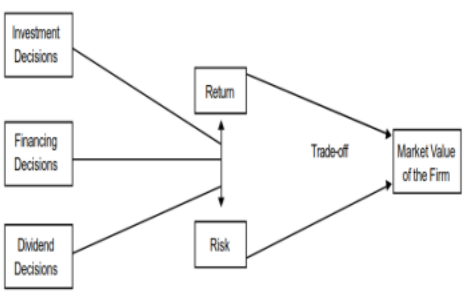
Financial decisions incur different degree of risk. An investor's decision to invest in risk free government bonds has less risk as interest rate is known and the risk of default is very less. On the other hand, an investor would incur more risk if he decides to invest in shares, as the return is not certain. However, the investor can expect a lower return from government bond and higher from shares. Risk and expected return move in tandem; the greater the risk the greater would be the expected return.



The Risk-return relationship

A finance manager cannot avoid the risk altogether nor can he make a decision by considering the return aspect only. Usually, as the return from an investment increases, the risk associated with it also increases. In an attempt to increase the return, the finance manager will have to undertake greater degree of risk also. Therefore, a finance manager is often required to trade-off between the risk and return.

At the time of taking any decision, the finance manager tries to achieve the proper balance between the consideration of risk and return associated with various financial management decisions to maximise the market value of the firm. A particular combination of risk and return where both are optimized may be known as Risk-return trade off and at this level of risk-return, the market price of the shares will be maximised.



LIQUIDITY

Liquidity is an important concept in financial management and is defined as ability of the business to meet its short-term obligations. It shows the quickness with which a business/company can convert its assets into cash to pay what it owes in the near future. According to Ezra Soloman, it measures a company's ability to meet expected as well as unexpected requirements of cash to expand its assets, reduce its liabilities and cover up any operating losses.

While using liquidity as a decision criterion, the management makes use of ratios. They give a bird's eye view of the current liquidity position or shortages thereof. A company will like to have liquid resources for transaction purposes as a precautionary measure and for speculative opportunities..	Liquidity is assessed through the use of ratio analysis. Liquidity ratios provide an insight into the present cash solvency of a firm and its ability to remain solvent in the event of calamities. Current Ratio which is the ratio of current assets to current liabilities, is widely used by corporate units to judge the ability to discharge short-term liabilities covering the period upto one year. The interpretation of the current ratio is that 'higher the ratio, greater is the ability of the firm to pay off its bills'.

Current Ratio is a crude ratio and does not take into account the difference amongst different categories of Assets.

The ingredients of current assets while computing the Quick Ratio are cash, marketable securities and receivables. Besides cash, the other two items are near cash and at very short notice can easily be converted into cash. Therefore, for taking financial decisions particularly for assessing cash position of the company and its ability to discharge current obligations, Quick Ratio is frequently relied upon	the main shortcoming of the Quick Ratio is that it ignores inventories and concentrates on cash, marketable securities and receivables in relation to current obligations although inventory is also a basic input in current ratio without which company's decision process cannot be complete. Liquidity ratio enables a company to assess its Net Working Capital. Working Capital is denoted by the combination of current assets or current liabilities of a company, and for calculation of net working capital we deduct current liabilities from current assets.

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

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

PROFITABILITY

Profitability as a decision criterion is another important tool in financial management for taking decisions from different angles after evaluating the performance of the company in different spheres

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

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

of actual returns received by them	(1) $\frac{\text{Earning available to common shareholders}}{\text{Total Equity}}$ (2) $\frac{\text{Net income after tax}}{\text{Total Equity}}$ [The ratio at (2) is used where the company has no preference shareholders].

Profit margin is another measure of viewing profitability. The revenue bearing property of sales can be easily assessed from the profit margin. It is derived by dividing operating income from business by sales. This ratio indicates the efficiency of operations as well as how products are priced. Inadequacy of profit margin is an evidence of company's inability to achieve satisfactory results. Pricing decisions are made by financial executives in consultation with the marketing departments of the company.	Policy decisions relating to increase or decrease in price are taken in respect of different products keeping in view the competitiveness of the market. Profit margin ratio is constantly used by business executives for this purpose. To look into the cash generating capacity of sales, gross profit margin is used by deducting the cost of goods sold from sales and dividing by sales.

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

NPM ratio is an indicator of company's ability to generate profits after paying all taxes and expenses. Decline in this ratio reflects the presence of either higher expenses relative to sales or higher tax burden on the company, affecting its profitability adversely

RETURN ON INVESTMENT (ROI)

an important profitability ratio from the angle of shareholders and reflects on the ability of management to earn a return on resources put in by the shareholders.

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

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

COSTING & RISK

In financial management, costing relates to the system adopted for assessing cost of capital from various sources viz., equity and preference shares, debentures/bonds, long-term borrowings from financial institutions, etc. Equity Capital is owner's money employed in the business whereas borrowed funds are creditors' funds carrying an interest obligation and repayment schedule.	There are thus, risks involved if interest is not paid or on account of default in repayment of principal. The rate of interest on borrowed funds is usually lower than the returns expected by the investors or risk-takers in the business. Moreover, interest paid is deductible for tax purposes.

Risk is associated with fixed charges in the shape of interest on debt capital. Higher the fixed charges, the greater the chance that it will not be covered by earnings and so greater the risk.	A study of the effects of capital gearing on cost of capital is quite important for financial decisions. Given that a company has to minimise the cost of capital, it should fix up a level of gearing where is costs of capital is minimum.

As against the traditional theory of capital structure suggesting that the	The essence of the Modigliani and Miller argument is the arbitrage process. Should the value of two firms with identical incomes

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

There are two major reasons for this increased risk viz.

(1) interest is a fixed charge and is required to be paid by the company whether or not it earns profits	(2) a substantial decrease in liquidity or increased demands from creditors for payment if the company has higher proportion of debt capital in its capital structure

Financial risk arises in relation to owners' return created by the utilization of funds in the enterprise particularly fixed cost securities i.e. debt and preference shares	"Business risks" which is associated with the chance of loss due to variability of return, in general, created by the enterprise and as such it is known as operating risk.
financial risk is concerned with EAIT (earning after interest and taxes).	It is concerned with EBIT

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

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

FINANCIAL MANAGEMENT AS A SCIENCE OR AN ART

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

Theory of financial management is based on certain systematic principles, some of which can be tested in mathematical equations like the law of physics and	The use of computers, operations research, statistical techniques and econometric models find wide application in financial management as tools for solving

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

A very interesting presentation has been made by Weston in his book "Methodology in Finance". The finance functions are mainly three viz., planning, organisation and financial control. In each of these finance functions elements of science and art can be observed. Wherever methodology is to be applied in decision making in all these areas, the subject matter becomes a science confronted with the framework of techniques and tools. On the other hand, when the question of choice to make selection out of the alternative results arises the subject matter becomes an art requiring human skills for value judgement.	in the entire study of financial management whether it is related to investment decision, financing decisions i.e. deciding about the sources of financing, or dividend decision, there is a mixture of science as well as art. When techniques for analytical purposes are used it is science and when choice in appreciation of the results is made it is an art. Thus, people will like to call financial management as science as well as art. But it is better if we say that the discipline of financial management has both the aspects of science as well as art; where there is theory of systematic knowledge it is science and where there is application it is art.

FUNCTIONS OF FINANCIAL MANAGER

Forecasting of Cash Flow: necessary for the successful day to day operations of the business so that it can discharge its obligations as and when they arise. In fact, it involves matching of cash inflows against outflows and the manager must forecast the sources and timing of inflows from customers and use them to pay the liability.	**Raising Funds:** to plan for mobilising funds from different sources so that the requisite amount of funds are made available to the business enterprise to meet its requirements for short term, medium term and long term.	**Managing the Flow of Internal Funds** Manager has to keep a track of the surplus in various bank accounts of the organisation and ensure that they are properly utilised to meet the requirements of the business. This will ensure that liquidity position of the company is maintained intact with the minimum amount of external borrowings.

To Facilitate Cost Control: Manager is generally first person to recognise when costs for supplies or production processes are exceeding standard costs/budgeted figures. Consequently, he can make recommendations to top management for controlling costs.	**Facilitate Pricing of Product, Product Lines and Services:** supply important information about cost changes and cost at varying levels of production and profit margins needed to carry on business successfully. Manager provides tools of analysis of information in pricing decisions and contribute to formulation of pricing policies jointly with marketing manager.	**Forecasting Profits:** Financial manager is usually responsible for collecting the relevant data to make forecasts of profit levels in future.
Measuring Required Return Determination of required rate of return is the responsibility of the financial manager and is a part of the financing decision. An investment project is accepted if the expected return is equal or more than the required rate of return.	**Managing Assets:** Function of asset management focuses on the decision-making role of the financial manager. Finance personnel meet with other officers of the firm and participate in making decisions affecting the current and future utilisation of the firm's resources	**Managing Funds:** The manager is responsible for having sufficient funds for the firm to conduct its business and to pay its bills. Money must be located to finance receivables and inventories, to make arrangements for the purchase of assets, and to identify the sources of long-term financing. Cash must be available to pay dividends declared by the board of directors.

Chapter 2 Investment Decisions : CAPITAL BUDGETING

TIME VALUE OF MONEY	PLANNING&CONTROL OF CAPITAL EXPENDITURE	CAPITAL BUDGETING PROCESS	TECHNIQUES OF CAPITAL BUDGETING
CHOICE OF METHODS	CAPITAL RATIONING	RISK EVALUATION & SENSITIVITY ANALYSIS	SIMULATION FOR RISK ANALYSIS
INFLATION, UNCERTAINTY & EVALUATION USING STATISTICAL DECISION THEORY		ANALYSIS OF CAPITAL BUDGETING, DECISIONS AND CASE STUDIES	

"Capital Budgeting is long term planning for making and financing proposed capital outlays"

– Charles T. Horngreen

TIME VALUE OF MONEY

One of the most fundamental concepts in finance is that money has a "time value." That is to say that money in hand today is worth more than money that is expected to be received in the future. The reason is straightforward: A rupee that you receive today can be invested in such a way that you will have more than a rupee at somemfuture time.	The time value of money serves as the foundation for all other notions in finance. It impacts business finance consumer finance, and government finance. Time value of money results from the concept of interest.

There are four primary reasons why a rupees to be received in the future is worth less than a rupees to be received immediately.

Presence of positive rates of inflation which reduce the purchasing power of rupees through time. Suppose rate of petrol about one year back was ` 65 per litre and now it is ` 72 per litre. This may bemobserved that in this example purchase power of rupee in terms of petrol purchased has decreased from 1/65 to 1/72.	Thirdly, all future values are in some sense only promises, and contain some uncertainty about theirnoccurrence. As a result of the risk of default or non-performance of an investment, a rupee in hand today is worth more than an expected rupee in the future.
A rupee today is worth more today than in the future because of the opportunity cost of lost earnings — that is, it could have been invested and earned a return between today and a point in time in the future.	Finally, human preferences typically involve impatience, or the preference to consume goods and services now rather than in the future.

Use of Time Value of Money

Present value refers to the current worth of a future sum of money or stream of cash flows given a specified rate of return. Present Value of a cash flow is calculated on the basis of formula as given below PV = Cash Flow/ (1+r)t	**Future value of a lump sum** refers to the value after a certain period of time at the given rate of interest. It may be calculated by using the following formula FVt = CF0 * (1+r)t OR FVt = PV * (1+r)t Where FVt = Future Value after a period t	**Present value of a future cash flow** (inflow or outflow) is the amount of current cash that is of equivalent value to the decision maker. Discounting is used to determine the present values of series of future cash flows. The compound interest rate used for discounting cash flows is also called the discount rate.

	r = Rate of return PV= Present Value	$PV = \frac{F_n}{(1+i)^n} = F_n[(1+i)^{-n}]$

An annuity is a stream of regular periodic payment made or received for a specified period of time. In an ordinary annuity, payments or receipts occur at the end of each period. Future Value of an Annuity: Expressed algebraically, FVAn is defined as future (compound) value of an annuity, R the periodic receipt (or payment), and n is the length of the annuity and the formula for FVAn is:- FVAn = R(I + i) n-1 + R (1+i) n-2 + ... + R(I + i) 1 + R (1+i)0

$$FVA_n = R\frac{(1+i)^n - 1}{i}$$

OR

$$FVA_n = R(FVIFAi,n)$$

Perpetuity is an annuity in which the periodic payments or receipts begin on a fixed date and continue indefinitely or perpetually. Fixed coupon payments on permanently invested (irredeemable) sums of money are prime examples of perpetuities. The formula for evaluating perpetuity is relatively straight forward. Two points which are important to understand in this regard are:

The value of the perpetuity is finite because receipts that are anticipated far in the future have extremely low present value.
Additionally, because the principal is never repaid, there is no present value for the principal.
Therefore the price of perpetuity is simply the coupon amount over the appropriate discount rate or yield.

SINKING FUND:
It is the fund which is created for a specified purpose by way of sequence of periodic payments over a time period at a specified interest rate. Size of the sinking fund deposit is computed by using the formula i.e. FVA=R[FVIFA(i,n), where FVA is the amount to be saved, R, the periodic payment, n, the payment period.

NET PRESENT VALUE (NPV)
Net Present Value is the difference between the sum total of present values of all the future cash inflows and outflows: Algebraically:

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

If cash outflow is also expected to occur at some time other than initial investment then formula would be:

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

NPV = Net Present Value
R = Cash inflow at different time period
k = Rate of discount or cost capital
t = 1 = first period in the sum
n = The last period in the sum
S_n = Salvage value in period n
W_n = Working capital in period n
C = Cost of investment plus Working Capital

Calculation of Multi Period Perpetuity: The formula for determining the present value of multi-period perpetuity is as follows:

$$PVA_\infty = \frac{R}{(1+i)^1} + \frac{R}{(1+i)^2} + \frac{R}{(1+i)^3} + \ldots + \frac{R}{(1+i)^\infty} = \sum_{n=1}^{\infty} \frac{R}{(1+i)^n} = \frac{R}{i}$$

Where

R = the payment or receipt each period

i = the interest rate per payment or receipt period

Calculation of Growing Perpetuity: A stream of cash flows that grows at a constant rate forever is known as growing perpetuity.

The formula for determining the present value of growing perpetuity is as follows:

$$PVA = \frac{R}{(1+i)^1} + \frac{R(1+g)}{(1+i)^2} + \frac{R(1+g)^2}{(1+i)^3} + \ldots + \frac{R(1+g)^\infty}{(1+i)^\infty} = \sum_{n=1}^{\infty} \frac{R(1+g)^{n-1}}{(1+i)^n} = \frac{R}{i-g}$$

CAPITAL BUDGETING

DEFINITIONS

Charles T. Horngreen,- "Capital budgeting is a long-term planning for making and financing proposed capital outlays".	**G. C. Philippatos**,-"Capital budgeting is concerned with the allocation of the firms source financial resources among the available opportunities".
Richard and Green law,- "Capital budgeting is acquiring inputs with long-term return"	**Lyrich**, -"Capital budgeting consists of planning development of available capital for the purpose of maximizing the long-term profitability of the concern".

CAPITAL BUDGETING- PLANNING AND CONTROL OF CAPITAL EXPENSES

The efficient allocation of capital resources is a most crucial function of financial management. This function involves organisation's decision to invest its resources in long-term assets like land, building facilities, equipment, vehicles, etc.	All these assets are extremely important to the firm because, in general, all the organisational profits are derived from the use of its capital in investment in assets which represent a very large commitment of financial resources, and these funds usually remain invested over a long period of time.
Capital budgeting refers to long-term planning for proposed capital outlays and their financing. Thus, it includes both raising of long-term funds as well as their utilisation. It may, thus, be defined as the "firm's formal process for acquisition and investment of capital."	To be more precise, capital budgeting decision may be defined as "the firms' decision to invest its current fund more efficiently in long-term activities in anticipation of an expected flow of future benefit over a series of years."

The basic feature of capital budgeting decisions are;

(1) current funds are exchanged for future benefits;	(2) there is an investment in long-term activities; and	(3) the future benefits will occur to the firm over series of years

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NEED FOR CAPITAL INVESTMENT

The following factors give rise to the need for capital investments:

(a) Wear and tear of old equipments	(b) Obsolescence	(c) Variation in product demand necessitating change in volume of production.
(d) Product improvement requiring capital additions.	(e) Learning-curve effect.	(f) Expansion.
(g) Change of plant site.	(h) Diversification.	(i) Productivity improvement.

INVESTMENT DECISIONS – MANAGEMENT PERSPECTIVE

Usually, in investment problems, much attention is focussed on how to choose among alternative projects, so that one is tempted to believe that this constitutes the only problem in capital decisions. However, if we examine carefully, it is easy to realise that choice among alternatives is only one facet albeit the	The other facets are implementation and control as applied to all phases of capital investment, and these are important aspects because in the ultimate analysis, the top management is accountable to Board of directors and owners for the success or failure of	A possible objective might be to maximise return on investment in which case the management might seek to minimise investment by selecting only a few capital projects that yield the highest	On the other hand, the objective may be to maximise sales volume and in that case all capital investment that yield a net profit would be made without undue concern. If the management is guided by a growth objective, expansionary investment involving high capital cost would be undertaken.

important facet of the problem from the top management perspective.	investment plans.	returns.	

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

IMPORTANCE OF CAPITAL BUDGETING

Long-term Implications: A capital budgeting decision has its effect over a long time span and inevitably affects the company's future cost structure and growth.	**Involvement of large amount of funds:** Capital budgeting decisions need substantial amount of capital outlay. This underlines the need for thoughtful, wise and correct decisions as an incorrect decision would not only result in losses but also prevent the firm from earning profit from other investments which could not be undertaken.	**Irreversible decisions:** Capital budgeting decisions in most of the cases are irreversible because it is difficult to find a market for such assets. The only way out will be to scrap the capital assets so acquired and incur heavy losses.
Risk and uncertainty: Capital budgeting decision is surrounded by great number of uncertainties. Investment is present and investment is future. The future is uncertain and full of risks. Longer the period of project, greater may be the risk and uncertainty.	**Difficult to make:** Capital budgeting decision making is a difficult and complicated exercise for the management. These decisions require an over all assessment of future events which are uncertain. It is really a marathon job to estimate the future benefits and cost correctly in quantitative terms subject to the uncertainties caused by economic-political social and technological factors.	

FACTORS INFLUENCING INVESTMENT DECISION

Management outlook: If the management is progressive and has an aggressive marketing and growth outlook, it will encourage innovation and favour capital proposals which ensure better productivity or quality or both. In some industries where the product being manufactured is a simple standardised one, innovation is difficult and management would be extremely cost conscious.	**Competitor's Strategy:** The competitors' strategy regarding capital investment exerts significant influence on the investment decision of a company. If competitors continue to install more equipment and succeed in turning out better products, the existence of the company not following suit would be seriously threatened.
Opportunities created by technological change:	**Market forecast:** Both short and long run market

Technological changes create new equipment which may represent a major change in process, so that there emerges the need for re-evaluation of existing capital equipment in a company. Such changes may justify new investments.	forecasts are influential factors in capital investment decisions. In order to participate in long-run forecast for market potential critical decisions on capital investment have to be taken.
Fiscal incentives: Tax concessions either on new investment incomes or investment allowance allowed on new investment decisions, the method for allowing depreciation deduction allowance also influence new investment decisions.	**Non-economic factors:** A new equipment may make the workshop a pleasant place and permit more socialising on the job. The effect would be reduced absenteeism and increased productivity. It may be difficult to evaluate the benefits in monetary terms and as such we call this as non-economic factor.
Cash flow Budget: The analysis of cash-flow budget which shows the flow of funds into and out of the company, may affect capital investment decision in two ways. First, the analysis may indicate that a company may acquire necessary cash to purchase the equipment not immediately but after say, one year, or it may show that the purchase of capital assets now may generate the demand for major capital additions after two years and such expenditure might clash with anticipated other expenditures which cannot be postponed. Secondly, the cash flow budget shows the timing of cash flows for alternative investments and thus help management in selecting the desired investment project.	

RATIONALE OF CAPITAL BUDGETING DECISIONS

Investment decisions affecting revenue: It includes all those investment decisions which are expected to bring an additional revenue by raising the size of firm's total revenue. It is possible either by expansion of present operations or the development of new product in line. In both the cases fixed assets are required.	**Investment decisions reducing costs:** It includes all those decisions of the firms which reduces the total costs and leads to increase in its total earnings i.e. when an asset is worn out or becomes outdated, the firm has to decide whether to continue with it or replace it by new machine. For this, the firm evaluates the benefit in the form of reduction in operating costs and outlays that would be needed to replace old machine by new one. A firm will replace an asset only when it finds it beneficial to do so.
Tactical investment decisions: It includes those investment decisions which generally involves a relatively small amount of funds and does not constitute a major departure from what the firm has been doing in the past.	**Strategic investment decisions:** Such decisions involve large sum of money and envisage major departure from what the company has been doing in the past. Acceptance of strategic investment will involve significant change in the company's expected profits and the risk to which these profits will be subject. These changes are likely to lead stock-holders and creditors to revise their evaluation of the company.

KINDS OF CAPITAL BUDGETING DECISIONS

(i) Accept-reject decisions: Business firm is confronted with alternative investment proposals. If the proposal is accepted, the firm incur the investment and not otherwise. Broadly, all those investment proposals which yield a rate of return greater than cost of capital are accepted and the others are rejected. Under this criterion, all the independent prospects are accepted.	**(ii) Mutually exclusive decisions:** It includes all those projects which compete with each other in a way that acceptance of one precludes the acceptance of other or others. Thus, some technique has to be used for selecting the best among all and eliminates other alternatives.
(iii) Capital rationing decisions: Capital budgeting decision is a simple process in those firms where fund is not the constraint, but in majority of the cases, firms have fixed capital budget. So large number of projects compete for these limited budget. So the firm ration them in a manner so as to maximise the long run returns. Thus, capital rationing refers to the situations where the firm have more acceptable investments requiring greater amount of finance than is available with the firm. It is concerned with the selection of a group of investment out	

of many investment proposals ranked in the descending order of the rate of return.

PLANNING OF CAPITAL EXPENDITURE

A. As regards long-term plan budget, the period covered under the planning is three to five or more years. The planning for such expenditure assumes a composite form involving all aspects of economic forecasts for the outlook of entire industry in which the company performs with its unit and forecast for the company with probable or expected coverage of market share.	On the basis of this forecast, plant managers estimate their prospective capital expenditure, the marketing managers plan their market shares, the personnel managers assess the requirements for manpower and technical hands to achieve targeted production results, and the finance mangers plans, for the funds to be made available for investment taking into consideration the above requirements.	The long-range capital budget is continually revised with changing economic conditions, the marketing environment, structure of wages and the inflationary pressures in the economy. It is flexible in nature and oriented towards a long-range growth planning for the company.

B. As regards short-period Capital budgeting, involving short-range planning for funds, it covers expenditure for a short duration involving the period covered within one or two years. It does not involve large capital expenditure but covers temporary need for funds for different departments within the company depending upon the degree of urgency, profitability and savings to be achieved with reference to the capital costs to be incurred.	Short run capital expenditure plans get converted into long-term plans of capital expenditure. Short- term capital expenditure plan is known as operating budget and is concerned with revenues and expenses related to firms daily operations. Significance of planning for capital expenditure is derived only with major investment proposals and the use of funds over a long period.	The most important factor affecting the planning horizon is the rate of change in technology in the industry. The advancement in technology may warrant capital investment for short as well as long period depending upon the changing pace of technology and technological obsolescence: long-term plan, however, helps the company to analyse its need and directions into the distant future involving a technological change.

CAPITAL EXPENDITURE CONTROL

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

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

(1) expenditure made to reduce costs;	(2) expenditure made to increase revenue;	(3) expenditure which is justified on non-economic grounds.

As regards major projects, strategic investment may be made for expansion of productive capacity or achievingnproduct innovation or preparing barriers against capital fluctuations. In the second type of outlay, routine expenditure may be working condition improvement, maintenance expenditure, competition oriented expenditure etc. Thirdly, replacement need may arise to avoid capital wastage for	One important aspect of control device is to match the demand schedule for the capital for the company and the supply of capital from different sources. Demand comes for capital from all departments and it is at this level control could be exercised to keep the demand at the bare minimum required for the	This necessitates for the finance manager to exercise economy in capital expenditure so that optimum benefit could be obtained with the use of scarce capital sources. This establishes the need for capital rationing to impose constraints on capital expenditure under prevailing

existing equipment to check its disposal value or it may be obsolescence replacement. In all circumstances, proper attention is to be devoted in analysing the need for the capital expenditure so that it would be curtailed to the minimum required.	objective inherent in capital investment decisions. Supply of capital, on the other hand, is a scarce commodity and the company has to incur expenditure for availing it.	market conditions and place self- imposed constraints to check the funds being raised from outside agencies like borrowings. Thus, the device of capital rationing is adopted to control capital expenditure.

CAPITAL BUDGETING PROCESS

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

Identification of Investment Opportunities: The best proposal needs to be discovered and considered. Capital expenditure proposals should come from different segments of the enterprise. Personnel working at different levels in the organisation should be encouraged to participate in the discovery of best available proposals for capital outlays within the limits of their authority, knowledge and experience. Capital expenditure proposals may also originate at the top management level of the company.	**II. Assembling Investment Purposal:** Economic performance like return on investment as calculated in a number of ways under different methods furnishes the most important criterion used for evaluating fixed assets investment proposals. But here also the technique to be used for evaluating economic performance should be clearly defined and communicated. There are also occasions when non-economic criteria like competition, risk, legal requirements, and social responsibilities become the over-riding considerations in evaluating different investment proposals. But it does not mean that criteria once established holds good under all circumstances and for all times to come. Relevance and reliability of criteria should be continuously reviewed.
Follow-up and Performance Report: Follow up implies comparing and reporting actual results with the projected result of investment proposal so as to evaluate the performance and outcome in proper perspective. It is required, however, that procedures and format of follow-up should be clearly defined and communicated. Frequency and duration of audit should also be clearly	**Budgeting Capital Expenditure:** Capital budgeting refers to the process of planning the investment of funds in long-term assets of the enterprise. Its purpose is to help management control capital expenditure. With the help of capital budgeting, management is able not only to reject poor investment decisions but also to select, in order of priority the projects which are most profitable

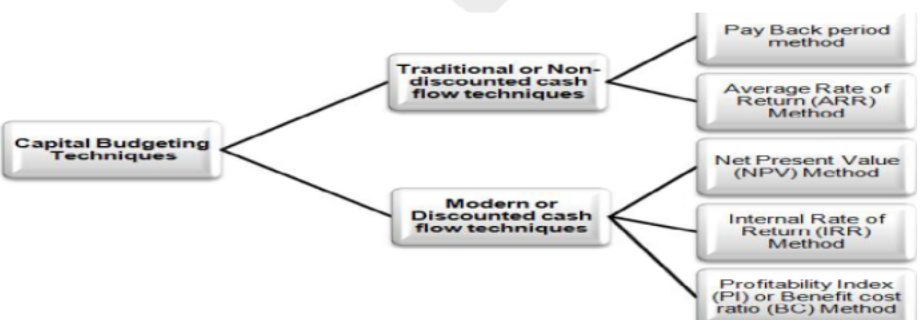
indicated. Audit personnel should also be provided with broad guidelines as to the extent of economic and non-economic evaluation they are expected to carry out. A project below a certain size may be audited locally by the staff of the departmental manager. But projects involving a number of departments or above a certain size should be audited by a certain group. The latter approach claims uniformity, efficiency and detailed review of the project as its main advantages.	and consistent with the objectives and targets set. Capital budget is a snapshot of the plan and projects for the coming year for which approval is sought. Capital budget should be flexible so as to eliminate some of the projects already included but allow addition of new projects that deserve consideration. Inclusion of certain projects in the capital budget and its approval by the management does not mean that actual expenditure has been authorised. Rather, it offers an opportunity to look at each project even from the view point of the totalorganisation.
Implementation and Controlling of Projects: Another important aspect of planning and control of capital outlays is to devise a procedure to exercise control over projects while in process. Controlling of projects in process generally falls within the purview of the financial manager. He is concerned with laying down the procedure to ensure that completion satisfies the norms with respect to cost, time and purpose of expenditure. Variations from approved plans together with reasons should promptly be reported to responsible authorities for deviations. The observations and up-to-date progress report provide sufficient information to the management about the exact stage and status of all major projects.	**Decision Making:** Investment proposals may be classified on the basis of the degree of risk involved or the extent to which they are postponable. In terms of reasons for the expenditure, the proposals may be classified whether they result in replacements, betterments or additions to assets. In the process, certain mutually exclusive and conflicting proposals will be eliminated

INVESTMENT CRITERIA

A sound investment criteria at least should provide the following:

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

CAPITAL BUDGETING TECHNI



Traditional or Non- Discounted Cash Flow Techniques

1. The Payback Period Method

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

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

(i) Cash inflows should be estimated on incremental basis so that only the difference between cash inflows of the firm with and without the proposed investment project is considered.	(ii) Cash inflows for a project should be estimated on an after-tax basis.	(iii) Since non-cash expenses like depreciation do not involve any cash outflows, estimated cash inflows form a project should be adjusted for such items.

ADVANTAGES OF PAYBACK METHOD:

1. It is easy to understand and calculate, thus, investment proposals can be ranked quickly.	2. For a firm experiencing shortage of cash, the payback technique may be used with advantage to selectbinvestments involving minimum time to recapture the original investment.	3. The payback period method permits the firm to determine the length of time required to recapture through cash flows, the capital expenditure incurred on a given project and thus helps it to determine the degree of risk involved in each investment proposal.
4. This is ideal in deciding cash investment in a foreign country with volatile dynamic political position where a long-term projection of political stability is difficult.	5. This is, likewise, more preferred in case of industries where technological obsolescence comes within short period; say electronic industries.	6. This method is a good indicator of liquidity. If an entrepreneur is interested to have greater liquidity for the firm, he can choose the proposal, which will provide early cash inflows.

DISADVANTAGES OF PAYBACK METHOD:

1. The payback method ignores the time value of money and treats all cash flows at par.	2. The payback method does not consider cash flows and income that may be earned beyond the payout period so it is not good measure of profitability. It gives misleading results.	3. Moreover, it does not take into account the salvage or residual value, if any, of the long-term asset.	4. The payback technique ignores the cost of capital as the cut-off factor affecting selection of investment proposals.

Suitability of using Payback Period of Medhod :

(i) where the firms suffers from liquidity problem and is interested in quick recovery of fund than profitability;	(ii) high external financing cost of the project;	(iii) for projects involving very uncertain return; and	(iv) political and economic pressures

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2. The Average Accounting Rate of Return (ARR) Method

This method is designated to consider the relative	Since this method uses accounting rate of return, it is sometimes described as the financial statement	Since both numerator and denominator carry different

profitability of different capital investment proposals as the basis for ranking them – the fact neglected by the payout period technique.	method. Rate of return is calculated by dividing earnings by capital invested. The numerator, i.e., earnings can be interpreted in a number of ways. It might mean income after taxes and depreciation, income before taxes and depreciation, or income after taxes but before depreciation.	meanings. It is not surprising if one comes across a number of variations of the average rate of return method. However, the two common variations are

(b) Average Rate of Return on Average Investment:	(a) Average Rate of Return in Original Investment:
$= \left(\frac{\text{Net earnings after Depreciation and Taxes}}{\text{No. of years project will last}} \right) \div \text{Average Investment}$	$= \left(\frac{\text{Net earnings after Depreciation and Taxes}}{\text{No. of years project will last}} \right) \div \text{Original Investment}$

Average investment is estimated by dividing the total of original investment and investment in the project at the end of its economic life by 2. The approach of dividing average annual after-tax earnings of the project by its original investment makes no attempt to incorporate the fact of gradual recovery of investment over time, hence tends to undertake the average rate of return. The average investment approach on the other hand, gives best result when original investment is evenly recovered over the economic life of the project which may not always be the case.

Decision Rule for Average of Rate of Return Method:

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

ARR > Minimum rate of return (cut off rate)

and Reject the project if

ARR < Minimum rate of return (cut off rate)

ADVANTAGES:

(i) Earnings over the entire life of the project are considered.	(ii) This method is easy to understand, simple to follow. Accounting concept of income after taxes is known to every student of accountancy.

DISADVANTAGES:

(i) Like the payback technique, the average return on investment method also ignore the time value of money. Consideration to distribution of earnings over time is important. It is to be accepted that current income is more valuable than income received at a later date.	(ii) The method ignores the shrinkage of original investment through the process of charging depreciation allowances against earnings. Even the assumption of regular recovery of capital over time as implied in average investment approach is not well founded.
(iii) The average rate of return on original investment approach cannot be applied to a situation where part of the investment is to be made after the beginning of the project	(iv) Since ARR can be calculated by using different methods, so results are not the same. Thus, the identification of right method to compare with cut of rate is difficult to apply.
(v) Its major limitation is that ARR is based on accounting principle and not on cash flow analysis.	

Suitability of using ARR Method:

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

Discounted Cash Flow (DCF) Method

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

Discounted cash flow method involves following steps:

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

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

A. Net Present Value Method	B. Internal Rate of Return Method	C. Profitability Index or Benefit Cost (B/C) Ratio Method.

A. Net Present Value Method (NPV)

The net present value method is understood to be the best available method for evaluating the capital investment proposals.

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

Decision Rule of using NPV Method:

If NPV > Zero : Accept the project

NPV < Zero : Reject the project

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

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

ADVANTAGES:	DISADVANTAGES:
(i) Income over the entire life of the project is considered. (ii) The method takes into account time value of money. (iii) The method provides clear acceptance so interpretation is easy. (iv) When projects involves different amount of investment, the method may not provide satisfactory answers. (v) This method considers the firm objective of wealth maximisation concept for the sharehol	(i) As compared with the first two methods, the present value approach is certainly more difficult to understand and apply. It requires special skill for calculation. (ii) An additional difficulty in this approach is encountered when projects with unequal lives are to be evaluated. (iii) It is difficult to determine the firm cost of capital or appropriate rate of discount.

Suitability of NPV Method:

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

B. Internal Rate of Return (IRR)

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

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

(i) Project the net cash benefit of an investment during the whole of its economic life. Future cash flows should bebestimated after taxes, but before depreciation and interest.	(ii) Determine the rate of discount that equates the present value of its future cash benefits to its present investment. The rate of discount is determined by the method of trial and error.	(iii) Compare the rate of discount as determined above with the cost of capital or any other cut-off rate, and select proposals with the highest rate of return as long as the rate is higher than the cost of capital or cut off rate.

Decision Rule:

If Internal Rate of Return i.e.

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

r < k Reject the investment proposal

r = k Indifferent

ADVANTAGES:

(i) The discounted cash flow (IRR) takes into account the time value of money.	(ii) It considers cash benefits, i.e. profitability of the project for the whole of its economic life.	(iii) The rate of discount at which the present value of cash flows is equated to capital outlay on a project is shown as a percentage figure. Evidently, this method provides for uniform ranking and quick comparison of relative efficiency of different projects.	
(iv) This method is considered to be a sophisticated and more reliable technique of evaluating capital investment proposals.			(v) The objective of maximising of owner's wealth is met.

DISADVANTAGES:

(i) The discounted cash flow is the most difficult of all the methods of project evaluation discussed	(ii) An important assumption implied in this method is that incomes are reinvested (compounding) over the project's economic life at the rate earned by the investment. This assumption is correct and justified only when the internal rate of return is very close to the average rate of return earned by the company on its total investments. To the extent internal rate of return departs from the typical rate of earnings of the company, results of this method, will be misleading. Thus, when the internal rate of return on a project is computed to be 30% while company's average rate of return is 15%, the assumption of earning income on income at the rate of 30% is highly unrealistic. From this point of view	(iii) The rate may be negative or one or may be multiple rate as per calculations. When a project has a sequence of changes in sign of cash flow, there

above.	the assumption of the net present value method that incomes are reinvested at the rate of discount (cost of capital) seems to be more reasonable.	may be more than one internal rate of return.

C. Profitability Index (PI) Method

Profitability Index is defined as the rate of present value of the future cash benefits at the required rate of return to the initial cash outflow of the investment. If the ratio is equal to or greater than one, it shows that project has an expected yield equal to or greater than the discount rate. If the index is less than one, it indicates that project has an expected yield less than the discount rate.	Profitability Index is expressed as : $\text{Profitability index} = \frac{\text{PV of Future cash flows}}{\text{Initial cash investment}}$ $PI = \frac{\sum_{t=1}^{n} \frac{A_t}{(1+k)^t}}{C}$ A_t = Present value of cash inflows. k = rate of return C = initial cash outlay t = time period.

Decision Rule:

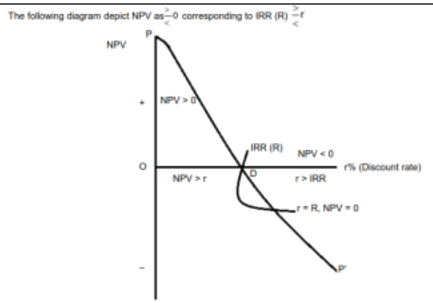
If PI > 1 Accept the Project, PI = 1 indifferent, PI < 1 Reject the project.
In the event of more than one alternatives, projects may be ranked according to their ratio – the project with the highest ratio should be ranked first and vice versa.

ADVANTAGES:	DISADVANTAGES:
(1) Profitability Index method gives due consideration to the time value of money. (2) Profitability Index method satisfies almost all the requirements of a sound investment criterion. (3) This method can be successfully employed to rank projects of varying cash and benefits in order of their profitability. (4) This method is consistent with the principle of shareholders wealth maximisation.	(1) This method is more difficult to understand and compute. (2) This method does not take into account the size of investment. (3) When cash outflows occur beyond the cement period Profitability Index Ratio criterion is unsuitable as a selection criterion.

COMPARISON OF NET PRESENT VALUE AND INTERNAL RATE OF RETURN METHODS

Points of Differences	Points of Similarities
1. Interest Rate: Under the net present value method rate of interest is assumed as the known factor whereas it is unknown in case of internal rate of return method. 2. Reinvestment Axiom: Under both the methods, it is assumed that cash inflows can be re-invested at the discount rate in the new projects. However, reinvestment of funds, at cut-off rate is more possible than internal rate of return. So the net present value method is more reliable than internal rate of return method for ranking two or more projects. 3. Objective: The net present value method took to ascertain the amount which can be invested in a project so that its expected yields will exactly match to repay this	IRR will give the same results as NPV in terms of acceptance or rejection of investment proposals in the following circumstances: 1. Projects having conventional cash flows i.e. a situation where initial investment (outlay or cash outflow) is followed by series of cash inflows. 2. Independent Investment Proposals: Such proposal, the acceptance of which does not exclude the acceptance of others.

amount with interest at the market rate. On the other hand, internal rate of return method attempts to find out the rate of interest which is maximum to repay the invested fund out of the cash inflows.	

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

CHOICE OF METHODS:

The business enterprise is confronted with large number of investment criteria for selection of investment proposals. It should like to choose the best among all. Specially, it is the choice between Net Present Value and Internal Rate of Return Method because these are the two methods which are widely used by the firms. If a choice must be made, the Net Present Value Method generally is considered to be superior theoretically because: (i) It is simple to operate as compared to internal rate of return method; (ii) It does not suffer from the limitations of multiple rates; (iii) The reinvestment assumption of the Net Present Value Method is more realistic than internal rate of return method.	On the other hand, some scholars have advocated for internal rate of return method on the following grounds 1. It is easier to visualise and to interpret as compared to Net Present Value Method. 2. It suggests the maximum rate of return and even in the absence of cost of capital, it gives fairly good idea of the projects profitability. On the other hand, Net Present Value Method may yield incorrect results if the firm's cost of capital is not calculated with accuracy. 3. The internal rate of return method is preferable over Net Present Value Method in the evaluation of risky projects.

CAPITAL RATIONING

The firm may put a limit to the maximum amount that can be invested during a given period of time, such as a year. Such a firm is then said to be resorting to capital rationing. A firm with capital rationing constraint attempts to select the combination of investment projects that will be within the specified limits of investments to be made during a given period of time and at the same	Capital rationing may be effected through budget ceiling. A firm may resort to capital rationing when it follows the policy of financing investment proposals only by ploughing back its retained earnings. In that case, capital expenditure in a given period cannot exceed the amount of retained earnings available for reinvestment. Management may also introduce capital rationing when a department is authorised to make investments upto a

time provide greatest profitability.	limit beyond which investment decisions will be made by higher level management.

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

Risk Evaluation and Sensitivity analysis

Risk analysis gives management better information about the possible outcomes that may occur so that management can use their judgement and experience to accept or reject an investment. Since risk analysis is costly, it should be used relatively in costly and important projects. Risk and uncertainty are quite inherent in capital budgeting decisions. This is so because investment decisions and capital budgeting are actions of today which bear fruits in future which is unforeseen. Future is uncertain and involve risk. The projection of probability of cash inflows made today are not certain to be achieved in the course of future. Seasonal fluctuations and business cycles both deliver heavy impact upon the cash inflows and outflows projected for different project proposals	The cost of capital which offers cut-off rates may also be inflated or deflated under business cycle conditions. Inflation and deflation are bound to effect the investment decision in future period rendering the degree of uncertainty more severe and enhancing the scope of risk. Technological developments are other factors that enhance the degree of risk and uncertainty by rendering the Plants or equipments obsolete and the product out of date. Tie up in the procurement in quantity and/or the marketing of products may at times fail and frustrate a business unless possible alternative strategies are kept in view.

Standard Deviation and Coefficient of Variation

Standard Deviation is considered as the best measures of dispersion or variability. Higher value of standard deviation indicates higher variability and vice versa. Higher variability means higher risk. As future cash flows cannot be estimated with certainty, it involves risk. Therefore, risk in investment analysis can be measured by using standard deviation. Investment proposal with lower standard deviation will indicate lower variability in cash flow estimates, hence such investment proposal may be preferred to the proposal having higher standard deviation.	$\text{Standard Deviation} \sqrt{\frac{\Sigma f(x-\bar{x})^2}{\Sigma f}}$ $\text{Co-efficient of Variation} = \frac{\text{Standard Deviation}}{\text{Mean}} \times 100$ Both standard deviation and co-efficient of variation require to be adjusted with the discount rate with which the project investments are evaluated. According to the degree of standard deviation or co-efficient of variation, the investment proposals shall be termed as highly risky or less risky investments. Less risky projects shall be afforded highest priority in investment or capital budgeting decisions.

Risk Adjusted Discount Rate (RADR) Method

Risk adjusted discount rates method is used in investment and budgeting decisions to cover time value of money and the risk. The use of risk adjusted discount rate is based on the concept that investors demands higher returns from the risky projects. The required return of return on any investment should include compensation for delaying consumption equal to risk free	The case, risk associated with any investment project is higher than risk involved in a similar kind of project, discount rate is adjusted upward in order to compensate this additional risk borne. The case, risk associated with any investment project is higher than risk involved in a similar kind of project, discount rate is adjusted upward in order to compensate this additional risk borne.

rate of return, plus compensation for any kind of risk taken on.	

Certainty Equivalent Approach (CE Approach)

This is another method of dealing with risk in capital budgeting in order to reduce the forecasts of cash flows to some conservative levels.

The certainty equivalent approach may be expressed as: $NPV = \sum_{t=0}^{n} \frac{\alpha_t NCF_t}{(1+k_f)^t}$ where NCF_t = the forecasts of net cash flow without risk adjustment α_t = the risk adjustment factor or the certainty equivalent coefficient k_f = risk- free rate of return assumed to be constant for all periods	The certainty equivalent coefficient assumes value between 0 and 1, and varies inversely with risk. A lower will be used if greater risk is perceived and a higher will be used if lower risk is anticipated. The decision maker subjectively or objectively establishes the coefficients. These coefficients reflect the decision maker's confidence in obtaining a particular cash flow in period t. Thus, to obtain certain cash flows, we multiply estimated cash flows by the certainty-equivalent coefficients.

The certainty-equivalent coefficient can be determined as a relationship between the certain cash flows and the risky cash flows, i.e.

$$\alpha_t = \frac{NCF_*}{NCF_t} = \frac{\text{Certain net cash flow}}{\text{Risky net cash flow}}$$

Decision Tree Analysis

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

Sensitivity Analysis in Capital Budgeting

Sensitivity analysis is used in Capital budgeting for more precisely measuring the risk. It helps in assessing information as to how sensitive are the estimated parameters of the project such as cash flows, discount rate, and the project life to the estimation errors. Future being always uncertain and estimations are always subject to error, sensitivity analysis takes care of estimation errors by using a number of possible outcomes in evaluating a project. The methodology adopted in sensitivity analysis is to evaluate a project by using a number of estimated cash flows so as to provide to the decision maker an insight into the variability of	it is a technique of risk analysis which studies the responsiveness of a criterion of merit like NPV or IRR to variation in underlying factors like selling price, quantity sold, returns from an investment etc. Sensitivity analysis answers questions like, (i) What happens to the present value (or some other criterion of merit) if flows are, say Rs. 50,000 than the expected Rs. 80,000? (ii) What will happen to NPV if the economic life of the project is only 3 years rather than expected 5 years? In terms of capital budgeting the possible cash flows are based on three assumptions:

outcome	(a) Cash flows may be worst (pessimistic)	(b) Cash flows may be most likely.	(c) Cash flows may be most optimistic.

Sensitivity analysis has been evolved to treat risk and uncertainty in capital budgeting decisions. The analysis is compromised of the following steps:

(1) Identification of variables;	(2) Evaluation of possibilities for these variables;	(3) Selection and combination of variables to calculate NPV or rate of return of the project;
(4) Substituting different values for each variables in turn while holding all other constant to discover the effect on the rate of return;	(5) Comparison of original rate of return with this adjusted rate to indicate the degree of sensitivity of the rate to change in variables;	(6) Subjective evaluation of the risk involved in the project.

The purpose of sensitivity analysis is to determine how varying assumptions will affect the measures of investment worth. Ordinarily, the assumptions are varied one at a time i.e. cash flows may be held constant with rate of discount used to vary; or discount rate is assumed constant and cash flow may vary with assumed outlay; or the level of initial outlay may change with discount rate and annual proceeds remaining the same. In the context of NPV, sensitivity analysis provides information regarding the sensitivity of the calculated NPV to possible estimation errors in expected cash flows, the required rate of return and project life.

SIMULATION FOR RISK EVALUATION

Simulation is known as simulated sampling or more fully Monte-Carlo simulation is as much an art as a technique. stochastic variables that analytical results are unobtainable. In simulation a mathematical model is constructed and artificial data is fed. The desired parameters of the system are then determined from the output of the mode. Simulation like sensitivity analysis is not an optimising technique. It merely provides a convenient representation of reality in some more advanced work than can be used to improve NPV by adjusting certain variables under the decision makers control	There are two important things in simulation viz. the construction of the model and the judgement of changes to be made to controllable variables. This method involves use of computers to determine the distribution of the internal rate of return or net present value. Simulation is an expensive device and suits only to those projects involving heavy capital expenditure. Simulation is advantageous to corporate project proposal selections for the reason that it shows all possible outcomes associated with the project including identification of possible extremely bad outcomes which might happen if the project is accepted.

Capital budgeting Techniques under uncertainty:

Risk can be defined as the chance that the actual outcome will differ from the expected outcome. Uncertainty relates to the situation where a range of differing outcome is possible, but it is not possible to assign probabilities to this range of outcomes. The two terms are generally used interchangeably in finance literature. The most common measures of risk are standard deviation and coefficient of variations. There are three different types of project risk to be considered:

1. Stand-alone risk: This is the risk of the project itself as measured in isolation from any effect it may have on the firm's overall corporate risk.	**2. Corporate or within-firm risk:** This is the total or overall risk of the firm when it is viewed as a collection or portfolio of investment projects.	**3. Market or systematic risk:** This defines the view taken from a well-diversified shareholders and investors. Market risk is essentially the stock market's assessment of a firm's risk, its beta, and this will affect its share price.

Statistical Techniques for Risk Analysis:

(a) Probability Assignment: The concept of probability is fundamental to the use of the risk analysis techniques. It may be defined as the likelihood of occurrence of an event. If an event is certain to occur, the probability of its occurrence is one but if an event is certain not to occur, the probability of its occurrence is zero. Thus, probability of all events to occur lies between zero and one.The classical view of probability holds that one can talk about probability in a very large number of times under independent identical conditions. Thus, the probability estimate, which is based on a large number of observations, is known as an objective probability. But this is of little use in analyzing investment decisions because these decisions are non-repetitive in nature and hardly made under independent identical conditions over time. The another view of probability holds that it makes a great deal of sense to talk about the probability of a single event without reference to the repeatability long run frequency concept.

(b) Expected Net Present Value: Once the probability assignments have been made to the future cash flows, the next step is to find out the expected net present value. It can be found out by multiplying the monetary values of the possible events by their probabilities. The following equation describes the expected net present value.:

$$ENPV = \sum_{t=0}^{n} \frac{ENCF_t}{(1+k)^t}$$

Where ENPV is the expected net present value, ENCFt expected net cash flows in period t and k is the discount rate. The expected net cash flow can be calculated as follows: $ENCF_t = NCF_{jt} \times P_{jt}$

Where NCFjt is net cash flow for jth event in period t and Pjt probability of net cash flow for jth event in period t.

(c) Standard Deviation: The assignment of probabilities and the calculation of the expected net present value include risk into the investment decision, but a better insight into the risk analysis of capital budgeting decision is possible by calculating standard deviation and coefficient of variation. Standard deviation(s) is an absolute measure of risk analysis and it can be used when projects under consideration are having same cash outlay. Statically, standard deviation is the square root of variance and variance measures the deviation about expected cash flow of each of the possible cash flows.

$$\sigma = \sqrt{\sum_{i=1}^{n} \left(CF_t \times \overline{CF}\right)^2 \times P_i}$$

it is the square root of the mean of the squared deviation, where deviation is the difference between an outcome and the expected mean value of all outcomes and the weights to the square of each deviation is provided by its probability of occurrence

(d) Coefficient of Variation: If the projects to be compared involve different outlays/different expected value, the coefficient of variation is the correct choice, being a relative measure. It can be calculated using following formula:

$$CV = \frac{\text{Standard deviation or } \sigma}{\text{Expected Value CF}}$$

It is a better measure of the uncertainty of cash flow returns than the standard deviation because it adjusts for the size of the cash flow.

(e) Probability Distribution Approach:

The researcher has discussed the concept of probability for incorporating risk in capital budgeting proposals. The probability distribution of cash flows over time provides valuable information about the expected value of return and the dispersion of the probability distribution of possible returns which helps in taking accept-reject decision of the investment decision. The application of this theory in analyzing risk in capital budgeting depends upon the behaviour of the cash flows, being (i) independent, or (ii) dependent. The assumption that cash flows are independent over time signifies that future cash flows are not affected by the cash flows in the preceding or following years. When the cash flows in one period depend upon the cash flows in previous periods, they are referred to as dependent cash flows.

(i)Independent Cash Flows over Time: The mathematical formulation to determine the expected values
of the probability distribution of NPV for any project is as follows:

$$PV = \sum_{t=1}^{n} \frac{CF_t}{(1+i)^t} - Co$$

where CFt is the expected value of net CFAT in period t and i is the risk free rate of interest. The standard deviation of the probability distribution of net present values is equal to ;

$$\sigma(NPV) = \sqrt{\sum_{t=1}^{n} \frac{\sigma t^2}{(1+i)^{2t}}}$$

where s t is the standard deviation of the probability distribution of expected cash flows for period t, s t would be calculated as follows:

$$\sigma t = \sqrt{\sum_{j=1}^{n} \left(CF_{jt} - \overline{CF_t}\right)^2 P_{jt}}$$

Thus, the above calculation of the standard deviation and the NPV will produce significant volume of information for evaluating the risk of the investment proposal.

(ii) Dependent Cash Flows: If cash flows are perfectly correlated, the behavior of cash flows in all periods is alike. This means that if the actual cash flow in one year is a standard deviations to the left of its expected value, cash flows in other years will also be a standard deviations to the left of their respective expected values. In other words, cash flows of all years are linearly related to one another. The expected value and the standard deviation of the net present value, when cash flows are perfectly correlated, are as follows:

$$\overline{NPV} = \sum_{t=1}^{n} \frac{\overline{CF_t}}{(1+t)^t} - CO \qquad \sigma(NPV) = \sum_{t=1}^{n} \frac{\sigma t}{(1+i)^t}$$

Where,

NPV = Expected Net Present Value

CF_t = Expected Cash Flow for year "t"

= Risk-free interest rate

s NPV = Standard deviation of Net Present Value

st = Standard deviation of the cash flow for year "t"

(f) Normal Probability Distribution: The normal probability distribution can be used to further analyze the risk in investment decision.

CHAPTER 3 CAPITAL STRUCTURE

Capital Structure

Meaning and Significance of Capital Structure	Capital Structure vis-à-vis Financial Structure	Planning and Designing	Optimal Capital Structure
Factors affecting Capital Structure of a Company	Determinants of Capital Structure	Capital Structure and Valuation	Theories of Capital Structure
EBIT - EPS Analysis	Measures of Operating and Financial Leverage	Effects of Leverage on Shareholders'Returns	Risk and Leverage

The optimal capital structure indicates the best debt-to-equity ratio for a firm that maximizes its value. Putting it simple, the optimal capital structure for a company is the one which offers a balance between the ideal debt-to-equity ranges thus minimizing the firm's cost of capital

INTRODUCTION, DEFINITION AND SIGNIFICANCE OF CAPITAL STRUCTURE

Definition of Capital Structure

Gerstenberg -, "Capital Structure of a company refers to the composition or make up of its capitalization and it includes all long-term capital resources	**James C. Van Horne**- Captial Structure is "The mix of a firm's permanent long term financing represented by debt, preferred stock and common stock equity".

Type of Capital Structure

1. Horizontal Capital Structure : the firm has zero debt components in the structure mix. The structure is quitenstable. Expansion of the firm takes in a lateral manner, i.e. through equity or retained earning only. The absencebof debt results in the lack of financial leverage. Probability of disturbance of the structure is remote.	**2. Vertical Capital Structure :** the base of the structure is formed by a small amount of equity share capital. This base serves as the foundation on which the super structure of preference share capital and debt is built. The incremental addition in the capital structure is almost entirely in the form of debt. Quantum of retained earnings is low and the dividend pay-out ratio is quite high. In such a structure, the cost of equity capital is usually higher than the cost of debt. The high component of debt in the capital structure increases the financial risk of the firm and renders the structure unstable. The firm, because of the relatively lesser component of equity capital, is vulnerable to hostile takeovers.
3. Pyramid shaped Capital structure: has a large proportion consisting of equity capital and retained earnings which have been ploughed back into the firm over a considerably large period of time. The cost of share capital and the retained earnings of the firm is usually lower than the cost of debt. This structure is indicative of risk averse conservative firms.	**4. Inverted Pyramid shaped Capital Structure :** has a small component of equity capital, reasonable level of retained earnings but an ever increasing component of debt. All the increases in the capital structure in the recent past have been made through debt only. Chances are that the retained earnings of the firm are shrinking due to accumulating losses. Such a capital structure is highly vulnerable to collapse.

Significance of Capital Structure

1. It reflects the firm's strategy The capital structure reflects the overall strategy of the firm. The strategy includes the pace of growth of the firm.	**2. It is an indicator of the risk profile of the firm** One can get a reasonably accurate broad idea about the risk profile of the firm from its capital structure. If the

In case the firm wants to grow at a faster pace, it would be required to incorporate debt in its capital structure to a greater extent. Further, in case of growth through acquisitions or the inorganic mode of growth as it is called, the firm would find that financial leverage is an important tool in funding the acquisitions.	debt component in the capital structure is predominant, the fixed interest cost of the firm increases thereby increasing its risk. If the firm has no long term debt in its capital structure, it means that either it is risk averse or it has cost of equity capital or cost of retained earnings less than the cost of debt.
3. It acts as a tax management tool The capital structure acts as a tax management tool also. Since the interest on borrowings is tax deductible, a firm having healthy growth in operating profits would find it worthwhile to incorporate debt in the capital structure in a greater measure.	**4. It helps to brighten the image of the firm** A firm can build on the retained earnings component of the capital structure by issuing equity capital at a premium to a spread out base of small investors. Such an act has two benefits. On the one hand, it helps the firm to improve its image in the eyes of the investors. At the same time, it reduces chances of hostile take-over of the firm.

CAPITAL STRUCTURE VIS-A-VIS FINANCIAL STRUCTURE

Following are differences between financial structure and capital structure:

Capital structure relates to long term capital deployment for creation of long term assets. Financial structure involves creation of both long term and short term assets.	Components of the capital structure may be used to build up the level of current assets but the current liabilities should not be used to finance acquisition of fixed assets. This would result in an asset liability mismatch.
Capital structure is the core element of the financial structure. Capital structure can exist without the current liabilities and in such cases. Capital structure shall be equal to the financial structure. But we cannot have a situation where the firm has only current liabilities and no long term capital.	The financial structure of a firm is considered to be a balanced one if the amount of current liabilities is less than the capital structure net of outside debt because in such cases the long term capital is considered sufficient to pay current liabilities in case of sudden loss of current assets.

PLANNING AND DESIGNING OF CAPITAL STRUCTURE

The management of a company should seek answers to the following questions while making the decision regarding capital structure of the company:

Ø How should the investment project be financed?	Ø Does the way in which the investment projects are financed matter?	Ø How does financing affect the shareholders' risk, return and value?
Ø Does there exist an optimum financing mix in terms of the maximum value to the firm's shareholders?	Ø Can the optimum financing mix be determined in practice for a company?	Ø What factors in practice should a company consider in designing its financing policy?

Attributes of a Well Planned Capital Structure

Return: The capital structure of the company should be most advantageous. Subject to other considerations, it should generate maximum returns to the shareholders without adding additional cost to them.	**Risk:** The use of excessive debt threatens the solvency of the company. To the point debt does not add significant risk. It should be sued, otherwise its use should be avoided.
Flexibility: The capital structure should be flexible. It should be possible for a company to adapt its capital structure with a minimum cost and delay if warranted by	**Capacity:** The capital structure should be determined within the debt capacity of the company and this capacity should not be exceeded. The debt capacity of a company

a changed situation. It should also be possible for the company to provide funds whenever needed to finance its profitable activities.	depends on its ability to generate future cash flows. It should have enough cash to pay creditors' fixed charges and principal sum.
Control: The capital structure should involve minimum risk of loss of control of the company. The owners of closely-held companies are particularly concerned about dilution of control.	

Designing a Capital Structure

Design should be functional: The design should create synergy with the long term strategy of the firm and should not be dysfunctional. It should facilitate the day to day working of the firm rather than create systematic bottlenecks.	**Design should be flexible:** The capital structure should be designed to incorporate a reasonable amount of flexibility in order to allow for temporary expansion or contraction of the share of each component.
Design should be conforming statutory guidelines: The design should conform to the statutory guidelines, if any, regarding the proportion and amount of each component. The limits imposed by lenders regarding the minimum level of owners' equity required in the firm should be complied with.	

OPTIMAL CAPITAL STRUCTURE

By the term optimal capital structure we mean a particular arrangement of various components of the structure which is just in tune with the both the long term and short term objectives of the firm. An optimal capital structure is the best debt to equity ratio for a firm that maximises its value. The optimal capital structure for a company is one that offers a balance between the ideal debt to equity range and minimises the firm's cost of capital. A combination less or more than the optimal combination would be less than satisfying. Hence, a sub-optimal combination would affect the achievement of the goal of maximisation of the shareholders' wealth.	For designing such a structure, one would need the following information: – The requirement of capital of the firm – Availability of different components – Cost of these components – Rate of return from investment the above information should be exact information. In reality it is not possible to have the exact information on all the above four parameters. Secondly whatever information is available is for a particular period. Thus, we have to design the structure in a static set-up which makes the design devoid of all flexibility.
The real world of business, however, is a dynamic world with ever changing demand and supply of various components of the capital structure. Hence, we can not formulate the optimal capital structure in a static framework. The process has to be carried out in a dynamic framework of interdependent investment and financing decisions that yield optimal values within the constraints at the time and place when the decisions were made.	We can, therefore, say that the optimal capital structure is an ideal situation which can function as the benchmark of performance for a firm. But this benchmark is invincible and the firm can expect to achieve moderated or toned down versions of this benchmark depending upon dynamics of each project.

FACTORS INFLUENCING CAPITAL STRUCTURE

(1) Cash Flow Position: While making a choice of the capital structure the future cash flow position should be kept in mind. Debt capital should be used only if the cash flow position is really good	**(2) Interest Coverage Ratio-ICR** With the help of this ratio an effort is made to find out how many times the EBIT is available to the payment of interest. The capacity of the company to use debt capital will be in direct	**(3) Debt Service Coverage Ratio-DSCR** This ratio removes the weakness of ICR. This shows the cash flow position of the company. This ratio tells us about the cash payments to be made

because a lot of cash is needed in order to make payment of interest and refund of capital.	proportion to this ratio. It is possible that inspite of better ICR the cash flow position of the company may be weak. Therefore, this ratio is not a proper or appropriate measure of the capacity of the company to pay interest. It is equally important to take into consideration the cash flow position.	and the amount of cash available. Better ratio means the better capacity of the company for debt payment. Consequently, more debt can be utilised in the capital structure.
(4) Return on Investment-ROI The greater return on investment of a company increases its capacity to utilise more debt capital.	**(5) Cost of Debt** The capacity of a company to take debt depends on the cost of debt. In case the rate of interest on the debt capital is less, more debt capital can be utilised and vice versa.	**(6) Tax Rate** The rate of tax affects the cost of debt. If the rate of tax is high, the cost of debt decreases. The reason is the deduction of interest on the debt capital from the profits considering it a part of expenses and a saving in taxes.
(7) Cost of Equity Capital Cost of equity capital is affected by the use of debt capital. If the debt capital is utilised more, it will increase the cost of the equity capital. The simple reason for this is that the greater use of debt capital increases the risk of the equity shareholders. , The use of the debt capital can be made only to a limited level. If even after this level the debt capital is used further, the cost of equity capital starts increasing rapidly. It adversely affects the market value of the shares. This is not a good situation. Efforts should be made to avoid it.	**(8) Floatation Costs** Floatation costs are those expenses which are incurred while issuing securities (e.g., equity shares, preference shares, debentures, etc.). These include commission of underwriters, brokerage, stationery expenses, etc. Generally, the cost of issuing debt capital is less than the share capital. This attracts the company towards debt capital.	**(9) Risk Consideration:** There are two types of risks in business – *(i) Operating Risk or Business Risk* This refers to the risk of inability to discharge permanent operating costs (e.g., rent of the building, payment of salary, insurance installment, etc.). *(ii) Financial Risk* This refers to the risk of inability to pay fixed financial payments (e.g., payment of interest, preference dividend, return of the debt capital, etc.) as promised by the company. If the operating risk in business is less, the financial risk can be faced which means that more debt capital can be utilised. On the contrary, if the operating risk is high, the financial risk likely occurring after the greater use of debt capital should be avoided.
(10) Flexibility capital structure should be fairly flexible. Flexibility means that, if need be, amount of capital in the business could be increased or decreased easily. Reducing the amount of capital in business is possible only in case of debt capital or preference share capital. If at any given time company has more capital than as necessary then both the above-mentioned capitals can be repaid. On the other hand,repayment of equity share capital is not possible by thecompany during its lifetime.	**(11) Control** at the time of preparing capital structure, it should be ensured that the control of the existing shareholders over the affairs of the company is not adversely affected. If funds are raised by issuing equity shares, then the number of company's shareholders will increase and it directly affects the control of existing shareholders. In other words, now the number of owner controlling the company increases. This situation will not be acceptable to the existing shareholders. On the contrary, when funds are raised through debt capital, there is no effect on the control of the company because the debenture	**(12) Regulatory Framework** Capital structure is also influenced by government regulations. For instance, banking companies can raise funds by issuing share capital alone, not any other kind of security. Similarly, it is compulsory for other companies to maintain a given debt-equity ratio while raising funds. Different ideal debt-equity ratios such as 2:1; 4:1; 6:1 have been determined for

Thus, from the viewpoint of flexibility to issue debt capital and preference share capital is the best.	holders have no control over the affairs of the company. Thus, for those who support this principle debt capital is the best.	different industries. The public issue of shares and debentures has to be made under SEBI guidelines.

(13) Stock Market Conditions

Stock market conditions refer to upward or downward trends in capital market. Both these conditions have their influence on the selection of sources of finance. When the market is dull, investors are mostly afraid of investing in the share capital due to high risk. On the contrary, when conditions in the capital market are cheerful, they treat investment in the share capital as the best choice to reap profits. Companies should, therefore, make selection of capital sources keeping in view the conditions prevailing in the capital market.

(14) Capital Structure of Other Companies

Capital structure is influenced by the industry to which a company is related. All companies related to a given industry produce almost similar products, their costs of production are similar, they depend on identical technology, they have similar profitability, and hence the pattern of their capital structure is almost similar. Because of this fact, there are different debt- equity ratios prevalent in different industries. Hence, at the time of raising funds a company must take into consideration debt-equity ratio prevalent in the related industry.

CAPITAL STRUCTURE AND VALUATION

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

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

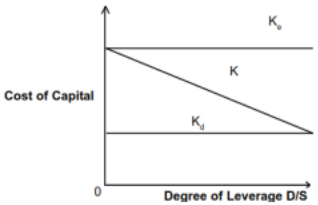
Retained earnings also have a book value, i.e. the value at which these earnings are carried in the books of the firm. The inherent value of the retained earnings depends upon the future returns which these earnings can generate for the owners. As earnings of the firm increase, its valuation also increases.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

CAPITAL STRUCTURE THEORIES

1. Net Income Approach

The Net Income Approach makes the following assumptions:

1. The total capital requirement of the firm is given and remains constant.
2. Cost of debt (Kd) is less than cost of equity (Ke).
3. Both Kd and Ke. remain constant and increase in financial leverage i.e., use of more and more debt financing in the capital structure does not affect the risk perception of the investors.

Under this approach, the cost of debt capital, Kd and the cost of equity capital Ke remains unchanged when D/S, the degree of leverage, varies. Here S stands for total capital employed (= D + E). The constancy of Kd and Ke with respect to the degree of leverage means that K the average cost of capital, measured by the following formula declines as the degree of leverage increases. $K = K_d \times \frac{D}{(D+E)} + K_e \times \frac{E}{(D+E)}$	This happens because when the degree of leverage increases, K-d which is lower than Ke receives a higher weight in the calculation of K. This can also be illustrated by a graph as shown below:  As our assumption is that the cost of debt and equity capital would not change with the change in the level of leverage, K is seen to go down with the increasing proportion of debt in the capital.

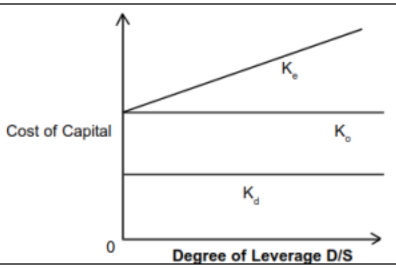
1. As the cost of capital decreases the value of the firm would go up as it is dependent upon the return expected and the cost of capital. Inverse relationship exists between the value of the firm and cost of capital for any given level of return.	2. This means that as we increase the level of debt in the company, the value of the firm would go up even further. This would mean that the companies would like to employ as much debt as possible.

2. Net Operating Income Approach

The NOI Approach makes the following assumptions:

1. The investors see the firm as a whole and thus capitalize the total earnings of the firm to find the value of the firm as a whole.	2. The overall cost of capital KO, of the firm is constant and depends upon the business risk which also is assumed to be unchanged.
3. The cost of debt, Kd, is also taken as constant.	4. There is no taxes.
5. The use of more and more debt in the capital structure increases the risk of the shareholders and thus results in the increase in the cost of equity capital i.e, Ke. The increase in Ke is such as to completely offset the benefits of employing cheaper debt,	

Under NOI Approach the relationship between the leverage and cost of capital has been represented in the Figure below:



As the cost of total capital and debt is constant, the cost	This means that as we increase the level of debt in the

of equity would go up or down with increasing or decreasing leverage, i.e., the amount of debt in the capital structure.	company, the value of the firm doesn't change and the company does not benefit by taking on debt. This would mean that the companies would like to employ as much equity as possible so as to reduce the risk of the company.

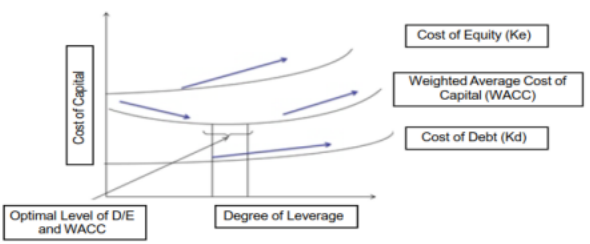
3. Traditional Approach

The traditional approach to capital structure advocates that there is a right combination of equity and debt in the capital structure, at which the market value of a firm is maximum. As per this approach, debt should exist in the capital structure only up to a specific point, beyond which, any increase in leverage would result in the reduction in value of the firm.	It means that there exists an optimum value of debt to equity ratio at which the Weighted Average Cost of Capital (WACC) is the lowest and the market value of the firm is the highest. Once the firm crosses that optimum value of debt to equity ratio, the cost of equity rises to give a detrimental effect to the WACC. Above the threshold, the WACC increases and market value of the firm starts a downward movement.

Assumptions under traditional approach:

1. The rate of interest on debt remains constant for a certain period and thereafter with an increase in leverage, it increases.	2. The expected rate by equity shareholders remains constant or increase gradually. After that, the equity shareholders starts perceiving a financial risk and then from the optimal point and the expected rate increases speedily.	3. As a result of the activity of rate of interest and expected rate of return, the WACC first decreases and then increases. The lowest point on the curve is optimal capital structure.

Traditional viewpoint on the relationship between leverage, cost of capital and the value of the firm is displayed in the figure below:



4. Modigliani - Miller Theory

In 1958, Franco Modigliani and Merton Miller (MM) published a	MM began with a very restrictive set of assumptions, including perfect capital markets (which implies zero taxes). And then they used an arbitrage proof to

theory of modern financial management – they concluded that the value of a firm depends solely on its future earnings stream, and hence its value is unaffected by its debt/equity mix. In short, they concluded that a firm's value stems from its assets, regardless of how those assets are financed.	demonstrate that capital structure is irrelevant. Under their assumptions, if debt financing resulted in a higher value for the firm than equity financing, then investors who owned shares in a leveraged (debt-financed) firm could increase their income by selling those shares and using the proceeds, plus borrowed funds, to buy shares in an unleveraged (all equity- financed) firm. The simultaneous selling of shares in the leveraged firm and buying of shares in the unleveraged firm would drive the prices of the stocks to the point where the values of the two firms would be identical. Thus, according to MM Hypothesis, a firm's stock price is not related to its mix of debt and equity financing.

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

Proposition – I

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

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

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

Proposition – II	**Proposition – III**
The expected yield on equity, Ke is equal to Ko plus a premium. This premium is equal to the debt – equity ratio times the difference between Ko and the yield on debt, Kd. This means that as the firm's use of debt increases its cost of equity also rises, and in a mathematically precise manner.	The cut-off rate for investment decision making for a firm in a given risk class is not affected by the manner in which the investment is financed. It emphasizes the point that investment and financing decisions are independent because the average cost of capital is not affected by the financing decision.

CRITICISM OF MM HYPOTHESIS

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

MM Hypothesis with Corporate Taxes

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

more debt financing is used.

Empirical evidence Against MM Hypothesis

In spite of the MM arguments, firms do not usually use anywhere close to 100% debt financing. In an attempt to modify MM's model to make it more consistent with actual behaviour, many of their assumptions were relaxed in papers by other authors. In particular, the possibility of financial distress drastically changed the MM results. In the modified model, tax savings cause the value of a firm to rise as more and more debt is used, but at some point (the optimal structure), the value of the firm begins to fall with additional debt because the tax benefits are more than offset by the increasing costs of potential financial distress.	The MM model as modified to include financial distress suggests to managers: – that a certain amount of debt is good – that too much debt is bad, and – that there is an optimal amount of debt for every firm. Thus, the modified MM theory, which is called the trade-off theory of capital structure, provides useful insights into the factors that affect a firm's optimal capital structure. Here the marginal costs and benefits of debt financing are balanced against one another, and the result is an optimal capital structure that falls somewhere between zero and 100% debt.

EBIT - EPS Analysis

1) The use of EBIT – EPS analysis indicates to management the projected EPS for different financial plans. Generally, management wants to maximise EPS if doing so also satisfies the primary goal of financial management - maximisation of the owner's wealth as represented by the value of business, i.e. the value of firm's equity. If the firm attempts to use excessive amounts of debt, shareholders (who are risk - averters) may sell their shares, and thus its price will fall	2) While the use of large amount of debt may result in higher EPS, it may also result in a reduction in the price of the firm's equity. The optimum financial structure for a firm (that is, the use of debt in relationship of equity and retained earnings as sources of financing) should be the one which maximises the price of the equity. Given the importance of earnings per share (EPS) as a measure of a firm's performance, analysis of the impact of financing alternatives on EPS is an important first step
3) the firm should resort to financing its operations through debt only beyond a threshold or indifference level in order to benefit from tax breaks provided by interest on borrowings. In other words, debt is suitable if the EBIT is expanding rapidly. If the operations are shrinking, it should change its capital structure immediately in favour of equity capital.	4) EBITDA, an acronym for "earnings before interest, taxes, depreciation and amortization," is an often-used measure of the value of a business. EBITDA is calculated by taking net income and adding interest, taxes, depreciation and amortization expenses back to it. EBITDA is used to analyze a company's operating profitability before non- operating expenses (such as interest and "other" non-core expenses) and non-cash charges .

ADVANTAGES OF EBITDA

1. The first factor to consider is that EBITDA can be used as a shortcut to estimate the cash flow available to pay debt on long-term assets, such as equipment and other items with a lifespan measured in decades rather than years. Dividing EBITDA by the amount of required debt payments yields a debt coverage ratio. Factoring out the	2. Another factor is that EBITDA estimate to be reasonably accurate, the company under evaluation must have legitimate profitability. Using EBITDA to evaluate old-line industrial firms is likely to produce useful results. This idea was lost during the 1980s, when leveraged buyouts were fashionable, and EBITDA began to be used

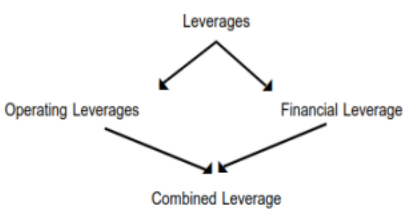
"ITDA" of EBITDA was designed to account for the cost of the long-term assets and provide a look at the profits that would be left after the cost of these tools was taken into consideration	as a proxy for cash flow. This evolved into the more recent practice of using EBITDA to evaluate unprofitable dotcoms as well as firms such as telecoms, where technology upgrades are a constant expense.
3. EBITDA can also be used to compare companies against each other and against industry averages. In addition, EBITDA is a good measure of core profit trends because it eliminates some of the extraneous factors and allows a more "apples-to-apples" comparison.	

Limitations of EBITDA

Operating cash flow is a better measure of how much cash a company is generating because it adds non-cash charges (depreciation and amortization) back to net income and includes the changes in working capital that also use or provide cash (such as changes in receivables, payables and inventories).	These working capital factors are the key to determining how much cash a company is generating. If investors do not include changes in working capital in their analysis and rely solely on EBITDA, they will miss clues that indicate whether a company is losing money because it isn't making any sales.
Factoring out interest, taxes, depreciation and amortization can make even completely unprofitable firms appear to be fiscally healthy. The use of EBITDA as measure of financial health made these firms look attractive. EBITDA numbers are easy to manipulate. If fraudulent accounting techniques are used to inflate revenues and interest, taxes, depreciation and amortization are factored out of the equation, almost any company may appears to be profitable and great.	

Ultimately, EBITDA should not replace the measure of cash flow, which includes the significant factor of changes in working capital. Remember "cash is king" because it shows "true" profitability and a company's ability to continue operations.

MEASURES OF OPERATING AND FINANCIAL LEVERAGE



James Horne has defined leverage as, "the employment of an asset or fund for which the firm pays a fixed cost or fixed return.

OPERATING LEVERAGE

The leverage associated with investment activities is called as operating leverage. It is caused due to fixed operating expenses in the company. Operating leverage may be defined as the company's ability to use fixed operating costs to magnify the effects of changes in sales on its earnings before interest and taxes. Operating leverage consists of two important costs viz., fixed cost	When the company is said to have a high degree of operating leverage if it employs a great amount of fixed cost and smaller amount of variable cost. Thus, the degree of operating leverage depends upon the amount of various cost structure. Operating leverage can be determined with the help of a break even analysis.

and variable cost.	

Operating leverage can be calculated with the help of the following formula: $\text{Operating Leverage} = \frac{\text{Contribution}}{\text{Operating Profit (EBIT)}}$	*Degree of Operating Leverage* The degree of operating leverage may be defined as percentage change in the operating income (EBIT) resulting from a percentage change in the sales. It can be calculated with the help of the following formula: $\text{DOL} = \frac{\text{Percentage change in EBIT}}{\text{Percentage change in sale}}$

USES OF OPERATING LEVERAGE

Operating leverage is one of the techniques to measure the impact of changes in sales which lead for change in the profits of the company. If any change in the sales, it will lead to corresponding changes in profit. Operating leverage helps to identify the position of fixed cost and variable cost.	Operating leverage measures the relationship between the sales and revenue of the company during a particular period. Operating leverage helps to understand the level of fixed cost which is invested in the operating expenses of business activities. It describes the overall position of the fixed operating cost.

FINANCIAL LEVERAGE

A leverage activity with financing activities is called financial leverage. Financial leverage represents the relationship between the company's earnings before interest and taxes (EBIT) or operating profit and the earning available to equity shareholders. Financial leverage is defined as "the ability of a firm to use fixed financial charges to magnify the effects of changes in EBIT on the earnings per share". It involves the use of funds obtained at a fixed cost in the hope of increasing the return to the shareholders. "The use of long-term fixed interest bearing debt and preference share capital along with share capital is called financial leverage or trading on equity".	Financial leverage may be favourable or unfavourable depends upon the use of fixed cost funds. Favourable financial leverage occurs when the company earns more on the assets purchased with the funds, then the fixed cost of their use. Hence, it is also called as positive financial leverage. Unfavourable financial leverage occurs when the company does not earn as much as the funds cost. Hence, it is also called as negative financial leverage. Financial leverage can be calculated with the help of the following formula: $\text{Financial Leverage} = \frac{\text{Operating Profit (EBIT)}}{\text{Profit Before Tax}}$

Degree of financial leverage may be defined as the percentage change in taxable profit as a result of percentage change in earnings before interest and tax (EBIT). This can be calculated by the following formula :-

$\text{DFL} = \frac{\text{Percentage change in taxable Income}}{\text{Percentage change in operating income}}$	$\text{DFL} = \frac{\text{Percentage change in EPS}}{\text{Percentage change in EBIT}}$

Alternative Definition of Financial Leverage

Gitmar, -"financial leverage is the ability of a firm to use fixed financial changes to magnify the effects of change in EBIT and EPS".

USES OF FINANCIAL LEVERAGE

Financial leverage helps to examine the relationship between EBIT and EPS. Financial leverage measures the percentage of change in taxable income to the percentage change in EBIT. Financial leverage locates the correct profitable financial decision regarding capital structure of the company. Financial leverage is one of the important devices which is used to measure the fixed cost proportion with the total capital of the company.	If the firm acquires fixed cost funds at a higher cost, then the earnings from those assets, the earning per share and return on equity capital will decrease. The impact of financial leverage can be understood with the help of the following exercise.

DIFFERENCE BETWEEN OPERATING LEVERAGE AND FINANCIAL LEVERAGE

Sl. No	Operating Leverage	Financial Leverage
1	Operating leverage is associated with investment activities of the company.	Financial leverage is associated with financing activities of the company.
2	Operating leverage consists of fixed operating expenses of the company.	Financial leverage consists of operating profit of the company.
3	It represents the ability to use fixed operating cost.	It represents the relationship between EBIT and EPS
4	Operating leverage can be calculated by	Financial leverage can be calculated by
5	A percentage change in the profits resulting from a percentage change in the sales is called as degree of operating leverage.	A percentage change in taxable profit is the result of percentage change in EBIT.
6	Trading on equity is not possible while the company is operating leverage.	Trading on equity is possible only when the company uses financial leverage.
7	Operating leverage depends upon fixed cost and variable cost.	Financial leverage depends upon the operating profits.
8	Tax rate and interest rate will not affect the operating leverage.	Financial leverage will change due to tax rate and interest rate.

FINANCIAL BEP : It is the level of EBIT which covers all fixed financing costs of the company. It is the level of EBIT at which EPS is zero.	**INDIFFERENCE POINT:** It is the point at which different sets of debt ratios (percentage of debt to total capital employed in the company) gives the same EPS.

COMBINED LEVERAGE

When the company uses both financial and operating leverage to magnification of any change in sales into a larger relative changes in earning per share. Combined leverage is also called as composite leverage or total leverage. Combined leverage expresses the relationship between the revenue in the account of sales and	Combined leverage can be calculated with the help of the following formulas: $$DCL = DOL \times DFL = \frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{PBT}} = \frac{\text{Contribution}}{\text{PBT}}$$

the taxable income.	

Degree of Combined Leverage

The percentage change in a firm's earning per share (EPS) results from one percent change in sales. This is also equal to the firm's degree of operating leverage (DOL) times its degree of financial leverage (DFL) at a particular level of sales.	Degree of combined leverage = $\frac{\text{Percentage change in EPS}}{\text{Percentage change in sales}}$

WORKING CAPITAL LEVERAGE

One of the new models of leverage is working capital leverage which is used to locate the investment in working capital or current assets in the company. Working capital leverage measures the sensitivity of return in investment of charges in the level of current assets.

$$\text{Working Capital Leverage} = \frac{\text{Percentage Change in ROI}}{\text{Percentage Change in Working Capital}}$$

If the earnings are not affected by the changes in current assets, the working capital leverage can be calculated with the help of the following formula:

$$Working\ Capital\ Leverage = \frac{CA}{TA + DCA}$$

where,

CA = Current Assets

TA = Total Assets

DCA = Changes in the level of Current Assets

EFFECTS OF LEVERAGE ON SHAREHOLDERS' RETURNS

1. Operating Leverage Effect : % Change in EBIT is more than % Change in Sale

If % change of earning before interest and tax is more than % change in sale, this operating leverage will effect ROE positively because at this level, per unit fixed cost will decrease and small increase in sale will boost EBIT.

If EBIT will increase, ROE will also increase. Operating Leverage indicates, how will EBIT change if sales changes. 2:1 ratio of operating leverage means 100% increase in sales will increase EBIT by 200%. As interest is fixed cost, so ROE will increase.

A. Situation: High Operating Leverage:
Too high operating leverage is not good, it may be highly risky.

B. Situation: Low Operating Leverage:
Low operating leverage may be useful when sale market is fluctuating.

3. Effect of Financial Leverage on ROE

If we have to check real effect of leverage on ROE, we have to study financial leverage. Financial leverage refers to the use of debt to acquire additional assets. Financial leverage may decrease or increase return on equity in different conditions.

A. Situation: High Financial Leverage:
Financial over-leveraging means incurring a huge debt by borrowing funds at a lower rate of interest and utilizing the excess funds in high risk investments in order to maximize returns.

B. Situation: Low Financial Leverage:
Financial low-leveraging means incurring a low debt by borrowing funds. It may affect positively, if decrease the value of bought asset with this low debt.

2. Operating Leverage Effect : % Change in EBIT is less than % Change in Sale

4. Effect of High Operating leverage and High Financial Leverage

Now we see the second face when % changes of EBIT is less than % changes in sales, it means 200% increase in sales will increase EBIT by only 100% if operating leverage is 1:2. This situation is less effective for enhancing ROE.	It will increase ROE but it is highly risky also.
5. Effect of Low Operating leverage and High Financial Leverage It is optimum combination for bringing optimum return on equity.	

RISK AND LEVERAGE

Risk is the probability that the future revenue streams of a firm shall show a variation from the expected figures. The variation is normally on the negative or the lower side because a positive variation reduces the investment risk and a reduction of risk is always welcome. For linkage with leverage, we can divide risk into two broad categories, i.e. business risk and financial risk. Business risk pertains to risks associated with day to day operations of the firm.	For example, decisions made regarding purchase of raw materials, manufacturing expenses and administrative expenses, etc. change the business risk profile of the firm. These decisions have an impact upon the operational profitability of the firm, i.e. the profits before interest and taxes. Financial risk, on the other hand, is associated with introduction of fixed interest bearing debt obligations in the capital structure of the firm. These obligations create a prior charge on EBIT before distribution of post tax profits among the owners.

Relationship between Financial Risk and Financial Leverage

As the financial leverage increases, the breakeven point of the company increases and the company now has to sell more of its product (or service) in order to break even. High financial leverage increases the risk to banks and other lenders because of the higher probability of bankruptcy and the risk to stockholders because greater losses may be incurred if the company goes bankrupt. Increase in financial leverage, increases the risk to stockholders because the higher leverage will cause greater volatility in earnings and greater volatility in the stock price.

CHAPTER 4 Sources of Raising Long Term Finance and Cost of Capital

Meaning and Purpose of Long Term Finance	Sources of Long Term Finance
Meaning of Cost of Capital	Factors Affecting Cost of Capital
Measurement of Cost of Capita	Weighted Average Cost of Capital
Marginal Cost of Capital	

Features of Long-term finance
- It involves financing for fixed capital required for investment in fixed assets
- it is obtained from Capital Market
- Long term sources of finance have a long term impact on the business
- Generally used for financing big projects, expansion plans, increasing production, funding operations.

LONG TERM FINANCE – ITS MEANING AND PURPOSE

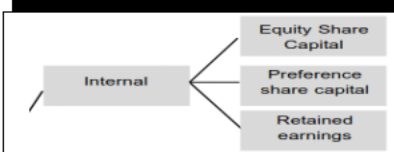
Purpose of long term finance:

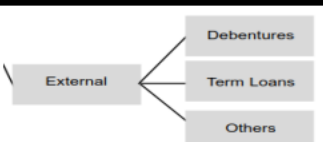
To Finance fixed assets : Business requires fixed assets like machines, building, furniture etc. Finance required to buy these assets is for a long period, because such assets can be used for a long period and are not for resale.	**To finance growth and expansion of business:** Expansion of business requires investment of a huge amount of capital permanently or for a long period.
To finance the permanent part of working capital: Business is a continuing activity. It must have a certain amount of working capital which would be needed again and again. This part of working capital is of a fixed or permanent nature. This requirement is also met from long term funds.	

FACTORS DETERMINING LONG-TERM FINANCIAL REQUIREMENTS

Nature of goods produced: If a business is engaged in manufacturing small and simple articles it will require a smaller amount of fixed capital as compared to one manufacturing heavy machines or heavy consumer items like cars, refrigerators etc. which will require more fixed capital.	**Technology used:** In heavy industries like steel the fixed capital investment is larger than in the case of a business producing plastic jars using simple technology or producing goods using labour intensive technique.
Nature of Business: The nature and character of a business determines the amount of fixed capital. A manufacturing company requires land, building, machines etc. So it has to invest a large amount of capital for a long period. But a trading concern dealing in, say, washing machines will require a smaller amount of long term fund because it does not have to buy building or machines.	

SOURCES OF LONG TERM FINANCE





Owner's capital

1. Equity share capital
It represents the investment made by the owners of the business. They enjoy the rewards and bear the risks of the ownership. They are paid dividend only after paying dividend to preference shareholders and after meeting the future investment needs of the organisation.

2. Preference share capital
It represents the investment made by preference shareholders. Preference share holders as the name suggests enjoy preference over payment of dividend. The dividend paid on these shares is generally at a fixed rate.

3. Retained earnings
It represents the earnings not distributed to shareholders. A firm may retain a portion or whole of its profits and utilize it for financing its projects.

Borrowed Capital

Debentures
Debenture capital is a financial instrument for raising long term debt capital. A debenture holder is a creditor of the company. A fixed rate of interest is paid on debentures. It may be convertible or Non- convertible.

Non-convertible debentures - these are straight debt instrument carrying a fixed rate and have a maturity period of 5-9 years. If interest is accumulated it has to be paid by the company by liquidation of its assets. It is an economical method of raising funds. Debenture holders do not have any voting rights and there is no dilution of ownership. They cannot be converted into equity shares.

Convertible debentures - convertible debentures are debentures which are convertible wholly or partly into equity shares after a fixed period of time.

Term loans from banks: Many industrial development banks, cooperative banks and commercial banks grant medium term loans for a period of three to five years. Commercial banks usually provide short- term finance to business firms in the form of loans and advances, cash credit, overdraft etc. But now-a- days, most of the commercial banks have also started term lending (long and medium term) and providing need based finance of different time periods to firms of all sizes.

Foreign Sources: Foreign Sources also play an important part in meeting the long-term financial needs of the business in India. These usually take the form of (1) external borrowings; (2) foreign investments and; (3) deposits from NRIs.

Loan from financial institutions: There are many specialised financial institutions established by the Central and State governments which give long term loans at reasonable rate of interest.

COST OF CAPITAL

Cost of capital is the rate of return that a firm must earn on its project investments to maintain its market value and attract funds. Cost of capital is the required rate of return on its investments which belongs to equity, debt and retained earnings. If a firm fails to earn return at the expected rate, the market value of the shares will fall and it will result in the

1) **John J. Hampton**- "Cost of capital is the rate of return the firm required from investment in order to increase the value of the firm in the market place"
2) **Solomon Ezra**- "Cost of capital is the minimum required rate of earnings or the cut- off rate of capital expenditure".
3) **James C. Van Horne**-, Cost of capital is "A cut-off rate for the allocation of capital to investment of projects. It is the rate of return on a project that will leave unchanged the market price of the stock
4) **William and Donaldson**- "Cost of capital may be defined as the rate that must be earned on the net proceeds to provide the cost

reduction of overall wealth of the shareholders.	elements of the burden at the time they are due".

Assumption of Cost of Capital

Cost of capital is based on certain assumptions which are closely associated while calculating and measuring the cost of capital. It is to be considered that there are three basic concepts:

A. It is not a cost as such. It is merely a hurdle rate.	B. It is the minimum rate of return.	C. It consists of three important risks such as zero risk level, business risk and financial risk. Cost of capital can be measured with the help of the following equation.

K = rj + b + f.
Where,
K = Cost of capital.
rj = The riskless cost of the particular type of finance, b = The business risk premium.
f = The financial risk premium.

IMPORTANCE OF COST OF CAPITAL

1. Importance to Capital Budgeting Decision; Capital budgeting decision largely depends on the cost of capital of each source. According to net present value method, present value of cash inflow must be more than the present value of cash outflow. Hence, cost of capital is used to make capital budgeting decision.	**2. Importance to Capital Structure Decision:** Capital structure is the mix or proportion of the different kinds of long term securities. A firm uses particular type of sources if the cost of capital is suitable. Hence, cost of capital helps to take decision regarding structure.
3. Importance to Evolution of Financial Performance: Cost of capital is one of the important factor in determining claim which affects the capital budgeting, capital structure and value of the firm. Hence, it helps to evaluate the financial performance of the firm.	**4. Importance to Other Financial Decisions:** Apart from the above points, cost of capital is also used in some other areas such as, market value of share, earning capacity of securities etc. hence; it plays a major part in the financial management.

FACTORS DETERMINING THE FIRM'S COST OF CAPITAL

1. General Economic Conditions General economic conditions determine the demand for and supply of capital within the economy, as well as the level of expected inflation. This economic variable is reflected in the risk less rate of return. This rate represents the rate of return on risk- free investments, such as the interest rate on short-term government securities. In principle, as the demand for money in the economy changes relative to the supply, investors alter their required rate of return. For example, if the demand for money increases without an equivalent increase in	**2. Market Conditions** When an investor purchases a security with significant risk, an opportunity for additional returns is necessary to make the investment attractive. Essentially, as risk increases, the investor requires a higher rate of return. This increase is called a risk premium. When investors increase their required rate of return, the cost of capital rises simultaneously. If the security is not readily marketable when the investor wants to sell, or even if a continuous demand for the security exists but the price varies significantly, an investor will require a relatively

the supply, lenders will raise their required interest rate. At the same time, if inflation is expected to deteriorate the purchasing power of money, investors require a higher rate of return to compensate for this anticipated loss.	high rate ofreturn. Conversely, if a security is readily marketable and its price is reasonably stable, the investor will require a lower rate of return and the company's cost of capital will be lower.
3. Operating and Financing Decisions Risk, or the variability of returns, also results from decisions made within the company. Risk resulting from these decisions is generally divided into two types: business risk and financial risk. Business risk is the variability in returns on assets and is affected by the company's investment decisions. Financial risk is the increased variability in returns to common stockholders as a result of financing with debt or preferred stock. As business risk and financial risk increase or decrease, the investor's required rate of return (and the cost of capital) will move in the same direction.	**4. Amount of Financing** The last factor determining the corporation's cost of funds is the level of financing that the firm requires. As the financing requirements of the firm become larger, the weighted cost of capital increases for several reasons. For instance, as more securities are issued, additional flotation costs, or the cost incurred by the firm from issuing securities, will affect the percentage cost of the funds to the firm. Also, as management approaches the market for large amounts of capital relative to the firm's size, the investors' required rate of return may rise. Suppliers of capital become hesitant to grant relatively large sums without evidence of management's capability to absorb this capital into the business. This is typically "too much too soon". Also, as the size of the issue increases, there is greater difficulty in placing it in the market without reducing the price of the security, which also increases the firm's cost of capital.

Controllable Factors Affecting Cost of Capital

(1) Capital Structure Policy A firm has control over its capital structure, and it targets an optimal capital structure. As more debt is issued, the cost of debt increases, and as more equity is issued, the cost of equity increases.	**(2) Dividend Policy** Given that the firm has control over its payout ratio, the breakpoint of the marginal cost of capital schedule can be changed. For example, as the payout ratio of the company increases, the breakpoint between lower-cost internally generated equity and newly issued equity is lowered.
(3) Investment Policy It is assumed that, when making investment decisions, the company is making investments with similar degrees of risk. If a company changes its investment policy relative to its risk, both the cost of debt and cost of equity change.	

Uncontrollable Factors Affecting the Cost of Capital

(1) Level of Interest Rates The level of interest rates will affect the cost of debt and, potentially, the cost of equity. For example, when interest rates increase the cost of debt increases, which increases the cost of capital.	**(2) Tax Rates** Tax rates affect the after-tax cost of debt. As tax rates increase, the cost of debt decreases, decreasing the cost of capital.

MEASUREMENT OF COST OF CAPITAL

Cost of Debt (Kd)

Cost of Debt refers to the cost of long term debentures/bond. Short term debts are ignored in calculating the cost of debt assuming that either short term debt plays insignificant part in	Cost of Debt is calculated after tax because interest payments are tax deductible for the firm. Cost of capital is denoted by the term Kd

determining the cost of debt or that theinterest on short term debt is balanced by interest on short term receivables	Kd after taxes = Kd (1 – tax rate)

Cost of Bond/Debentures redeemable after certain period

Cost of Redeemable debt:
In case of debentures redeemable after a certain period of time, cost of debt is calculated taking the average of sale value and redemption value. It is calculated by using under given formula :

Kd (before tax) = (I + [RV - SV] / n) / (RV + SV) / 2
Where:
I = Annual fixed interest
RV = Redeemable Value of debenture net of commission and floatation costs, if any.
SV= Sale Value of debentures net of discount or premium.
n = Term of debt till maturity

Kd (after tax) = Kd (before tax) * (1 - T)

B. COST OF PREFERENCE SHARE CAPITAL

Preference shares represent a special type of ownership interest in the firm. They are entitled to a fixed dividend, but subject to availability of profit for distribution. The preference share holders have to be paid their fixed dividends before any distribution of dividends to the equity shareholders. Their dividends are not allowed as an expense for the purpose of taxation. In fact, the preference dividend is a distribution of profits of the business. Dividends are paid out of profits after taxes so the cost of preference shareholder is after tax only.

(1) Cost of Irredeemable preference shares:
Irredeemable preference shares are those shares issuing by which the company has no obligation to pay back the principal amount of the shares during its lifetime. The only liability of the company is to pay the annual dividends. The cost of irredeemable preference shares is:

$$Kp \text{ (cost of pref. share)} = \frac{\text{Annual dividend of preference shares}}{\text{Market price of the preference stock}}$$

(2) Cost of Redeemable preference shares:
Redeemable preference shares are those shares which have a fixed maturity date at which they would be redeemed.

$$\text{Cost of Redeemable preference shares} = Kp = \frac{D + (RV - SV) / N}{(RV + SV) / 2}$$

Where Kp= Cost of preference Shares
RV- Redemption value
SV= Sale value
N= No of years to Maturity
D= Annual Dividend

COST OF EQUITY CAPITAL

The measurement of cost of capital of equity share capital is the most typical and conceptually a difficult exercise. The reason being there is no coupon rate in case of equity shares. Further, there is no commitment to pay equity dividends and it is the sole discretion of the Board of directors to pay or not to pay dividends or to decide at what rate the dividend be paid to the equity share holders. Moreover equity shareholders are the last claimant on the profits of the company. Therefore, it is often said that equity shares have no cost of capital as such. But the same is not true.

The cost of equity capital is the minimum rate of return that a company must earn on the equity financed portion of its investments in order to maintain the market price of the equity share at the current level. The cost of equity capital is rather difficult to estimate because there is no definite commitment on the part of the company to pay dividends. However, there are various approaches for computing the cost of equity capital

1. CAPM model

This is a popular approach to estimate the cost of equity. According to the CAPM, the cost of equity capital is:

$Ke = R_f + (R_m - R_f)\ ß$

Where:

Ke = Cost of equity

R_f = Risk-free rate

R_m = Equity market required return (expected return on the market portfolio)

ß = beta is Systematic Risk Coefficient.

2. Bond Yield Plus Risk Premium Approach

This approach is a subjective procedure to estimate the cost of equity. In this approach, a judgmental risk premium to the observed yield on the long-term bonds of the firm is added to get the cost of equity. Cost of equity = Yield on long-term bonds + Risk Premium.	Firms that have risky and consequently high cost of debt will also have risky and consequently high cost equity. Thus, it makes sense to base the cost of equity on a readily observable cost of debt. The disadvantage or a challenge to this approach is the determination of the risk premium. There is no objective way to determine it and hence many financial analysts look at the operating and financial risks of the business and arrive at a subjectively determined risk premium that ranges between 2 percent and 6 percent.

3. Dividend Growth Model Approach

The price of an equity stock depends ultimately on the dividends expected from it. It can be represented as follows:

$P_0 = D_1/(1+r)^1 + D_2/(1+r)^2 + D_3/(1+r)^3 +$----------

Where:

P_0 = Current price of the stock

D_1 = Expected dividend at the end of year 1

D_2 = Expected dividend at the end of year 2 and so on..

t = Year t

r = Equity shareholders' required rate of return

If the dividends are expected to grow at a constant rate of g% per year, then the equation becomes:

$P_0 = D_1(1+g)/(1+r)^1 + D_2(1+g)/(1+r)^2 + D_3(1+g)/(1+r)^3 +$----------

Simplifying this equation, we get: $P_0 = D_1/(r-g)$

and solving for r, we get $r = D_1/P_0 + g$

4. Earnings-Price Ratio approach

According to this approach, the cost of equity capital is:

$$Ke = \frac{E_1}{P_0}$$

Where:

E_1 = Expected earnings per share for the next year

P_0 = Current market price per share

E_1 = (Current EPS) * (1 + growth rate of EPS)

Cost of Retained Earnings

Earnings generated by a firm are distributed among the equity shareholders. However, if the entire earnings are not distributed and a part of it is retained by the firm, then these retained earnings are available for reinvestment within the firm. The firm is not required to pay dividends on retained earnings, so it may be argued that the retained earnings have no cost as such. But this is not true. The cost of retained earnings must be considered as the opportunity cost of the foregone dividends. from the point of view of equity shareholder, any earnings could have been profitably invested by them, had these been distributed to them	Thus, there is an opportunity cost involved in the firms retaining the earnings and an estimation of this cost may be taken up as a measure of cost of capital of retained earnings. The cost of retained earnings are often taken as equal to the cost of equity. Therefore we can say, ke = kr. It may be noted that the cost of retained earnings is not to be adjusted for tax, for floatation cost and for the under pricing. While retaining the earnings, the firm does not in any way incur any such cost and the earnings to be retained are already after tax.

Weighted Average Cost of Capital

The weighted average cost of capital (WACC), as the name implies, is the weighted average of the costs of different components of the capital structure of a firm. WACC is calculated after assigning different weights to the components according to the proportion of that component in the capital structure.

Book Value vs. Market Value weights

(a) Book value weights The weights are said to be book value weights if the proportion of different sources are ascertained on the basis of the face values. The book value can be easily calculated by taking the relevant information from the capital structure as given in the balance sheet of the firm.	**(b) Market value weights** The weights may also be calculated on the basis of the market value of different sources i.e., the proportion of each source at its market value. In order to calculate the market value weights, the firm has to find out the current market price of the securities in each category.

Marginal Cost of Capital (MCC)

MCC can be defined as the cost of additional capital introduced in the capital structure since we have assumed that the capital structure can vary according to changing requirements of the firm.

COST OF CAPITAL AND ITS IMPLICATIONS IN BUDGETING DECISIONS

Investment decisions are directly related to financial decisions influenced by cost of capital. Management of a

company is always anxious to maximise return on investments with a view to ensure that cost of capital is covered although management may alternatively decide to minimise investment which may yield highest returns for reasons of high risk involved or it may decide to maximise investments for obtaining highest growth through expansion of the productive processes.

Management is guided by such considerations as:

(1) Opportunities created by technological change requiring replacements, necessitating expansion or taking up new activities.	(2) Competition strategies to avail of economic opportunities, investment being planned by them and the threat which may arise to the existing or proposed market shares of the firm;
(3) Short-term and long-term market forecasts with reference to sales, revenue proceeds, net profits etc.;	(4) Incentives offered by the state to promote investment in particular areas of production required for meeting urgent local needs of the nation or for exporting to earn foreign exchange etc.

IMPLICATIONS IN BUDGETING DECISIONS

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

Lesson 5 Project Finance

Project Finance	Project planning	Preparation of project report
Project Appraisal under Normal, Inflationary and Deflationary Conditions	Project Appraisal by Financial Institutions	Lending Policies and Appraisal, Norms by Financial Institutions and Banks
Loan Documentation,	Project Review and Control;	Social Cost and Benefit Analysis of Project.
Term Loans from Financial Institutions and Banks;	Lease and Hire Purchase Finance;	Venture Capital Funds;
Private Equity;	International Finance and Syndication of Loans,	Deferred Payment Arrangements;
Corporate Taxation and its Impact on Corporate Financing,	Financing Cost Escalation	

"Planning without action is futile, action without planning is fatal."

Project Finance

Project finance is the financing of long-term infrastructure, industrial projects and public services based upon a non-recourse or limited recourse financial structure, in which project debt and equity used to finance the project are paid back from the cash flow generated by the project, without any claims (with some very specific exceptions) on the companies that develop these projects.	Project financing is a loan structure that relies primarily on the project's cash flow for repayment, with the project's assets, rights and interests held as secondary security or collateral. Project finance is especially attractive to the private sector because companies can fund major projects off balance sheet.
The principle used in Project Finance is simple: a bank finances a specific asset, and gets repaid only from the revenues generated by that asset, without recourse to the investors that own the project. It works well for project with well identified assets with high initial investment costs, and strong cash flows after that, like big infrastructure items (toll bridges, pipelines) and energy assets (oil fields, power plants).	Project finance, comes from a combination of both equity and debt. The split between equity (investor funding) and debt (lender funding) depends on the individual project and, most importantly, on the risk profile of each project. The higher the risk, the greater the share of equity will be required by the lending banks. The risk of an individual project is also decisive for the level of debt which a project can take on.

PROJECT PLANNING

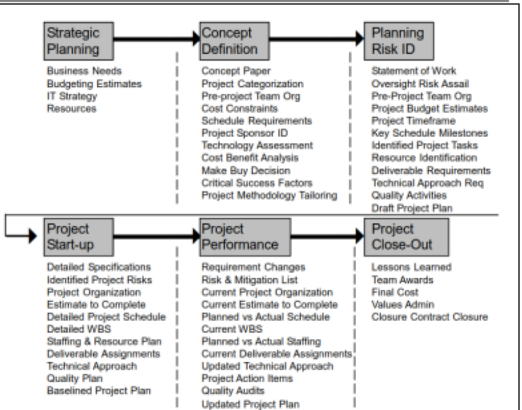
A project plan is a formal, approved document that is used to manage and control a project.

Project planning defines the project activities and end products that will be performed and describes how the activities will be accomplished. The purpose of project planning is to define each major task, estimate the time and resources required, and provide a framework for management review and control. The project planning activities and goals include defining: 1. The specific work to be performed and goals that define and bind the project. 2. Estimates to be documented for planning, tracking, and controlling the project.	The planning process includes steps to estimate the size of the project, estimate the technical scope of the effort, estimate the resources required to complete the project, produce a schedule, identify and assess risks and negotiate commitments. Repetition of these steps is necessary to establish the project plan. Typically, several iterations of the planning process are performed before a plan is actually completed. The project plan forms the basis for all management efforts associated with the project. It is a document that is also expected to change over time. The project plan documents the pertinent

3. Commitments that are planned, documented, and agreed to by affected groups. 4. Project alternatives, assumptions, and constraints.	information associated with the project; the information associated with the plan evolves as the project moves through its various stages and is to be updated as new information unfolds about the project.

STEPS OF PROJECT PLANNING:

The planning process consists of the following basic tasks:
(a) Define the technical approach used to solve the problem.
(b) Define and sequence the tasks to be performed and identify all deliverables associated with the project.
(c) Define the dependency relations between tasks.
(d) Estimate the resources required to perform each task.
(e) Schedule all tasks to be performed.
(f) Define a budget for performing the tasks.
(g) Define the organization used to execute the project.
(h) Identify the known risks in executing the project.
(i) Define the process used for ensuring quality.
(j) Define the process used for specifying and controlling requirements.



IMPORTANCE OF PLANNING:

(1) Planning in the Concept Phase
In the projects concept phase, a need that would result in a product is identified. While only very general information may be known about the project at this time, it is important to capture this information for the planning phase. In this stage, the focus of planning is on the project definition and on getting the project underway. A strategy for deriving a solution to the stated goals is important at this point. The problem being addressed by the project is clearly stated; the project goals and objectives are identified; and success criteria for the project are documented. Also, the assumptions, constraints, and risks that apply to the project are defined. Without a description of this concept information, the completed project plan is difficult to thoroughly understand. Results of the technology assessment also are documented as a precursor to the technical approach that is later defined.

(2)Planning in the Project Start-up Stage
To transition a project from the initial conceptualization and planning to execution requires some type of start-up activities. The project start-up stage is typically a short period that transitions a project from the planning to the execution stage. In the start-up stage, the team is assembled and a kickoff meeting is held to familiarize the team with the elements of the plan and the requirements of the system. Specific work packages detail and specify the activities being performed by the teams, as well as the cost and schedule associated with those activities. Sometimes, particularly in systems that include procurement, there may be a need to update the project plan during this stage to reflect negotiations or refinements in scope that occurred prior to the actual start of the project. In these cases, the plan is reviewed and updated prior to presentation to the team. Also, in some projects, auxiliary plans (such as the configuration management or quality assurance plans) are detailed in

	the start-up phase. These plans are developed from strategies defined in the project planning stage.
(3)Planning in the Project Execution Stage Planning in the project execution stage consists of re-planning when it is determined that the project is not on track with the current plan. This might occur for a variety of reasons. It is very important to know that project plans will change and that re-planning is a natural part of the planning process. Re-planning does not necessarily mean that a project is in trouble. Frequent and extensive re planning may, however, indicate that there are some serious issues with the project plan. It is better to re-plan than to simply throw away the original plan and operate without a plan.	**(4)Planning in the Project Close-Out Stage** A close-out process is performed once the project objectives have been met. Closing a project should be fairly routine. The first step is acceptance of the system by the users. It is important that the user decides when the project is completed. The determination is based upon the success criteria defined in the very early concept and planning stages of the project. This acceptance may be very informal or it may be very formal and depends upon the criteria defined in the plan.

(5)Planning in the Planning Stage

The project plan is completed in the Project Planning and Risk Identification stage of a project. For large projects, this stage may be run as a mini-project, with a team of people dedicated to performing the effort. For very small projects, the plan may be developed by a group of people as a part-time job.	Since various skill sets are required to complete a successful project plan, it is a difficult task for one person to develop the entire plan. During this project stage, details of the plan are determined and an approach is defined. The full project plan is then developed. The plan may include the following elements: a brief project summary, a work breakdown structure, a project organization chart, a schedule, an approach, a list of identified risks, an estimated budget and cost, a list of deliverables, a description of planned quality activities, a description of the configuration management process to be used, and a summary of project requirements.	Even during the planning stage, the development of the project plan is an iterative process. Each element of the plan is regularly revisited for changes and refinements, based upon further analysis and decisions made in developing other plan elements. This refinement also develops .buy-in. from the project team and stakeholders. It is critical to get buy off on the project plan from the involved parties prior to actually starting the project. Approval of the plan commits the resources needed to perform the work.

PREPARATION OF PROJECT REPORT

The project report is an extremely important aspect of the project. It should be properly structured and also necessary and appropriate information regarding the project. Preparation of project report is a pre-investment study of investment proposal but encompasses a thorough investigating process covering economic, technical, social managerial and commercial aspects. Project report is a working plan for implementation of project proposal after investment decision by a company has been taken.	Importance of preparation of project report has been felt in the wake of sophisticated technology being adopted and the heavy financial state of public funds through financial institutions, banks and investment organisation being contemplated. High technology involvement, higher cost in the project implementation and as such economy cannot afford to tolerate failure of the project. Therefore, to ensure before taking in hand a project whether or not the proposed project is viable, preparation of project report has become essential exercise for all corporate units

Lesson 6 Dividend Policy

INTRODUCTION	Types of Dividend Policies	Determinants and Constraints of Dividend Policy
Type/ Forms of Dividend	Different Dividend Theories	Practical and Legal Constraints

Dividend decision is one of the crucial parts of the financial manager, as it determines the amount available for financing the organisation long term growth and it plays very important part in the financial management

INTRODUCTION

Dividend policy determines what portion of earnings will be paid out to stock holders and what portion will be retained in the business to finance long-term growth. Dividend constitutes the cash flow that accrues to equity holders whereas retained earnings are one of the most significant sources of funds for financing the corporate growth.
Both dividend and growth are desirable but are conflicting goals to each other. Higher dividend means less retained earnings and vice versa. This position is quite challenging for the finance manager and necessitate the need to establish a dividend policy in the firm which will evolve a pattern of dividend payments having no adverse effects on future actions of the firm.

Two important considerations evolve from the above, firstly, whether owners' needs are more important than the needs of the firm. It is not easy to ascertain the extent to which shareholders best interest or desires affect dividend policy because of the following difficulties:

(1) in determining the dividend 'needs of the stock-holders, as related to tax position, capital gains, current incomes; it is also difficult to locate exactly what more affects the interest of the shareholders current income requirements or alternative use of funds, or tax considerations.	(2) Existing conflict of interest amongst shareholders dividend policy may be advantageous to one and not to other

Nevertheless, investor's expectations of dividend are mainly based on three factors viz.

(a) reduction of uncertainty due to current earnings by way of dividend.	(b) Indication of company's strength and sound position that reposes confidence in investors.	(c) To meet the need of current income.

Secondly, need of the firm are easier to determine which the centre of attention is for the policy makers. Firm- oriented matters relating to dividend policy can be grouped under the following six categories, affecting directly or indirectly the determination and the appropriateness of the policy:

(1) Firms' contractual obligations, restrictions in loan agreement and/or legal limitations/ considerations; and insufficiency of cash to pay dividends.	(2) Liquidity, credit standing and working capital requirement and considerations. Ability to borrow, nature of stockholders, degree of control, timing of investment opportunities, inflation and need to repay debt.	
(3) Need for expansion-availability of external finance, financial position of promoters, relative cost of external funds, the ratio of debt to equity.		(4) Business cycle considerations.
(5) Factors relating to future financing.	(6) Past dividend policies and stockholders relationship.	

Types of Dividend Policies

(1) Regular dividend policy: In this type of dividend policy the investors get dividend at usual rate. Here, the investors are usually persons who want to get regulary incomes. This type of dividend payment can be maintained only if the company has regular earning.

Merits of Regular Dividend Policy:

– It helps in creating confidence among the shareholders.	– It stabilizes the market value of shares.
– It helps in marinating the goodwill of the company.	– It helps in giving regular income to the shareholders.

(2) Stable dividend policy

Here the payment of certain sum of money is regularly made to the shareholders. It is of three types:

(a) Constant dividend per share: In this case, reserve fund is created to pay fixed amount of dividend in the year when the earning of the company is not enough. It is suitable for the firms having stable earning.	**Constant payout ratio:** Under this type the payment of fixed percentage of earning is paid as dividend every year.
(c) Stable rupee dividend + extra dividend: Under this type, there is payment of low dividend per share constantly + extra dividend in the year when the company earns high profit. The extra dividend may be considered as a "bonus" paid to the shareholders as a result of usually good year for the firm. This additional amount of dividend may be paid in the form of cash or bonus shares, subject to the firm's liquidity position.	

Merits of stable dividend policy:
– It helps in creating confidence among the shareholders.

– It stabilizes the market value of shares.	– It helps in marinating the goodwill of the company.
– It helps in giving regular income to the shareholders.	

(3) Irregular dividend: as the name suggests here the company does not pay regular dividend to the shareholders. The company uses this practice due to following reasons:

– Due to uncertain earning of the company.	– Due to lack of liquid resources.
– The company is sometime afraid of giving regular dividend.	– Due to uncertainty of business.

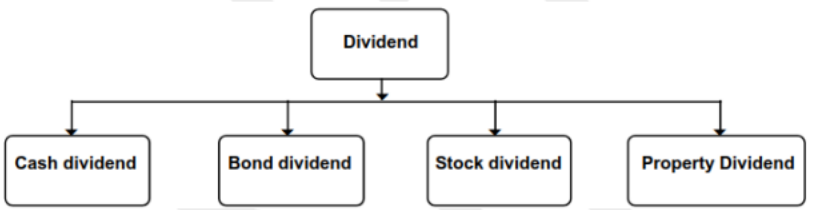
(4) No dividend: the company may use this type of dividend policy due to requirement of funds for the growth of the company or for the working capital requirement.

DETERMINANTS/CONSTRAINTS OF DIVIDEND POLICY

(1)Legal: As regards cash dividend policy several legal constraints bear upon it – a firm may not pay a dividend which will impair capital. Dividend must be paid out of firm's earnings/current earnings. Contract/ Agreements for bonds/loans may restrict dividend payments. The purpose of legal restriction is to ensure that the payment of dividend may not cause insolvency.	**(2) Financial:** There are financial constraints to dividend policy. A firm can pay dividend only to the extent that it has sufficient cash to disburse; a firm can't pay dividend when its earnings are in accounts receivables or firm does not have adequate liquidity.
(3) Economic Constraints: Besides, there are economic constraints also. The question arise, does the value of dividend affects the value of the firm. If the answer to it is yes then there must be some optimum level of dividend, which maximises the market price of the firm's stock.	**(4) Nature of Business Conducted by a Company:** A company having a business of the nature which gives regular earnings may like to have a stable and consistent dividend policy. Industries manufacturing consumer/consumer durable items have a stable dividend policy.
(5) Existence of the Company: The length of existence of the company affects dividend policy. With their long standing experience, the company may have a better dividend policy	**(6) Type of Company Organisation:** The type of company organisation whether a private limited company or a public limited company affects dividend decisions. In a closely held company, a view may be taken for acquiescence and conservative dividend policy may be followed but for a public limited company with wide spread of shareholder, a more progressive

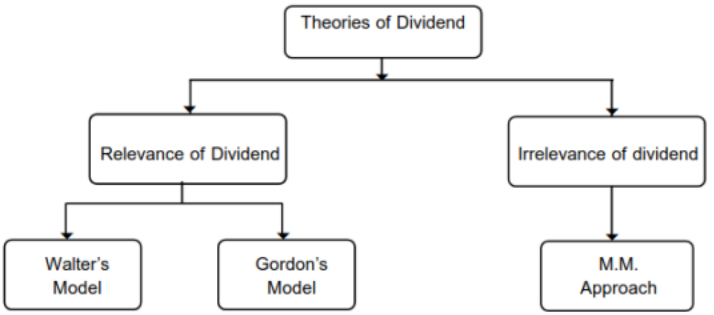
than the new companies.	and promising dividend policy will be the better decision.
(7) Financial Needs of the Company: Needs of the Company for additional capital affects the dividend policy. The extent to which the profits are required to be invested in the company for business growth is the main consideration in dividend decisions. Working capital position of a company is an important condition that affects the dividend policy as no company would declare a dividend to undermine its financial strength and threaten its solvency and existence.	**(8) Market Conditions:** Business cycles, boom and depression, affects dividend decisions. In a depressed market, higher dividend declaration are used to market securities for creating a better image of the company. During the boom, the company may like to save more, create reserves for growth and expansion or meeting its working capital requirements.
(9) Financial Arrangement: In case of financial arrangements being entered into or being planned like merger or amalgamation with another company, liberal policy of dividend distribution is followed to make the share stock more attractive.	**(10) Change in Government Policies:** Changes in Government Policies particularly those affecting earnings of the company are also taken into consideration in settling dividend decisions. For example, higher rate of taxation will definitely affect company earnings and carry impact on dividend decisions. Besides, fiscal, industrial, labour, industrial policies do affect in different magnitude the dividend decisions of individual corporate enterprises.

TYPES OF DIVIDEND/FORM OF DIVIDEND



(1) Cash Dividend If the dividend is paid in the form of cash to the shareholders, it is called cash dividend. It is paid periodically out the business concern's EAIT (Earnings after interest and tax). Cash dividends are common and popular type followed by majority of the business concerns.	**(2) Stock Dividend** Stock dividend is paid in the form of the company stock due to raising of more finance. Under this type, cash is retained by the business concern. Stock dividend may be bonus issue. This issue is given only to the existing shareholders of the business concern.
(3) Bond Dividend Bond dividend is also known as script dividend. If the company does not have sufficient funds to pay cash dividend, the company promises to pay the shareholder at a future specific date with the help of issue of bond or notes.	**(4) Property Dividend** An alternative to cash or stock dividend, a property dividend can either include shares of a subsidiary company or physical assets such as inventories that the company holds. The dividend is recorded at the market value of the asset provided. It will be distributed under exceptional circumstances. This type of dividend is not prevalent in India.

THEORIES OF DIVIDEND



RELEVANCE OF DIVIDEND

If the choice of the dividend policy affects the value of a firm, it is considered as relevant. In that case a change in the dividend payout ratio will be followed by a change in the market value of the firm. If the dividend is relevant, there must be an optimum payout ratio. Optimum payout ratio is the ratio which gives highest market value per share.

1. Walter's Model

Professor James E. Walter has developed a theoretical model which shows the relationship between dividend policies and common stock prices. The basic premise underlying the formulation is that prices reflect the present value of expected dividend in the long run. The model operates on the objective of maximising common stockholders wealth. In general, if a firm is able to earn a higher return on earnings retained than the stockholder is able to earn on a like investment then it would appear beneficial to retain these earnings, all other things being equal.

Walter's model is based on the following assumptions:

1. The firm finances all investment through retained earnings; that is debt or new equity is not issued;	2. The firm's internal rate of return (r), and its cost of capital (k) are constant;	3. All earnings are either distributed as dividend or reinvested internally immediately.
4. Beginning earnings and dividends never change. The values of the earnings per share (E), and the divided per share may be changed in the model to determine results, but any given values of E and D are assumed to remain constant forever in determining a given value.		5. The firm has a very long or infinite life.

$P = \frac{D + \frac{r}{k}(E - D)}{k}$ Where: P : market price per share of common stock D : dividend per share E : earnings per share r : return on investment k : market capitalization rate. The above equation clearly reveals that the market price per share is the sum of the present value of two sources of income: (i) The present value of an infinite stream of constant dividends, (D/k) and (ii) The present value of the infinite stream of stream gains, [r (E-D)/k/k]	According to the theory, the optimum dividend policy depends on the relationship between the firm's internal rate of return and cost of capital. If r > k, the firm should retain the entire earnings, whereas it should distribute the earnings to the shareholders in case the r < k. The rationale of r > k is that the firm is able to produce more return than the shareholders from the retained earnings.

Walter's view on optimum dividend payout ratio can be summarised as below:

(a) Growth Firms (r > k):- The firms having r > k may be referred to as growth firms. The growth firms are assumed to have ample profitable investment opportunities. These firms naturally can earn a return which is more than what shareholders could earn on their own. So optimum payout ratio for growth firm is 0%.	**(b) Normal Firms (r = k):**- If r is equal to k, the firm is known as normal firm. These firms earn a rate of return which is equal to that of shareholders. In this case, dividend policy will not have any influence on the price per share. So there is nothing like optimum payout ratio for a normal firm. All the payout ratios are optimum.
(c) Declining Firm (r < k):- If the company earns a return which is less than what shareholders can earn on their investments, it is known as declining firm. Here it will not make any sense to retain the earnings. So entire earnings should be distributed to the shareholders to maximise price per share. Optimum payout ratio for a declining firm is 100%. So according to Walter, the optimum payout ratio is either 0% (when r > k) or 100% (when r < k).	

Criticism of Walter's Model:

1. Walter's model of share valuation mixes dividend policy with investment policy of the firm. The model assumes that the investment opportunities of the firm are financed by retained earnings only and no external financing debt or equity is used for the purpose when such a situation exists either the firm's investment or its dividend policy or both will be sub-optimum. The wealth of the owners will maximise only when this optimum investment in made.	2. Walter's model is based on the unrealstic assumption that r is constant, but it does not hold good. This reflects the assumption that the most profitable investments are made first and then the poorer investments are made. The firm should stop at a point where r = k. This is clearly an erroneous policy and fail to optimise the wealth of the owners.
3. A firm's cost of capital or discount rate, k, does not remain constant; it changes directly with the firm's risk. Thus, the present value of the firm's income moves inversely with the cost of capital. By assuming that the discount rate, k is constant, Walter's model abstracts from the effect of risk on the value of the firm.	

Market price per share can be maximised with complete distribution of earnings. If r is equal k, then Market price per share is insensitive to payout ratio. To sum up Walter's conclusions, the firm should distribute all the earnings in dividends if it has no profitable opportunities to invest.

2. Gordon's Model

Another theory, which contends that dividends are relevant, is the Gordon's model. This model which opinesthat dividend policy of a firm affects its value of the share and firm is based on the following assumptions:

(a) The firm is an all equity firm (no debt).	(b) There is no outside financing and all investments are financed exclusively by retained earnings.	(c) Internal rate of return (r) of the firm remains constant.
(d) Cost of capital (k) of the firm also remains same regardless of the change in the risk complexion of the firm.	(e) The firm derives its earnings in perpetuity.	(f) The retention ratio (b) once decided upon is constant. Thus the growth rate of frim (g) is also constant
(g=br).	(g) ke>g.	(h) A corporate tax does not exist.

$$P = \frac{E(1-b)}{k_e - br}$$

Where, P = Market price of a share

E = Earning per share

b = Retention ratio or percentage of earnings retained or (1 – Payout ratio)

(1 - b) = dividend payout ratio, i.e., percentage of earnings distributed as dividend

k_e = Capitalisation rate/cost of capital

br = growth rate in r, i.e., rate of return on investment of an all equity firm.

The model is also referred to as the dividend capitalization model. Grahm and Dodd Myron Gordon and others worked on the model which considers capitalization of dividends and earnings. The model is also referred to as the dividend growth model. The model considers the growth rate of the firm to be the product of its retention ratio and its rate of return.	The capitalization model projects that the dividend division has a bearing on the market price of the shares. According to Gordon, when r>ke the price per share increases as the dividend payout ratio decreases. When r<k the price per share increases as the dividend payout ratio increases. When r=ke the price per share remains unchanged in response to the change in the payout ratio.

Thus Gordon's view on the optimum dividend payout ratio can be summarised as below:

(1) The optimum payout ratio for a growth firm (r>ke) is zero.	(2) There no optimum ratio for a normal firm (r=ke).	(3) Optimum payout ratio for a declining firm r<ke is 100%.

Thus the Gordon's Model's is conclusions about dividend policy are similar to that of Walter. This similarity is due to the similarities of assumptions of both the models.

The impact of dividend growth model can thus be analysed in three situations:

(1) When normal capitalization rate is less than the actual capitalization rate: $CD_{norm} < CR_{act}$ In such a situation, the shareholder gains more earnings by investing in the company than he expects as a norm. The shareholder would want the firm to retain more than to pay as dividend. If dividend payout is enhanced it will lower the intrinsic value as it lowers the growth rate of a highly profitable company.	**(2) Another situation could be where normal capitalization rate equals the actual capitalization rate: $CD_{norm} = CR_{act}$** This situation represents that the company is doing well and shareholders are indifferent as to the level of dividend. If dividend is declared, it would be reinvested in the companies. Thus, the dividend payout ratio does not effect the intrinsic value of the company.
(3) Where normal capitalization rate is more than actual capitalization rate i.e., $CD_{norm} > CR_{act}$: This situation represents the opposite side of (1) above. Here, the company is not doing well as expected, the shareholders would like to invest elsewhere in more profitable avenues, so dividend payout has to be higher and intrinsic value of shares accordingly gets enhanced. The dividend growth model, thus an additional measure of the intrinsic value of shares that may be used to supplement other valuation methods.	

DIVIDEND AND UNCERTAINTY: THE BIRD-IN-HAND ARGUMENT

Gordon revised this basic model later	The investors are	But the future	A bird in hand is worth

to consider risk and uncertainty. Gordon's model, like Walter's model, contends that dividend policy is relevant. According to Walter, dividend policy will not affect the price of the share when r = k. But Gordon goes one step ahead and argues that dividend policy affects the value of shares even when r = k. The crux of Gordon's argument is based on the following two assumptions :

1. Investors are risk averse and	2. They put a premium on a certain return and discount (penalise) uncertain return.

rational. Accordingly they want to avoid risk. The term risk refers to the possibility of not getting the return on investment. The payment of dividends now completely removes any chance of risk. But if the firm retains the earnings the investors can expect to get a dividend in the future.

dividend is uncertain both with respect to the amount as well as the timing. The rational investors, therefore prefer current or near dividend to future dividend. Retained earnings are considered as risky by the investors. In case earnings are retained, therefore the price per share would be adversely affected. This behaviour of investor is described as "Bird in Hand Argument".

two in bush. What is available today is more important than what may be available in the future. So the rational investors are willing to pay a higher price for shares on which more current dividends are paid, all other things held constant. Therefore the discount rate (K) increases with retention rate. Thus, distant dividends would be discounted at a higher rate than the near dividends.

DIVIDEND IRRELEVANCE: MODIGLIANI - MILLER MODEL

Professor Modigliani and Miller in their article, "Dividend Policy, Growth and the Valuation of Shares" advanced most comprehensive arguments to hold that investors are indifferent to dividends and capital gains and so dividends have no effect on the wealth of shareholders. They argue that the value of the firm is determined by the earning power of firm's assets or its investment policy. The manner in which earnings are divided into dividends and retained earnings does not affect this value.

These conclusions of MM model are based on certain assumptions which sidelined the importance of the dividend policy and its effect thereof on the share price of the firm. According to the theory the value of a firm depends solely on its earnings power resulting from the investment policy and not influenced by the manner in which its earnings are split between dividends and retained earnings.

Following are the assumptions under M-M hypothesis:

1. Capital markets are perfect- Investors are rational, information is freely available, transaction cost are nil, securities are divisible and no investor can influence the market price of the share.	2. There are no taxes- No difference between tax rates on dividends and capital gains.
3. The firm has a fixed investment policy which will not change. So if the retained earnings are reinvested, there will not be any change in the risk of the firm. So k remains same.	4. Floatation cost does not exist.

With these assumptions, the market price of a share at the beginning of the period is defined as equal to the present value of dividend paid at the end of the period plus the market price at the end of the period.

$$P_0 = \frac{1}{1+r}(D_1 + P_1)$$

Where

P_0 = market price per share at 0 time

r = Capitalisation rate for firm in that risk class (assumed constant throughout)

D_1 = Dividend per share at time 1

P_1 = Expected market price per share at time 1.

Suppose a share is expected to sell at ` 100/- one year from now, and is to pay a dividend of ` 5/- one year from now, the current value of stock is ` 105/- discounted by the appropriate rate r.	A firm committed to equity financing may retain earnings and forego selling additional shares or it may pay dividend and sell shares. According to MM, the discounted value per share before and after a dividend payment (with an accompanying sale of shares) will be the same as if earnings had been retained (with no accompanying sale of shares). Let 'n' share be outstanding at period t0 and let Δn be number of new shares sold at t1 at a price of P1, the new equation will be written as

$nP_0 = \frac{1}{1+r}[nD_1 + (n + \Delta n)P_1 - \Delta nP_1]$	The total value of new shares to be sold (DnP1) will depend on the volume of new Investment I, the net income earned Y during the period and the dividend paid on outstanding shares (nD1) will be: ΔnP1 = I - (Y - nD1) or I – Y + nD1

The substance of MM arguments may be stated as below:

If the company retains the earnings instead of giving it out as dividends, the shareholders enjoy capital appreciation, which is equal to the earnings, retained.	If the company distributes the earnings by the way of dividends instead of retention, the shareholders enjoy the dividend, which is equal to the amount by which his capital would have been appreciated had the company chosen to retain the earnings.Hence, the division of earnings between dividends and retained earnings is irrelevant from the point of view of shareholders.

Substituting the above into main equation above we have:

$$nP_0 = \frac{1}{1+r}[(n + \Delta n)P_1 - I + Y]$$

Since D1 does not appear in the above equation MM concludes that P0 is not a function of D1, the other variable n, Δn, P1, I, Y are assumed to be independent of D1.

Lesson 7 Working Capital

Meaning, Types, Determinants and Assessment of Working Capital Requirements,	Negative Working Capital
Operating Cycle Concept and Applications of Quantitative Techniques	Financing of Working Capital; Banking Norms and Macro Aspects
Cash Management, Inventories Management, Receivables Management	Factoring and Forfeiting

All companies should focus on the proper management of working capital. Inventory, accounts receivable, and accounts payable are of specific importance since they can be influenced most directly by operational management and here starts the role of Management.

MEANING OF WORKING CAPITAL -THE BASIC CONCEPT

The capital which is required to finance current assets is called working capital. It is the capital of a busniess which is used to carry out day-to-day business operations of a firm.
"Working capital may be defined as all the short term assets used in daily operation"—John. J Harpton.

Current Assets: An asset is classified as current when: (i) It is expected to be realised or intends to be sold or consumed in normal operating cycle of the entity; (ii) The asset is held primarily for the purpose of trading; (iii) It is expected to be realised within twelve months after the reporting period; (iv) It is non- restricted cash or cash equivalent.	Generally current assets of an entity, for the purpose of working capital management can be grouped into the following main heads: (a) Inventory (raw material, work in process and finished goods) (b) Receivables (trade receivables and bills receivables) (c) Cash or cash equivalents (short-term marketable securities) (d) Prepaid expenses.

Current Liabilities: A liability is classified as current when: (i) It is expected to be settled in normal operating cycle of the entity (ii) The liability is held primarily for the purpose of trading (iii) It is expected to be settled within twelve months after the reporting period.	Generally current liabilities of an entity, for the purpose of working capital management can be grouped into the following main heads: (a) Payable (trade payables and bills receivables) (b) Outstanding payments (wages & salary etc.)

Short term assets of a firm means cash money, short-term securities, inventory, bill receivable, note receivable, debtors etc. In operating daily business, fixed assets are also needed in addition to current assets. Though some fixed assets help on the daily operation of a firm, these can't be termed as working capital, because these can't be converted into cash in the current accounting period. So, the assets which can be converted into raw material from cash—R/M—Finished Goods—B/R—Cash and helps in operating daily business of the firm, is called working Capital. Working capital is also	Working capital is defined keeping in view the varying objectives and purposes. To businessmen, working capital comprises current assets of business whereas to the accountant/creditors/investment analysts working capital is understood as the difference of current assets and current liabilities. This is also called the Net Working Capital. There is operative aspects of working capital i.e. current assets (which is known as 'funds' also) employed in the business process from the gross working capital. Current assets comprise: cash, receivables, inventories, marketable securities held as short-term investment and

called 'Trading Capital", Circulating capital/Short term capital / Short /Current Assets management.	other items near cash or equivalent to cash. This is also known as going-concern concept of working capital.

SIGNIFICANCE OF WORKING CAPITAL

Management of working capital is an essential task of the finance manager. He has to ensure that the amount of working capital available with his concern is neither too large nor too small for its requirements. A large amount of working capital would mean that the company has idle funds. Since funds have a cost, the company has to pay huge amount as interest on such funds. If the firm has inadequate working capital, such firm runs the risk of insolvency.	Paucity of working capital may lead to a situation where the firm may not be able to meet its liabilities. The various studies conducted by the Bureau of Public Enterprises have shown that one of the reasons for the poor performance of public sector undertakings in our country has been the large amount of funds locked up in working capital. This results in over capitalization. Over capitalization implies that a company has too large funds for its requirements, resulting in a low rate of return, a situation which implies a less than optimal use of resources. A firm, therefore, has to be very careful in estimating its working capital requirements.
Maintaining adequate working capital is not just important in the short-term. Sufficient liquidity must be maintained in order to ensure the survival of the business in the long- term as well. When businesses make investment decisions they must not only consider the financial outlay involved with acquiring the new machine or the new building, etc., but must also take account of the additional current assets that are usually required with any expansion of activity. For e.g.:-Increased production leads to holding of additional stocks of raw materials and work-in-progress.	An increased sale usually means that the level of debtors will increase. A general increase in the firm's scale of operations tends to imply a need for greater levels of working capital. A question then arises what is an optimum amount of working capital for a firm? We can say that a firm should neither have too high an amount of working capital nor should the same be too low. It is the job of the finance manager to estimate the requirements of working capital carefully and determine the optimum level of investment in working capital.

OPTIMUM WORKING CAPITAL

If a company's current assets do not exceed its current liabilities, then it may run into trouble with creditors that want their money quickly. Current ratio (current assets/current liabilities) (along with acid test ratio to supplement it) has traditionally been considered the best indicator of the working capital situation. It is understood that a current ratio of 2 (two) for a manufacturing firm implies that the firm has an optimum amount of working capital. This is supplemented by Acid Test Ratio (Quick assets/ Current liabilities) which should be at least 1 (one). Thus, it is considered that there is a comfortable liquidity position if liquid current assets are equal to current liabilities	Bankers, financial institutions, financial analysts, investors and other people interested in financial statements have, for years, considered the current ratio at 'two' and the acid test ratio at 'one' as indicators of a good working capital situation. As a thumb rule, this may be quite adequate. However, it should be remembered that optimum working capital can be determined only with reference to the particular circumstances of a specific situation. Thus, in a company where the inventories are easily saleable and the sundry debtors are as good as liquid cash, the current ratio may be lower than 2 and yet firm may be sound. In nutshell, a firm should have adequate working capital to run its business operations. Both excessive as well as inadequate working capital positions are dangerous.

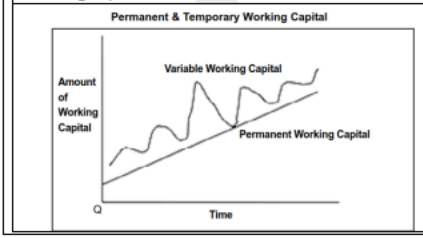
TYPES OF WORKING CAPITAL

1. Initial working capital: The capital, which is required at	2. Regular working capital: This type of working capital

the time of the commencement of business, is called initial working capital. These are the promotion expenses incurred at the earliest stage of formation of the enterprise which include the incorporation fees, attorney's fees, office expenses and other preliminary expenses.	remains always in the enterprise for the successful operation. It supplies the funds necessary to meet the current working expenses i.e. for purchasing raw material and supplies, payment of wages, salaries and other sundry expenses.
3. Fluctuating working capital: This capital is needed to meet the seasonal requirements of the business. It is used to raise the volume of production by improvement or extension of machinery. It may be secured from any financial institution which can, of course, be met with short term capital. It is also called variable working capital.	4. Reserve margin working capital: It represents the amount utilized at the time of contingencies. These unpleasant events may occur at any time in the running life of the business such as inflation, depression, slump, flood, fire, earthquakes, strike, lay off and unavoidable competition etc. In this case, greater amount of capital is required for maintenance of the business.

5. Permanent and Temporary Working Capital: The Operating Cycle creates the need for Current Assets (Working Capital). However, the need does not come to an end once the cycle is completed. It continues to exist. To explain the continuing need of current assets, a distinction should be drawn between temporary and permanent working capital.

Business Activity does not come to an end after the realization of cash from customers. For a company, the process is continuing, and hence, the need for regular supply of working capital. However, the, magnitude of Working Capital required is not constant but fluctuating. To carry on a business, a certain minimum level of working capital is necessary on a continuous and uninterrupted basis. For all practical purposes, this requirement has to be met permanently as with other fixed assets. This requirement is referred to as permanent or fixed working capital.	Any amount over and above the permanent level of working capital is temporary, fluctuating or variable working capital. The position of the required working capital is needed to meet fluctuations in demand consequent upon changes in production and sales as a result of seasonal changes. Both kinds of working capital are necessary to facilitate the sales proceeds through the Operating Cycle.



6. Long Term working capital: The long-term working capital represents the amount of funds needed to keep a company running in order to satisfy demand at lowest point. There may be many situations where demand may fluctuate considerably. It is not possible to retrench the work force or instantly sell all the inventories whenever demand declines due to temporary reasons. Therefore the value, which represents the long-term working capital, stays with the business process all the time. It is for all practical purpose known as permanent fixed assets. In other words, it consists of the minimum current	7. Short term working capital: Short-term capital varies directly with the level of activity achieved by a company. The Volume of Operation decides the quantum of Short-term working capital. It also changes from one form to another; from cash to inventory, from inventory to debtors and from debtors back to cash. It may not always be gainfully employed. Temporary Working capital should be obtained from such sources, which will allow its return when it is not in use.

assets to be maintained at all times. The size of the permanent working capital varies directly with the size of Operation of a firm.	
8. Gross Working Capital: Gross working capital refers to the firm's investment in current assets. Current assets are those assets which can be converted in to cash with in an accounting year and includes cash, short term securities, debtors bills receivable and stock. The Gross working capital concept focuses attention on two aspect of current assets management. (a) How to optimize investment in current assets? (b) How should current assets be financed?	9. Net Working Capital: Net working capital refers to the difference between current asset and Current liabilities. Current liabilities are those claims of outsiders, which are expected to mature for payment within accounting year and include creditors, bills payable and outstanding expenses. Net Working capital can be positive or negative. A positive net working capital will arise when current assets exceed current liabilities.

DETERMINANTS OF WORKING CAPITAL

1. Nature of Business: A company's working capital requirements are directly related to the kind of business it conducts. A company that sells a service primarily on a cash basis does not have the pressure of keeping considerable amounts of inventories or of carrying customer's receivables. On the other hand, a manufacturing enterprise ordinarily finances its own customers, requires large amounts to pay its own bills, and uses inventories of direct materials for conversion into end products. These conditions augment the working capital requirements.	**2. Degree of Seasonality:** Companies that experience strong seasonal movements have special working capital problems in controlling the internal financial savings that may take place. Aggrevating this difficulty is the fact that no matter how clearly defined a pattern may be, it is never certain. Unusual circumstances may distort ordinary relationships. Although seasonality may pull financial manager from the security of fixed programmes to meet recurring requirements, flexible arrangements are preferable to guard against unforeseen contingencies. An inability to cope with sharp working capital swings is one of the factors that encourages companies to undertake diversification programmes.
3. Production Policies: Depending upon the kind of items manufactured, by adjusting its production schedules a company may be able to offset the effect of seasonal fluctuations upon working capital, at least to some degree, even without seeking a balancing diversified line. Thus, in one year, in order to avoid burdensome inventories, firm may curtail activity when a seasonal upswing normally takes place. As a matter of policy, the choice will rest on the one hand, and maintaining a steady rate of production and permitting stocks of inventories to build up during off season periods, on the other. In the first instance, inventories are kept to minimum levels but the production manager must shoulder the burden of constantly adjusting his working staff; in the second the uniform manufacturing rate avoids fluctuations of production schedules, but enlarged inventory stocks create special risks and costs. Because the purchase of inventories is often financed by suppliers, the mere fact that company carries bigger amounts does not necessarily mean that its cash problem is more serious.	**4. Production Collection Time Period:** Closely related to a company's competitive status are the credit terms, it must grant. These arrangements may be result of tradition, policy within the industry, or even carelessness in failing to carry out announced principles. And the arrangements, in turn, are part of the overall production collection time sequence, that is, the time intervening between the actual production of goods and the eventual collection of receivables, flowing from sales. The length of this period is influenced by various factors. Purchases may be on a cash basis, but the manufacturing cycle may be prolonged and sales terms generous, causing a wide gap between cash expenditure and receipt and possibly placing heavy financing pressure on the firm. The pressure may be eased, despite long manufacturing cycle, if the company can persuade its suppliers to bear a large part of its financing burden or the manufacturing cycle may be short, and get the pressures heavy because suppliers do not bear a large part of financial burden. The financing requirements of the company may always be traceable to the relation between purchasing and sales

credit volume and terms of operations.

5. Position of the Business Cycle: In addition to the long-term secular trend, the recurring movements of the business cycle influence working capital changes. As business recedes, companies tend to defer capitalbreplacement programmes and deflect depreciations to liquid balances rather than fixed assets. Similarly, curtailed sales reduce amounts receivable and modify inventory purchases, thereby contributing further to the accumulation of cash balances. Conversely, the sales, capital, and inventory expansions that accompany a boom produce a greater concentration of credit items in the balance sheet. The tendency for companies to become cash-poor as the tide of economic prosperity rises and cash-rich as it runs out is well known economic phenomenon. The pressure on company finances during boom years is reflected in the business drive for loans and the high interest rate of these years as compared with a reversal of such conditions during the periods of economic decline. The financial implications of these movements may be deceptive. A weakening of the cash position in favourable economic environment may suggest the need or difficulty of raising capital for the further expansion rather than a shortage of funds to take care of current needs. On the other hand, a strong cash position when the economic outlook is bleak may be the forerunner of actual financial difficulties. The financial manager must learn to look behind the obvious significance of the standard test of corporate liquidity interpret their meaning in the light of his knowledge of the company's position in the industry, the prospects of new business and the availability of external sources for supplying additional capital.

6. Growth Stage of Business : As a company expands, it is logical to expect that larger amounts of working capital will be required to avoid interruptions to the production sequence. Although this is true it is hard to draw up firm rules for the relationship between the growth in the volume of a company's business and the growth of its working capital. A major reason for this is management's increasing sophistication in handling the current assets, besides other factors operating simultaneously.

7. Competitive Conditions: A corporation that dominates the market may relax its working capital standard because failing to meet customers requirements promptly does not necessarily lead to a loss of business. When competition is keen, there is more pressure to stock varied lines of inventory to satisfy customer's demands and to grant more generous credit terms, thereby causing an expansion in receivables.

8. Dividend Policy: A desire to maintain an established dividend policy may affect the volume of working capital, or changes in working capital may bring about an adjustment of dividend policy. In either event, the relationship between dividend policy and working capital is well established, and very few companies ever declare a dividend without giving consideration to its effect on cash and their needs for cash.

9. Size of Business: The amount needed may be relatively large per unit of output for a small company subject to higher overhead costs, less favourable buying terms, and higher interest rates. Small though growing companies tend to be hard pressed in financing their working capital needs because they seldom have access to the open market as do large established business firms have.

10. Sales Policies: Working capital needs vary on the basis of sales policy of the same industry. A department store which caters to the "carries trade" by carrying a quality line of merchandise and offering extensive charge accounts will usually have a slower turnover of assets, a higher margin on sales, and relatively larger accounts receivable than many of its non-carriage, trade competitors. Another department store which stresses cash and carry operations will usually have a rapid turnover, a low margin on sales, and small or no accounts receivable.

11. Risk Factor: The greater the uncertainty of receipt and expenditure, more the need for working capital. A business firm producing an item which sells for a small unit price and which necessitates repeat buying, such as canned foods or staple dry goods etc., would be subject to less risk than a firm producing a luxury item which sells for a relatively high price and is purchased once over a period of years, such as furniture, automobiles etc.

Investment of working capital

How much to be invested in current assets as working capital is a matter of policy decision by an entity. It has to be decided in the light of organisational objectives, trade policies and financial (cost-benefit) considerations. There is not

set rules for deciding the level of investment in working capital. Some organisations due to its peculiarity require more investment than others. For example, an infrastructure development company requires more investment in its working capital as there may be huge inventory in the form of work in process on the other hand a company which is engaged in fast food business, comparatively requires less investment. Hence, level of investment depends on the various factors listed below:	
(a) Nature of Industry: Construction companies, breweries etc. requires large investment in working capital due long gestation period.	**(b) Types of products:** Consumer durable has large inventory as compared to perishable products.
(c) Manufacturing Vs Trading Vs Service: A manufacturing entity has to maintain three levels of inventory i.e. raw material, work-in-process and finished goods whereas a trading and a service entity has to maintain inventory only in the form of trading stock and consumables respectively.	**(d) Volume of sales:** Where the sales are high, there is a possibility of high receivables as well.
e) Credit policy: An entity whose credit policy is liberal has not only high level of receivables but requires more capital to fund raw material purchases.	

Approaches of working capital investment:

(a) Aggressive: Here investment in working capital is kept at minimal investment in current assets which means the entity does hold lower level of inventory, follow strict credit policy, keeps less cash balance etc. The advantage of this approach is that lower level of fund is tied in the working capital which results in lower financial costs but the flip side could be that the organisation could not grow which leads to lower utilisation of fixed assets and long term debts. In the long run firm stay behind the competitors.	**(b) Conservative:** In this approach of organisation use to invest high capital in current assets. Organisations use to keep inventory level higher, follows liberal credit policies, and cash balance as high as to meet any current liabilities immediately. The advantage of this approach are higher sales volume, increased demand due to liberal credit policy and increase goodwill among the suppliers due to payment in short time. The disadvantages are increase cost of capital, higher risk of bad debts, shortage of liquidity in long run to longer operating cycles.
(c) Moderate: This approach is in between the above two approaches. Under this approach a balance between the risk and return is maintained to gain more by using the funds in very efficient manner.	

Current Assets to Fixed Assets Ratio

The finance manager is required to determine the optimum level of current assets so that the shareholders' value is maximized. A firm needs fixed and current assets to support a particular level of output. As the firm's output and sales increases, the need for current assets also increases. Generally, current assets do not increase in direct proportion to output; current assets may increase at a decreasing rate with output. As the output increases, the firm starts using its current asset more efficiently. The level of the current assets can be measured by creating a relationship between current assets and fixed assets. Dividing current assets by fixed assets gives current assets/fixed assets ratio.	Assuming a constant level of fixed assets, a higher current assets/fixed assets ratio indicates a conservative current assets policy and a lower current assets/fixed assets ratio means an aggressive current assets policy assuming all factors to be constant. A conservative policy implies greater liquidity and lower risk whereas an aggressive policy indicates higher risk and poor liquidity. Moderate current assets policy will fall in the middle of conservative and aggressive policies. The current assets policy of most of the firms may fall between these two extreme policies. The following illustration explains the risk-return trade off of various working capital management policies, viz. conservative, aggressive and moderate.

ESTIMATING WORKING CAPITAL NEEDS

Operating cycle is one of the most reliable methods of Computation of Working Capital. However, other methods like ratio of sales and ratio of fixed investment may also be used to determine the Working Capital requirements. These methods are briefly explained as follows:

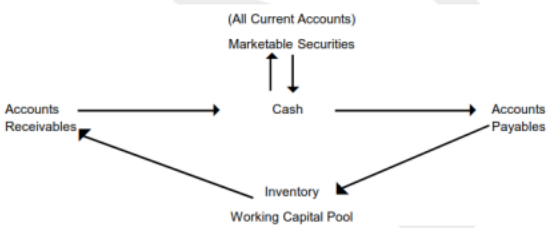
(i) Current Assets Holding Period: To estimate working capital needs based on the average holding period of current assets and relating them to costs based on the company's experience in the previous year. This method is essentially based on the Operating Cycle Concept.	**(ii) Ratio of Sales:** To estimate working capital needs as a ratio of sales on the assumption that current assets change with changes in sales.

(iii) Ratio of Fixed Investments: To estimate Working Capital requirements as a percentage of fixed investments. A number of factors will, however, be impacting the choice of method of estimating Working Capital. Factors such as seasonal fluctuations, accurate sales forecast, investment cost and variability in sales price would generally be considered. The production cycle and credit and collection policies of the firm will have an impact on Working Capital requirements. Therefore, they should be given due weightage in projecting Working Capital requirements.

CURRENT ASSETS AND FIXED ASSETS FINANCING

The more of the funds of a business are invested in working capital, lesser is the return in term of profitability and less amount is available for investing in long-term assets such as plant and machinery, etc. Therefore, the corporate enterprise has to minimise investment in working capital and to concentrate on investment of resources in fixed assets. Some economists argue that current assets be financed by current liabilities	But this all depends upon economic conditions prevailing in the economy at particular time requiring a company to keep business resources liquid so that business can take immediate advantage of knocking opportunities. In short-run, opportunity may arise for investment in stocks to make immediate gains due to movement in prices, whereas investment in plant and machinery may not be possible.

Current assets financing can be viewed from the working capital pool as under:



Current assets usually are converted into cash within a current accounting cycle in one year. Cash is used to purchase raw material etc., i..e. to create inventories. When inventories are sold, it gives rise to accounts receivables. Collection of receivables brings cash into company and the process forms a circle and goes on as depicted in figure above:

Thus, the current assets represent cash or near cash necessary to carry on business operations at all times. A level of current assets is thus maintained throughout the year and this represents permanent working capital.	Fixed assets financing is different to current assets financing. In fixed assets investment is made in building, plant and machinery which remains blocked over a period of time and generates funds through the help of

Additional assets are also required in business at different times during the operating year. Added inventory must be maintained to support peak selling period when receivables also increase and must be financed. Extra cash is needed to pay increased obligations due to spurt in activities.	working capital at a percentage higher than the return on investment in current assets. Working capital financing or current assets financing is done by raising short-term loans or cash credits limits but fixed assets financing is done by raising long-term loans or equity.

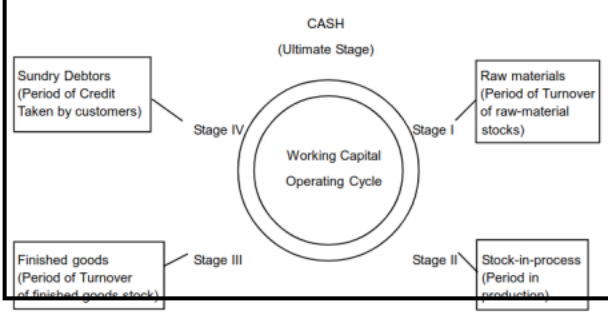
The working capital leverage and the capital structure leverage are, therefore, two different concepts. Capital structure leverage is associated with the fixed assets, financing, with an optional mix of owner's funds and borrowed funds. Owner's funds are the internal funds of the company comprised of equity holder's money in the shape of equity, retained earnings, depreciation fund and reserves. Borrowed funds are the external sources of funds raised from banks, financial institutions, issue of debentures, stock and term deposits from public. Financing of fixed assets with borrowed funds is cheaper than using owner's funds which increases the earnings per share and tends to increase the value of owner's capital in the share market. The detailed discussion on this aspect can not be accommodated as this topic is entirely devoted to the aspects of working capital.

OPERATING OR WORKING CAPITAL CYCLE : CONCEPT AND APPLICATION OF QUANTITATIVE TECHNIQUES

The operating cycle is the length of time between the company's outlay on raw materials, wages and other expenditures and the inflow of cash from the sale of the goods. In a manufacturing business, operating cycle is the average time that raw material remains in stock less the period of credit taken from suppliers, plus the time taken for producing the goods, plus the time the goods remain in finished inventory, plus the time taken by customers to pay for the goods. Operating cycle conceptis important for management of cash and management of working capital because the longer the operating cycle the more financial resources the company needs.	Therefore, the management has to remain cautious that the operating cycle should not become too long. Most businesses cannot finance the operating cycle (accounts receivable days + inventory days) with accounts payable financing alone. Consequently, working capital financing is needed. This shortfall is typically covered by the net profits generated internally or by externally borrowed funds or by a combination of the two. The duration of working capital cycle may vary depending on the nature of the business. In the form of an equation

The operating cycle process can be expressed as follows:
Operating Cycle = R + W + F + D – C
Where,
R = Raw material storage period
W = Work-in-progress holding period
F = Finished goods storage period
D = Receivables (Debtors) collection period.
C = Credit period allowed by suppliers (Creditors).

The stages of operating cycle could be depicted through the following diagram :



The above figure would reveal that operating cycle is the time that elapses between the cash outlay and the cash realisation by the sale of finished goods and realisation of sundry debtors. Thus, cash used in productive activity, often some time comes back from the operating cycle of the activity. The length of operating cycle of an enterprise is the sum

of these four individual stages i.e. components of time. The various component operating cycle can be calculated as shown below:

S.No.	Name of Working Capital Component	Formula	Days
1.	**Raw materials** Period of raw material stock ***Less***: Period of credit granted by supplier	 $\frac{\text{Average value of Raw material stock}}{\text{Consumption of raw material per day}}$ $\frac{\text{Average level of creditors}}{\text{Purchase of raw materials per day}}$	
2.	Period of Production	$\frac{\text{Average value of work in progress}}{\text{Average cost of production per day}}$	
3.	Period of turnover of finished goods stock	$\frac{\text{Average Stock of finished goods}}{\text{Average cost of goods sold per day}}$	
4.	Period of credit taken by customers	$\frac{\text{Average receivable}}{\text{Average value of credit sales per day}}$	
	Total operating cycle period	Sum of Sl. Nos. 1, 2, 3, 4	

ASSESSMENT OF WORKING CAPITAL

Requirement of working capital over the operating cycle period could be guessed for short-term, medium term as well as long-term. For short term, working capital is required to support a given level of turnover to pay for the goods and services before the cash is received from sales to customers. Effort is made that there remains no idle cash and no shortage of money to erase liquidity within the company's working process. For this purpose sales budget could be linked to the expected operating cycle to know working capital requirement for any given period of time or for each month. Medium term working capital include profit and depreciation provisions. These funds are retained in business and reduced by expenditure on capital replacements and dividend and tax payment. By preparing budget the minimum amount required for medium term working capital can be estimated.	The company can work out its working capital needs for different periods through cash budget which is key part of working capital planning. To prepare such a budget operating cycle parameters are of great use as estimation of future sales level, time and amount of funds flowing into business, future expenditure and costs all can be made with least difficulty to help the main target. Then, operating cycle help in assessing the needs of working capital accurately by determining the relationship between debtors and sales, creditors and sales and inventory and sales. Even requirement of extra working capital can be guessed from such estimate.

WORKING CAPITAL REQUIREMENT ASSESSMENT:

Working capital requirement assessment requires :

1. Calculation of average value of Raw Material Inventory, Work in Progress inventory and Finished Goods inventory
2. Calculation of Trade receivables
3. Calculation of Cash and Cash Convertibles required for normal running of business,
4. Calculation of trade payables.

The formula which is used for assessing the working capital requirement is listed below:

A.	Current Assets	₹
	Value of Raw Material Stock	XXXX
	Value of Work in Progress	XXXX
	Value of Finished Goods Stock	XXXX
	Value of Trade Receivables	XXXX
	Value of Cash Required	XXXX
	Total of A	XXXXX
B.	Current Liabilities	
	Value of Trade Payable	XXXX
	Value of Bank Overdraft	XXXX
	Value of Outstanding expenses	XXXX
	Total of B	XXXXX
	Working Capital Total of (A)-Total of (B)	XXXX

NEGATIVE WORKING CAPIAL

Generally, negative working capital is a sign that the company may be facing bankruptcy or a serious financial trouble. Under the best circumstances, poor working capital leads to financial pressure on a company, increased borrowing, and late payments to creditor - all of which result in a lower credit rating. A lower credit rating means banks charge a higher interest rate, which can cost a corporation a lot of money over time. In general, companies that have a lot of working capital will be more successful since they can expand and improve their operations. Companies with negative working capital may lack the funds necessary for growth However, some companies can sell their inventory and generate cash so quickly that they actually have a negative working capital. This is generally true of companies in the restaurant business (McDonald's had a negative working capital of $698.5 million between 1999 and 2000). Amazon.com is another example. This happens because customers pay upfront and so rapidly that the business has no problems raising cash.
In these companies, products are delivered and sold to the

Let us take an example of Wal-Mart.
Suppose Wal-Mart orders 500,000 copies of a DVD to Warner Brothers and they were supposed to pay within 30 days. What if by the sixth or seventh day, Wal-Mart had already put the DVDs on the shelves of its stores across the country? By the twentieth day, they may have sold all of the DVDs. Here, Wal-Mart received the DVDs, shipped them to its stores, and sold them to the customer (making a profit in the process), all before they had paid Warner Brothers! If Wal-Mart can continue to do this with all of its suppliers, it doesn't really need to have enough cash on hand to pay all of its accounts payable. As long as the transactions are timed right, theycan pay each bill as it comes due, maximizing their efficiency.

The bottom line is that a negative working capital can also be a sign of managerial efficiency in a business with low inventory and accounts receivable (which means they operate on an almost strictly cash basis).

customer before the company even pays for them. In order to understand how a company can have a negative working capital,	

Quantitative Techniques for Forecasting Working Capital Needs

A company very often faces fluctuations in business operations which affect the levels of current assets and liabilities due to cyclical and seasonal fluctuations. Estimation of future needs of working capital becomes difficult in such situations. But the data collected for past working may establish a trend relationship between the sales per month or per week and the level of working capital. Linear regression model is used to judge the relationship of two variables for estimating the working capital needs for the given amount of working capital needs. The most widely used regression technique employs the method of least squares:	The linear equation technique solve the equation problem as under: $y = a + b(x)$ When x = the independent variable i.e. sales y = the dependent variable i.e. working capital level a = intercept of the least square line with the vertical axis b = the slope of the line. With the help of such model, linear equation could be solved. Working capital = a + b (prior months sales).

To forecast the working capital requirement for the next period, the following may also be used:

$$C + \frac{O.C.}{\text{Number of working days in the period}} \times C.O.G.S$$

Where, C = Cash balance required

O.C. = Operating cycle

C.O.G.S. = Estimated cost of goods sold.

Financing of Working Capital

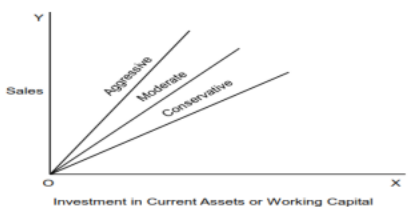
1. Sources of permanent working capital are the following:	2. Source of variable working capital
(a) Owner's funds are the main source. Sale of equity stock or preference stock could provide a permanent working capital to the business with no burden of repayment particularly during short period. These funds can be retained in the business permanently. Permanent working capital provides more strength to the business.	(a) Trade Creditors: Trade credit provide a quite effective source of financing variable working capital for the period falling between the point goods are purchased and the point when payment is made. The longer this period, the more advantageous it becomes for the firm to avoid efforts of seeking finance for holding inventories or receivables.
(b) Another source of permanent working capital is bond financing but it has a fixed maturity period and ultimately repayment has to be made. For repayment of this source, company provides sinking funds for retirement of bonds issued for permanent working capital.	(b) Bank loan: Bank loan is used for variable or temporary working capital. Such loans run from 30 days to several months with renewals being very common. These loans are granted by bank on the goodwill and credit worthiness of the borrower, and collateral may include goods, accounts/notes receivable or Government obligations or other marketable securities, commodities and equipments.
(c) Term loan from banks or financial institutions has the same	(c) Commercial Paper: It can be defined as a short term money market instrument, issued in the form of promissory notes for a fixed maturity. It will be totally unsecured and will have a maturity period ranging from 90 days to 180 days. It will meet the short term finance requirements of the companies and will be good short term investment for parking temporary surpluses by corporate bodies.
	(d) Depreciation as a source of working capital: Increase in working capital results form the difference the amount of depreciation allowance deducted from earnings and new investment made in fixed assets Usually, the entire amount deducted towards depreciation on fixed assets

characteristics as the bond financing of permanent working capital.	is not invested in the acquisition of fixed assets and is saved and utilised in business as working capital. This is also a temporary source of working capital so long as the acquisition of fixed asset is deferred.
(d) Short-term borrowing is also a source of working capital finance on permanent basis.	(e) Tax liabilities: Deferred payment of taxes is also a source of working capital. Taxes are not paid from day-to-day, but estimated liability for taxes is indicated in Balance Sheet. Besides, business organisations collect taxes by way of income tax payable on salaries of staff deducted at source, old age retirementbenefits, excise taxes, sales taxes, etc. and retain them for some period in business to be used as working capital. & Other miscellaneous sources are Dealer Deposits, Customer advances etc.

WORKING CAPITAL – A POLICY DECISION

In formulating a Firm's Working Capital Policy, an important consideration is the trade-off between profitability and risk. In other words, the level of a firm's Net Working Capital (Current Assets – Current Liabilities) has a bearing on its profitability as well as risk. The term profitability here means profits after expenses. The term risk is defined as the probability that a firm will become technically insolvent so that it will not be able to meet its obligations when they become due for payment.	The risk of becoming technically insolvent is measured using net working capital. It is assumed that the greater the amount of Net Working Capital, the less risky the firm is, and vice-versa. The relationship between liquidity, Net Working Capital and risk is such that if either net working capital or liquidity increases, the firm's risk decreases. What proportion of current assets should be financed by current liabilities and how much by long term sources will depend, apart from liquidity – profitability trade off, on the risk perception of the management. *Two broad policy alternatives, in this respect, are:*
(a) A conservative current Asset financing policy: It relies less on short term bank financing and more on long term sources. No doubt it reduces the risk that the firm will be unable to repay its short term debt periodically, but enhances the cost of financing.	**(b) An aggressive current Asset Financing Policy:** It relies heavily on short term bank finance and seeks to reduce dependence on long term financing. It exposes the firm to a higher degree of risk, but reduces the average cost of financing thereby resulting in higher profits.

The relationship between current assets and sales under different current asset policies is shown in the following



To explain, an aggressive current asset policy aims at minimising the investment in current assets corresponding to increase in sales thereby exposing the firm to greater risk but at the result of higher expected profitability.	On the other hand conservative policy aims at reducing the risk by having higher investment in current assets and thereby depressing the expected profitability. In between these two, lies a moderate current asset policy.

Working Capital Leverage

Working capital leverage may refer to the way in which a company's profitability is affected in part by its working capital management. Profitability of a business enterprise is affected when working capital is varied relative to sales but not in the same proportion. If the flow of funds created by the movements of working capital through the various business processes is interrupted, the turnover of working capital is decreased as is the rate of return on investment. Working capital management should enhance the productivity of the current assets deployed in business. This correlates the working capital with Return-on-Investment (ROI). ROI is product of two factors – assets turnover and profits margin. If either of these ratios can be increased, ROI will be increased to a great degree.	Current assets reflect the funds position of a company and is known as Gross Working Capital. Working Capital leverage is nothing but current assets leverage which refers to the asset turnover aspect of ROI. This reflects company's degree of efficiency in employing current assets. In other words, the ability of the company to guarantee large volume of sales with small current asset base is a measure of company's operating efficiency. This phenomenon is asset turnover which is a real tool in the hands of finance manager in a company to monitor the employment of fund on a cumulative basis to result into high degree of working capital leverage. To maximise profits, finance managers unanimously view the investment in current assets be kept to the minimum and should be financed from the funds such as current liabilities or low cost funds.

Ways to Improve Working Capital Position	
Get educated: There is more to working capital management than simply forcing debtors to pay as quickly as possible, delay paying suppliers as long as possible and keep stock levels as lean as possible. A properly conceived and executed improvement program will certainly focus on optimizing each of these components, but also, it will deliver additional benefits that extend far beyond operational rewards. All this underscores the need for ambitious executives to integrate working capital management into their strategic and tactical thinking, rather than view it as an extraneous added bonus.	**Don't forget to collect your cash:** This may sound obvious, but many businesses fail to implement effective ongoing collection procedures to prevent excess overdue funds or build-up of old debts. Customers should be asked if invoices have been received and are clear to pay and, if not, to identify the problems preventing timely payment. Confirm and reconfirm the credit terms. Often, credit terms get lost in the translation of general payment terms and what's on the payables ledger in front of the payables clerk.
Institute dispute management protocols: Consider a case where a company's working capital is deteriorating due to an increase in past-due accounts receivable (A/R). A review of the past-due A/R illustrates a high level of customer disputes, which are taking on average of 30 days to resolve and consuming significant amounts of sales, order-entry and cash collectors' time. By tackling the root cause of the disputes in this case, poor adherence to pricing policies the company can eliminate the disputes, thereby improving customer service. Established dispute-management protocols free up time for sales, order-entry and cash collections' personnel to be more effective at their designated roles, and they also will increase productivity, reduce operating costs and potentially boost sales. And finally, days payable outstanding (DPO) and working capital will improve, as customers won't have reason to hold payment.	**Treat suppliers as you would like customers to treat you:** Far greater cash flow benefits can be realized by strategically leveraging your relationship with suppliers and customers. A supplier is more likely to support you in the case of emergency if you have treated them fairly, and, likewise, a customer will be willing to forgive a mistake if you have a strong working relationship. That said, also realize that each customer is unique. Utilize segmentation tactics to split your customers and suppliers into similar groups. For customers, segmentation may be based on criteria including, profitability, sales, A/R size, past-due debt, average order size and frequency. Once segmentation is complete, it is important to define strategies for each segment based around the segmentation criteria and your strategic goals.
Do not assume all answers can be found externally: Before approaching existing customers and suppliers to	**Steer clear of arbitrary top-down targets:** Too many companies, for example, impose a 10 percent reduction

discuss cash management goals, fully understand your own process gaps so you can credibly discuss poor payment processes. Approximately 75 percent of the issues that impact cash flow are internally generated.	in working capital for each division that fails to take into account the realistic reduction opportunities within each division. This can result in goals that de-motivate employees by establishing impossible targets, creating severe unintended consequences. Instead, try to balance top-down with bottom-up intelligence when setting objectives.
Establish targets that foster desired behaviours: Many companies will incentivise collections staff to minimize A/R over 60 days outstanding when, in fact, they should reward those who collect A/R within the agreed-upon time period. After all, what would stop someone from delaying collections activities until after 60 days when they can expect to be rewarded? Likewise, a purchasing manager may be driven by the purchase price and rewarded for buying when prices are low, but this provides no incentive to manage lot sizes and order frequency to minimize inventory.	**Educate personnel, customers and suppliers:** A business imperative should be to educate staff to consider the trade-offs between various working capital assets when negotiating with customers and suppliers. Depending on the usage pattern of a raw material, there may be more to gain from negotiating consignment stock with a supplier instead of pushing for extended terms - particularly in cases of long lead-time items or those that require high minimum-order quantities. The same can hold true for customers. It is important to remember, however, that this is not the solution for all products, and it should be evaluated on a case-by-case basis.
Agree to formal terms with suppliers and customers and document carefully: This step cannot be stressed enough. Terms must be kept up to date and communicated to employees throughout the organization, especially to those involved in the customer-to-cash and purchase-to-pay processes; this includes your sales organization. Avoid prolific new product introductions without first establishing a clear product-range management strategy. Whether in the consumer products or aluminium extrusions business, many companies rely heavily on new products to maintain and grow market share. However, poor product-range management creates inefficiency in the supply chain, as companies must support old products with inventory and manufacturing capability. This increases operating costs and exposes the company to obsolete inventory.	**Facilitate collaborative customer management:** One of the most important cash management and working capital strategies that executives CFOs and treasurers, as well as CEOs can employ is to avoid thinking linearly and concerning themselves solely with their own company's needs. If it is feasible to collaborate with customers to help them plan their inventory requirements more efficiently, it may be possible to match your production to their consumption, efficiently and cost-effectively, and replicate this collaboration with your suppliers. The resulting implications for inventory levels can be massive. By aligning ordering, production and distribution processes, companies can increase inherent efficiency and achieve direct cost savings almost instantly. At this point, payment terms can be most effectively negotiated.

BANKING NORMS AND MACRO ASPECT OF WORKING CAPITAL MANAGEMENT

The assessment of funds required to be blocked in each of these items of the working capital required by an industry is discussed as under:

Raw Material: Raw material, of any kind is necessarily required by an industrial unit to continue the production process. Different raw material could be procured from different sources may be indigenous or overseas and accordingly different treatment of procurement time is bound to be given. Mode of payment for the raw material may also be different. Thus, affecting the credit requirements of the client, the funds blocked up in procurement and stocking of material will have to be taken into consideration. Total materials including those in transit and for which advance payment is made can normally be expressed in	**Work in Process:** The time taken by the raw material to be converted into finished product is the period of material processing and all the expenses of the process are involved in it. Therefore, the assessment of funds blocked in the process is made by taking into account the raw material consumption during the processing period and the expenses incurred during such

terms of number of months consumption and requirements of funds can be assessed by multiplying the figure by the amount of monthly consumption.	period i.e. the cost of production for the period of processing.
Finished goods in the next stage: The funds blocked in finished goods inventories are assessed by estimating the manufacturing cost of product.	**Trade Credit** received on purchases reduces working capital funds requirements and has to be taken into account for correct assessment of funds.
Advances received alongwith purchase orders for the products also reduce the funds requirements for working capital.	**Expenses:** One month's total expenses, direct or indirect, are provided by way of cushion in assessing the requirement of funds which may include rent, salaries, etc. depending upon the length of operating cycle.
Sundry Debtors: When goods sold is not realised in cash, sundry debtors are generated. The credit period followed by a particular industrial unit in practice is generally the result of industry practices. Investment in accounts receivable remains blocked from the time of sale till the time amount is realised from debtors. The assessment of funds blocked should be on the basis of cost of production of the materials against which bank extends working capital credit.	

DIFFERENT COMMITTEE OF RBI FOR WORKING CAPITAL MANAGEMENT

1. Daheja Study Group

The current limit was related to the security offered by the clients of banks without assessing financial position of the borrower through cash flow analysis. Short-term advances were not utilised for short-term purposes and defeated their self liquidating objective. In large number of accounts, no credit balance existed nor was the debit balance fully wiped out over a period of years because withdrawals were more than deposits. To control the tendency of over-financing and the diversion of the banks funds, Daheja Study Group (National Credit Council constituted in 1968 under the Chairmanship of V.T. Daheja) made recommendations for the banking system to finance industry on the basis of a total study of the borrower's operations rather than on security considerations.	Further, present as well as future cash credit accounts should be distinguished as between the 'hard core' and the 'short-term components'. The hard core should represent the minimum level of raw materials, finished goods and stores which the industry required to hold in order to maintain a given level of production, and the bank finance should be provided on strong financial basis as term loan and be subjected to regular repayment schedule whereas short-term component of the account would represent the requirement of funds for temporary purposes i.e. a short term increase in inventories, tax, dividends and bonus payments, etc. the borrowing being adjsuted in a short period out of sales.

2. Tandon Committee

Although the above recommendations were implemented but no improvement was noticed in money drain to strong industrial groups by banks and RBI appointed another study group under the chairmanship of Shri P.L. Tandon in July, 1974. Tandon committee made certain recommendations inter alia comprising of recommendations on norms for inventory and receivables for 15 major industries, new approach to bank lending, style of lending credit, information system and follow up, supervision and control and norms of capital structure.

A brief appraisal of the Tandon committee recommendations would prove more enlightening as given below:

1. Norms for inventory and receivables recommended by Tandon Committee for 15 major industries, cover about 50 per cent of industrial advances of banks. These norms were arrived at after examining the trends reflected in the company finance studies conducted by the Reserve Bank of India and detailed discussion with representatives and experts of the industries concerned.

2. Bank lending: The Committee introduced the concept of working capital gap. This gap arised due to the non-coverage of the current assets by the current liabilities other than bank borrowings. A certain portion of this gap will be filled up by the borrower's own funds and long-term borrowings. The Committee developed three alternatives for working out the maximum permissible level of bank borrowings:

1. 75% of the working capital gap will be financed by the bank i.e. Total Current assets Less: Current Liabilities other than Bank Borrowings = Working Capital Gap. Less: 25% of Working Capital gap from long-term sources.	2. Alternatively, the borrower has to provide for a minimum of 25% of the total current assets out of long- term funds and the bank will provide the balance. The total current liabilities inclusive of bank borrowings will not exceed 75% of the current assets: Total Current Assets Less: 25% of current assets from long-term sources. Less: Current liabilities other than Bank borrowings = Maximum Bank Borrowing permissible.

3. The third alternative is also the same as the second one noted above except that it excludes the permanent portion of current assets from the total current assets to be financed out of the long-term funds, viz.

Total Current assets
Less: Permanent portion of current assets
Real Current Assets
Less: 25% of Real Current Assets
Less: Current liabilities other than Bank Borrowings
= Maximum Bank Borrowing permissible.

Thus, by following the above measures, the excessive borrowings from banks will be gradually eliminated and the funds could be put to more productive purposes.

The above methods may be reduced to equation as under:

1st Method : PBC = 75/100 x WCG

2nd Method : PBC = TCA – [(25/100 x TCA) + OCL]

3rd Method : PBC = TCA – [CRA + 25/100 (TCA – CRA) + OCL]

Where,

PBC stands for Permissible Bank Credit
WCG stands for Working Capital Gap
TCA stands for Total Current Assets
OCL stands for Other Current Liabilities
(i.e. Current Liabilities other than Bank Borrowings)
CRA stands for Amount required to finance Core Assets.

3. Style of credit: A change in the style of lending has also been suggested by the Committee so as to bifurcate the cash credit into a loan account and demand cash credit instead of treating the entire credit limit as cash credit for a year. This will make the credit less expensive to borrowers. The demand cash credit will meet the seasonal requirements of industry and will be wiped out automatically at the end of the business cycle. This will introduce a better financial discipline in the credit system and will generate better financing system in the banking economy with numerous advantages.

4. Information system: To monitor better credit information system in the banking industry, the committee suggested for the borrower to submit quarterly statements in the prescribed format about its operations, current assets and current liabilities and funds flow statements with monthly stock statements and projected balance sheets and profit and loss account at the end of financial year.

5. Follow up: The Committee also suggested a close follow up for supervision and control of the use of credit by the banks and change in attitude of the banks from security-oriented lending to production oriented lendings/ credit.

6. Norms of Capital Structure: For examining the capital structure of the company the norms have also been suggested by the committee for monitoring a better equity : debt relationship.

3. Chore Committee

Reserve Bank of India accepted the above recommendations of the Tandon Committee but found that the gap between sanctioned cash credit limit and its utilisation has remained unanswered. In this context, RBI appointed in April 1979 a working group under the Chairmanship of Mr. K.B. Chore to look into this gap between the sanctioned limits and their utilisation.

The Chore Committee has, inter alia, recommended as follows:

(1) emphasised need for reducing the dependance of large and medium scale units on bank finance for working capital;	(2) to supplant the cash credit system by loans and bills wherever possible; and	(3) to follow simplified information system but with penalties when such information is not forthcoming within the specified limit.

Chore Committee also suggested that the banks should adopt henceforth Method II of the lending recommended by the Tandon Committee so as to enhance the borrowers' contribution towards working capital. The observance of these guidelines will ensure a minimum current ratio of 1.33 : 1. Where the borrowers are not in a position to comply with this, excess borrowings on account of adoption of Method II should be segregated and converted into a working capital term loan (WCTL). This loan should be made repayable in half-yearly instalments over a period not exceeding five years. WCTL may carry a rate of interest higher than the rate applicable on the relative cash credit limit, not exceeding the ceiling with a view to encouraging an early liquidation of WCTL. It was also suggested that banks should fix separate limits where feasible for peak level and non-peak level requirements with periods where there is a pronounced seasonal trend. This will not apply to agro-based industries but also to certain consumer industries like fans, refrigerators, etc.

The borrower should be discouraged from approaching banks frequently for ad hoc limits in excess of the sanctioned limits excepting those special circumstances when such requests be considered for short duration with 1 per cent additional interest over normal rate which could be waived in general cases on merits. Sick units may be allowed general exemptions from the above requirements. The Committee also favoured encouragement be given to bill finance i.e. bill acceptance and bill discounting practices involving banks, buyers and sellers. The Committee suggested some modifications and improvements in the system earlier recommended by the Tandon Committee. The modified system includes that banks should submit half-yearly statements to RBI above credit limits of borrowers with aggregate working capital of ` 50 lakhs and above from the banking system.

4. Marathe Committee

In 1982, it was felt that an independent review of the Credit Authorisation Scheme (CAS) which had been in operation for several years would be useful and accordingly the Reserve Bank of India appointed a Committee referred as "Marathe Committee" in November 1982 to review the working of the Credit Authorisation Scheme. The Committee submitted its report in July 1983. The Marathe Committee which was given terms of reference to examine the Credit Authorisation Scheme from the point of view of it operational aspects stressed that the 'CAS is not to be looked upon as a mere regulatory measure which is confined to large borrowers.

The basic purpose of CAS is to ensure orderly credit management and improve quality of bank lending so that all borrowings, whether large or small, are in conformity with the policies and priorities laid down by the Central Banking Authority. If the CAS scrutiny has to be limited to a certain segment of borrowers, it is because of administrative limitations or convenience, and it should not imply that there are to be different criteria for lending to the borrowers above the cut off point as compared to those who do not come within the purview of the scheme.

5. Chakraborty Committee

The Reserve Bank of India constituted a committee under the chairmanship of Sukhomoy Chakraborty to review the working of monetary system in India. The committee examined the matter in details and submitted its report in April, 1985 with wide ranging suggestions for its improvement.

The committee made two major recommendations which were as under –

i) The observation of the committee was that the delay in making payment by public sector units, some big private sector units and Government, departments continues unabated. The suggestion of committee in this regard was that the Government, should take initiative to include a penal interest payment clause in purchase contracts with suppliers for delayed payments beyond a pre-specified period.	**ii)** The credit limits to be sanctioned to a borrower should be segregated under three different heads - Cash credit-I - to cover the supplies to Govt. Cash credit II - to cover special circumstances and contingencies Normal working capital limit - to cover the balance of the credit facilities.

6. Kannan Committee

With a view to free the banks from rigidities of the Tandon Committee recommendations in the area of Working Capital Finance and considering the ongoing liberalizations in the financial sector, IBA constituted, following a meeting of the Chief Executives of Selected public sector banks with the Deputy Governor of Reserve Bank of India on 31.8.96, a committee on 'Working Capital Finance' including Assessment of Maximum Permissible Bank Finance (MPBF), headed by Mr. K. Kannan, the then Chairman and Managing Director of the Bank of Baroda.	The Committee examined all the aspects of working capital finance and gave far reaching recommendations on the modalities of assessment of working capital finance in its report, submitted to IBA on February 25, 1997. It observed that since commercial banks in India were undergoing a metamorphosis of deregulations and liberalizations, it was imperative that micro-level credit administration should be handled by each bank individually with their own risks-perceptions, risks-analysis and risks-forecastings. The final report of the Committee was submitted to RBI for its consideration in March, 1997.

The final report of the Committee was submitted to RBI for its consideration in March, 1997. In its final report, the Kannan Committee also pointed that alongwith modification of existing systems of working capital assessment and credit monitoring, certain undermentioned areas also need to be addressed:

(1) Regular interface with the borrower to have a better understanding of (i) his business/activity; and, (ii) problems/constraints faced by him and the future action plan envisaged;
(2) Periodical obtaining of affidavits from the borrowers, declaring highlights of their assets, liabilities and operating performance (in lieu of subjecting even the high rated/high valued borrowers to several routine inspections/ verifications) in order to bestow faith-oriented, rather than ab initio doubt-oriented, approach in monitoring the credit dispensation.
(3) Periodical exchange of information between/among financing banks/financial institutions to pick-up the alarm signals at the earliest.
(4) Establishing, within, a time bound programme, a "Credit Information Bureau" to provide updated information of existing/new borrowers before taking a credit decision

Accordingly, the Kannan Committee recommended that the arithmetical rigidities, imposed by Tandon Committee (and reinforced by Chore Committee) in the form of MPBF-computation, having so far been in vogue, should be given a go-by. The committee also recommended for freedoms to each bank in regard to evolving their own system of working capital finance for a faster credit delivery in order to serve more effectively various segments of borrowers in the Indian economy.

Concurring with recommendations of the Kannan Committee, Reserve Bank of India (vide circular No. IECD No. 23/08.12.01/96 dated 15.04.1997) advised to all the banks, inter-alia, as under:

It has now been decided that the Reserve Bank of India shall withdraw forthwith the prescription in regard to assessment o working capital needs based on the concept of maximum permissible bank finance (MPBF) enunciated by Tandon Working Group. Accordingly, an appropriate system may be evolved by banks for assessing the working capital needs of borrowers within the prudential guidelines and exposure norms already prescribed.	The turnover method, as already prevalent for small borrowers, may continue to be used as a tool of assessment for this segment; since major corporates have adopted cash budgeting as a tool of funds management, banks may follow cash budget system for assessing the working capital finance in respect of large borrowers; there should also be no objection to the individual banks retaining the concept of the present maximum permissible bank finance, with necessary modifications or any system."
Reserve Bank of India further directed that Working capital credit may henceforth be determined by banks according to their perception of the borrower and the credit needs. Banks should lay down, through their boards a transparent policy and guidelines for credit dispensation in respect of each broad category of economic activity.	

OTHER ISSUES INVOLVED IN THE MANAGEMENT OF WORKING CAPITAL

Apart from the discussion of the nature of various components of working capital, we need to consider various other aspects of this intricate system of financial management. These aspects undertake a finer and more microscopic analysis of the components in order to strengthen control over the current assets on one hand and to improve the productivity of working capital on the other. Some of the relevant issues are described as under:

(A) The Concept of Negative Working Capital

Net working capital is the term used to denote the difference of current assets and current liabilities. Traditionally it has been assumed that the current assets of a firm should be more than adequate to meet the current liabilities. In other words, the current ratio, i.e. the ratio of current assets to current liabilities should be more than one. The rationale behind this assumption is that the firm should at all times be in a position to maintain liquidity. By definition, current assets are treated as those assets which are capable of quick conversion into cash and secondly, the time period for conversion into cash is usually small but not more than one year in any case	Carrying the argument further, one can postulate that the older the current asset gets, the lesser are its chances of easy conversion into cash. So, in order to maintain the quality of its current assets, the firm seeks to reduce their holding period. Simultaneously, the firm tries to prolong the time period available for payment of its current liabilities by building up the level of inventory through trade finance and using bank borrowing against inventory and debtors. The result of this exercise is that the net working capital of the firm turns negative and its current ratio becomes less than one.

On the face of, it the concept of negative net working capital appears to be thought with unfavourable consequences for the firm. In such a situation, if the firm is required to meet its current obligations all at once, it might not have adequate liquidity available and as a result, it could default on its obligations. This could happen in a situation where the cash has moved out of the operating cycle to long term uses like creatioof fixed assets or towards non-productive investments in other firms. But if the firm has, as part of its conscious working capital management policy, kept the level of current assets to the minimum and deployed the surplus cash in non-working capital, yet liquid investments, then it can afford to function with a net working capital that is negative.	Hence so long as a firm does not default on payment of its current liabilities, the fact that it has a negative net working capital need not be a cause for concern. This may not always be true as most of the organisatons may like to see current assets more than current liabilities. Example of such organisations could be banks who provide short-term credit or suppliers of raw material who sell on credit to firms.

(B) The Myth of Adequate Current Assets

Aligned to the first issue is the myth of adequate current asset. Traditionally, it has been believed that liquidity is proportional to the level of current assets. A firm having a high current ratio is treated as favorably placed as regards payment of its current liabilities. This is myth since the holding of current assets is always in proportion to the turnover. If level of current assets is rising disproportionately to the turnover, then notwithstanding the high current ratio, the situation has the following implications:

– The age of current assets is increasing which tells upon their quality. As the current assets, particularly inventory and receivables, get older the chances of their easy and complete conversion into cash recede. Once this happens, there is every possibility of the operating cycle cracking.

– The firm is paying a huge cost for the higher build up of current assets. This cost consists of

(a) The amount spent towards raw materials and intermediate inputs	(b) The cost incurred towards storing and maintaining the inventory.	(c) The interest cost for obtaining finance against these current assets
(d) The cost of obsolescence associated with holding inventory for longer periods and	(e) The cost of expected default on receivables as reflected in charge to profit and loss account towards bad debts.	

(C) Does the balance sheet give a true picture of current assets?

We have restricted the discussion of current assets to the position obtained as on a particular date. This position may not be representative of the state of affairs prevailing on a day to day basis throughout the year. In order to even out the effects of daily variation in the level of current assets, it is advisable to take average of weekly, monthly or quarterly holding depending upon the nature of the industry and turnover of the assets. The position at the end of a day is a static position which is not representative of the entire year. By taking period averages some amount of dynamism is brought into the picture.

The second point to be noted is that an industry might have seasonal peaks or troughs of working capital requirement. For example agro based industry like fruit processing unit would need to stock more raw material during the peak season when the crop has been harvested than during the lean season. In such cases different norms have to be applied for peak season and non peak season for holding of current assets for judging the reasonability of their holding.

We find, therefore that the high level of current assets is nothing but a fiction when we seek to realize the current assets. It may happen that the inventory carried by the firm may consist of obsolete items, packing materials, finished goods which have been rejected by buyers and items like dies and tools which are more fixed than current in character. Prudence would advise that the firm should get rid of these current assets as early as possible.

On the other hand, the current liabilities are more ascertainable and less fictions. The payment of these liabilities, if not possible from the operating cycle, has to be arranged from long term sources of funds which results in a mismatch that is not conducive to financial health of the firm.

(D) The various forms of cash holding

Cash is considered to be the most liquid of current assets. It is held either as cash balances with the firms or in bank accounts. There are two ways of holding bank balances – first as current accounts through which the day to day

Cash balances are also held as un availed portion of the working capital facilities granted by the banks. All such balances earn money for the firm in terms of the interest that is saved on unavailed portion. Yet the money

transactions of the firm are carried out and secondly as fixed deposits in which balances are held for a specified twice period. Current account balances are most liquid. Fixed account balances are convertible into cash by adjustment downwards of the rate of interest even before maturity. Hence even fixed deposit balances should be treated at par as regards liquidity. But there is a catch here. Quite a few fixed deposits are not held perse, but as margin money deposits for availing the facilities like letters of credit and guarantee from banks. To the extent of such margin money deposits, the liquidity of bank balances of the firm is impaired.

remains available to the firm almost on call. Such balances are most suitable to a firm for enhancement of liquidity provided the firm has the policy of availing bank finance for its working capital requirements. These firms maintain just enough balance in their current accounts and transfer the surplus immediately to the borrower accounts for saving interest thereon. In most such cases, even the routine transactions are carried out through the borrowal accounts, thus precluding the need for maintaining current accounts even.

CASH MANAGEMENT

By cash management, we mean the management of cash in currency form, bank balances and readily marketable securities. Cash is the most important component of working capital of a firm. It is also the terminal conversion point for other constituents. Each firm holds cash to some extent at any point of time. Source of this cash may be the working capital operating cycle or capital inflows. Similarly the outflow of cash from the cash reservoir of a firm can be either to the operating cycle or for capital repayment.

Motives for holding cash

At the basic level, a firm like individuals, has three motives for holding cash. These are as under:

Speculative Motive:
Since cash is the most liquid current asset, it has the maximum potential of value addition to a firm's business.
The value addition can come in two forms. First, as the originating and terminal point of the operating cycle, cash is invaluable. But cash has an opportunity cost also and if cash is kept idle, it becomes a liability rather than an asset. Therefore, efficient firms seek to deploy surplus cash in short term investments to get better returns. It is here that the second form of value addition from cash can be had. Since this deployment of cash needs to be done skillfully, not all the firms hold cash for speculative motive. Further, the amount of cash held for speculative motive should not cause any strain upon the operating cycle.

Contingency Motive:
This motive of holding cash takes into account the element of uncertainty associated with any form of business. The uncertainty can result in prolongation of the working capital operating cycle or even its disruption. It is possible that cost of raw materials or components might go up or the time taken for conversion of raw materials into finished goods might increase. For such contingencies, some amount of cash is kept by every firm.

Transactional Motive

This is the most essential motive for holding cash because cash is the medium through which all the transactions of the firm are carried out. Some examples of transactions of a manufacturing firm are given below:
– Purchase of Capital Goods like plant and machinery
– Purchase of raw material and components
– Payment of rent and wages
– Payment for utilities like water, power and telephone
– Payment for service like freight and courier

These transactions are paid for from the cash pool or cash reservoir which is all the time being supplemented by inflows. These inflows are of the following kinds:

– Capital inflows from promoters' capital and borrowed funds	– Sales proceeds of finished goods	– Capital gains from investments

The size of the cash pool depends upon the overall operations of the firm. Ideally, for transaction purposes, the working capital inflows should be more than the working capital outflows at any point of time. The non-working capital inflows should be utilized for similar outflows such as purchase of fixed assets together with the surplus of

working capital inflows.

Level of cash holding

The level of cash holding of a firm depends upon a number of factors. Prominent among these factors are the nature of the firms' business, the extent and reach of the business. The level of cash is measured as a percentage of turnover of the firm.

1. Nature of the business: If the firm is engaged in cash purchase of raw material from a number of sources, its requirement of cash would be more than that a firm which buys on credit. Also a firm having cash purchase and cash sale would need to maintain more cash balance than a firm which buys on credit and sells on credit. A firm buying in cash and selling on credit is likely to have strained cash flows. On the other hand, a firm buying on credit and selling in cash has comfortable cash balances.	**2. Extent and reach of the business:** A multi location firm having a number of large and small branches has more cash requirement than a single location firm. Also the problems associated with moving cash between the branches and maintaining liquidity are much more in a multi location firm.

Components of cash and bank balances

1. Cash and Cheques in hand:

This is the most liquid and readily accessible component of cash. The cash is held to meet day-to-day payments of small amounts. It is generated from counter cash receipts of the firm, if any, and from cash withdrawals from the bank. The volume of cash in hand maintained by the firm again depends upon the nature of operations of the firm. In case of major portion of the sales being in cash, firm is left with large amounts of cash at the end of the day which needs to be taken care of safely. This entails security and custody arrangements for the cash before it is deposited in the bank. Moreover, since receipt and payment of cash is a primary level transaction which is culminated with the handing over of the cash, special care is required while handling cash.	Cheques in hand are clubbed with cash in a categorization because a cheque is a secondary form of cash and is equivalent to holding cash. The care and precaution required for holding cheques is much less than required for cash because almost all the cheques are "account payee cheques" which can be credited to the account of the firm only. The cheques in hand need to be deposited carefully and expeditiously into the bank in order to get credit to the correct account well in time. Attention also needs to be paid to those cheques which are dishonoured at the time of presentation to the payee banks since the drawer of the cheques has to be contacted for obtaining rectified cheques.

2. Bank Balances

Bank balances represent the amount held with banks in savings, current or deposit accounts. In the case of firms, balances are not held in savings accounts. A firm has at least one main current account with a bank through which the transactions are carried out. All the excess cash is deposited into this account together with the cheques. Payments to employees, creditors and suppliers are made by way of cheques drawn on this account.	Being a current account, no interest is payable to the firm on the balance maintained in this account. Therefore, the firm seeks to keep just sufficient balance in the current account for meeting immediate payment liabilities. After accounting for these liabilities, the surplus is transferred either to an interest bearing deposit account or invested in short term liquid instruments. In case the firm has borrowed funds for working capital, the surplus cash and cheques are credited to those accounts, thereby reducing the liability of the company.

William J. Baumal Model for Optimal Cash Balance Management

Cash management model of William J. Baumal assumes that the concerned company keeps all its cash on interest yielding deposits from which it withdraws as and when required. It also assumes that cash usage is linear over time. The amount of money is withdrawn from deposits in such a way that the cost of withdrawal is optimally balanced with those of interest foregone by holding cash. The model is almost same as economic stock order quantity model.	Formula Economic lot size = $\sqrt{\frac{2 \times Tb}{I}}$ Where T= Projected cash requirement b= Conversion cost per lot I= Interest earned on marketable securities per annum.

Strategy for effective cash management

The strategy for effective cash management in any firm has a core component of ensuring uninterrupted supply of cash to the operating cycle. This cash is ideally generated from the cycle itself but under certain circumstances infusion of cash from outside the cycle also takes place. Examples of such circumstances are:
(a) when the firm has been newly set up and the cycle has yet to commence;
(b) when due to disruption in the cycle, cash gets stuck in other current assets and outside cash infusion in the form of promoters lenders' contribution is done.

Essential elements of a successful cash management strategy are:-

Speeding up Collections: After the cash forecast has been prepared, the firm should ensure that in day to day operations cash (including cheques) should be collected speedily. Towards this end, a schedule of receivables should be prepared and kept updated. Before due date of each payment, the debtor should be reminded for it. When the cheques are received on due dates, these should be credited to the bank account expeditiously. For a multi-locational firm, arrangements should be made with the bank for on-line transfer of funds to the main account. Similarly, facilities like drop boxes can be provided by firms having a large user base whereby customers can drop their payments in boxes placed at vantage locations.	**Spreading out Payments:** Simultaneously with speeding up collection, the firm should spread out payments as far as possible. It means that if credit period is available in some payments, it should be utilized fully. Bunching of payments should be avoided. For outstation customers, arrangement can be made with the bank for making at par payment.
Realistic cash forecasting: By realistic cash forecasting we mean that a cash forecast for the entire next year should be prepared at its commencement. The cash forecast has two parts—one is the forecast of cash flows from the operating cycle and the second part is the capital flows. The first part originates from the sales forecast for the year while the second part originates from the capital budget. The surplus of cash generated from the operating cycle in called the internal accruals of the firm and it is used to fund the capital outlays together with bank borrowings. For a realistic cash forecast, the sales projections and capital budget have to be drawn up after extensive deliberations in the management committee of the firm. Such a forecast carries a cushion for normal contingences like sudden spurt or shrinkage in demand for which mid-term modifications in the forecast are made. Involvement of operational level people, both from production and sales areas, is essential for a realistic cash forecast.	

INVENTORY MANAGEMENT

Inventory Management is the second important segment of working capital management Inventory is the second	Inventories form a link between production and sale of a product. A manufacturing company must maintain a certain amount of inventory during production, the inventory known as work in process (WIP).

step in the operating cycle wherein cash in converted into various items of the inventory. Inventory has the following major components: (a) Raw Material | (b) Work in Process | (c) Finished Goods.	Although other types of inventory – namely, raw materials and finished goods – are not necessary in the strictest sense, they allow the company to be flexible. Raw materials inventory gives the firm flexibility in its purchasing. Finished goods inventory allows the firm flexibility in its production scheduling and in its marketing. Production does not need to be geared directly to sales. Large inventories also allow efficient servicing of customer demands. If a product is temporarily out of stock, present as well as future sales may be lost. Thus, there is an incentive to maintain large stocks of all three types of inventory.

Benefits versus Costs

The advantages of increased inventories are several. The firm can effect economies of production and purchasing and can fill orders more quickly. In short, the firm is more flexible. The obvious disadvantages are the total cost of holding the inventory, including storage and handling costs, and the required return on capital tied up in inventory. An additional disadvantage is the danger of obsolescence. Because of the benefits, however, the sales manager and production manager are biased toward relatively large inventories. Moreover, the purchasing manager often can achieve quantity discounts with large orders, and there may be a bias here as well.	It falls on the financial manager to dampen the temptation for large inventories. This is done by forcing consideration of the cost of funds necessary to carry inventories as well as perhaps the handling and storage costs. Inventories should be increased as long as the resulting savings exceed the total cost of estimates of holding the added inventory. The balance finally reached depends on the estimates of actual savings, the cost of carrying additional inventory, and the efficiency of inventory control. Obviously, this balance requires coordination of the production, marketing, and finance areas of the firm in keeping with an overall objective. Our purpose is to examine various principles of inventory control by which an appropriate balance might be achieved.

Strategy for Inventory Management

A successful strategy for inventory management has at its core the objective of holding the optimum level of inventory at the lowest cost. The cost of holding inventory has the following three elements:

(i) Carrying Cost This is the cost of keeping or maintaining the inventory in a usable condition. This includes the storage costs, i.e. the cost of storing the inventory in rented premises or the opportunity cost of storing in own premises + the wage cost of personnel assigned to storing and securing it + cost of utilities and insurance + cost of financing. Inventory carrying cost is directly proportional to the level of inventory assuming that the loading of carrying cost is done pro rata to the space occupied. Thus if inventory level rises, its carrying cost also rises.	**(ii) Ordering Cost** It is the cost associated with placing each individual order for supply of raw materials, stores, packing materials etc. If these items are procured in small lots, then the ordering cost per unit of inventory would be more and vice versa.
(iii) Stock-out Cost It is the cost associated with procuring an inventory item, which has gone out of stock and is needed for immediate supply. This cost includes the reduction of profit and costs accruing due to disruption in the operating cycle.	

How cost of inventory can be lowered:

Cost of inventory can be lowered by–

– Entering into long term arrangements for supply of raw materials at market driven prices.	– Arranging for direct supply of raw material at manufacturing locations.	– Promoting ex-factory sales of the finished goods.
– Availing quantity discounts and spot payment discounts if the carrying cost and financing cost is less than the discounts.	– Apart from these general steps, a technique called ABC analysis is also used for monitoring inventory costs.	

Managing the Inventory Level

1. Economic Order Quantity (EOQ) Model

Inventory level can be managed by adopting the Economic Order Quantity (EOQ) model. This model determines the order size that will minimize the total inventory cost. According to this model, three parameters are fixed for each item of the inventory:

(1) Minimum level of that inventory to be kept after accounting for usage rate of that item and time lag in procuring that item and contingences.	(2) The level at which next order for the item must be placed to avoid possibility of a stock-out.	(3) The quantity of the item for which the re-order must be placed.

In addition to the determination of above parameters, the EOQ model is based on the following assumptions:

– The total usage of that particular item for a given period is known with certainty and the usage rate is even throughout the period.	– There is no time gap between placing an order and receiving supply.
– The cost per order of an item is constant and the cost of carrying inventory is also fixed and is given as a percentage of the average value of inventory.	– There are only two costs associated with the inventory and these are the cost of ordering and the cost of carrying the inventory.

Given the above assumptions, the optimum or economic order quantity is represented as:

$$EOQ = \sqrt{\frac{2AO}{C}}$$

Where A = Total annual requirement for the item

O = Ordering cost per order of that item

C = Carrying cost per unit per annum.

2. ABC Analysis

This system is based on the assumption that in view of the scarcity of managerial time and efforts, more attention should be paid to those items which account for a larger chunk of the value of consumption rather than the quantity of consumption. Let us take an example of a firm having three major components of raw material:

Component	*Units Consumed*	*% to total*	*Value per unit*	*Total Value (Lacs)*	*%*
A	5000	45.45	1000	50.00	22.93
B	4000	36.36	1200	48.00	22.00
C	2000	18.18	6000	120.00	55.05
	11000	100.00	218.00	100.00	

Thus, the cost of raw material C which accounts for 55% of the total consumption value should be given priority over item A although the number of units consumed of the latter is much more than former.

RECEIVABLES MANAGEMENT

Receivables are near the terminating point of the operating cycle. When raw material has been converted into finished goods, the final product is sold by the firm. Some of the sales are done on spot basis while the remaining sales are made on credit. The extent of credit sales varies from industry to industry and within an industry. Period of credit depends upon the position of the firm in the industry. If the firm has a monopoly position, period of credit would be very low. If the industry consists of a large number of players in keen competition with each other, the period of credit would tend to be fairly long. Also, during periods of demand recession, even a firm in monopoly situation might be forced to extend credit in order to promote sales.

Receivables are generally referred to by the name of "Sundry Debtors" in the books of account, Strictly speaking, Sundry Debtors refer to receivables created in the course of operation of the working capital cycle, i.e. those persons which owe payment to the firm for goods supplied or services rendered. Thus sundry debtors represent an intermediate stage between reconversion of finished goods into cash. So long as the sundry debtors persist, the firm is strained of cash. So, logically the firm seeks to minimize the level of sundry debtors.

The period of credit allowed to debtors also depends upon the industry practice. This period of credit has two components. First component is a small period of week to ten days which is normally allowed in all industries and no interest is charged on the amount due. The second component is the larger one, length of which varies from industry to industry and interest is usually charged for this period. In the alternative, the firm may charge full invoice value for payment made after the credit period and allow discount for spot payments. Apart from the Sundry Debtors, cash flow of the firm is also affected by Loans and Advances made to suppliers, subsidiaries and others.

These advances are not exactly working capital advances but nevertheless these are treated as current assets because these are assumed to be recoverable or converted into inventory, fixed assets or investments within one year. Credit policy can have a significant influence on sales. In theory, the firm should lower its quality standard for accounts accepted as long as the profitability of sales generated exceeds the added costs of the receivables. What are the costs of relaxing credit standards? Some arise from an enlarged credit department, the clerical work of checking additional accounts, and servicing the added volume of receivables. We assume for now that these costs are deducted from the profitability of additional sales to give a net profitability figure for computational purpose. An other cost comes from the increased probability of bad-debt losses.

How do firms ensure realisations?

Timely realisation of receivables is an important element of working capital management. Practices in this respect

The key elements here are the opportunity cost of funds blocked in receivables and the net expenses of

vary from firm to firm. Most of the firms dissuade credit sales to first time customers and gradually allow credit after development of relationship. While giving credit, some firms obtain post dated cheques from their clients. In other cases, firms have special staff earmarked for recovery efforts	maintaining recovery infrastructure. Expenses of maintaining recovery infrastructure include the costs associated with recovering the amount from debtors. If the funds realised from receivables can yield better return than the interest recovered from debtors, then the firm would be better off by promoting cash sales.

FACTORS DETERMINING CREDIT POLICY

The credit policy is an important factor determining both the quantity and the quality of accounts receivables. Various factors determine the size of the investment a company makes in accounts receivables. They are, for instance:

(i) The effect of credit on the volume of sales;	(ii) Credit terms;	(iii) Cash discount;
(iv) Policies and practices of the firm for selecting credit customers;	(v) Paying practices and habits of the customers;	(vi) The firm's policy and practice of collection; and

(vii) The degree of operating efficiency in the billing, record keeping and adjustment function, other costs such as interest, collection costs and bad debts etc., would also have an impact on the size of the investment in receivables.

The rising trend in these costs would depress the size of investment in receivables. The firm may follow a lenient or a stringent credit policy. The firm which follows a lenient credit policy sells on credit to customers on very liberal terms and standards.	On the contrary a firm following a stringent credit policy sells on credit on a highly selective basis only to those customers who have proper credit worthiness and who are financially sound.	Any increase in accounts receivables that is, additional extension of trade credit not only results in higher sales but also requires additional financing to support the increased investment in accounts receivables. The costs of credit investigations and collection efforts and the chances of bad debts are also increased.

FACTORING SERVICES

As the accounts receivable amount to the blocking of the firm's funds, the need for an outlet to impart these liquidity is obvious. Other than the lag between the date of sale and the date of receipt of dues, collection of receivables involves a cost of inconvenience associated with tapping every individual debtor. Thus, if the firm could contract out the collection of accounts receivable it would be saved from many things such as administration of sales ledger, collection of debt and the management of associated risk of bad-debts etc.

Factoring is a type of financial service which involves an outright sale of the receivables of a firm to a financial institution called the factor which specialises in the management of trade credit. Under a typical factoring arrangement, a factor collects the accounts on the due dates, effects payments to the firm on these dates (irrespective of whether the customers have paid or not) and also assumes the credit risks associated with the collection of the accounts. As such factoring is nothing but a substitute for in-house management of receivables.

A factor not only enables a firm to get rid of the work involved in handling the credit and collection of receivables, but also in placing its sales in effect on cash basis.

Definition and functions – Factoring Services

"Factoring may be defined as a relationship between the financial	A proper appreciation of these functions would

institution or banker ('factor') and a business concern (the 'supplier') selling goods or providing services to trade customers (the customer) whereby the factor purchases book debts with or without recourse ('with a recourse' means that in the event of bad debts factor can approach the 'supplier') to the supplier and in relationship thereto controls the credit extended to the customers and administers the sales ledger of the supplier." Though the purchase of book debts is fundamental to the functioning of factoring, there are a number of functions associated with this unique financial services	enable one to distinguish it from the other sources of finance against receivables. They are: – assumption of credit and collection function; – credit protection; – encashing of receivables; – collateral functions such as: (a) loans on inventory, (b) loans on fixed assets, other security and on open credit, (c) advisory services to clients.

Factoring vs. Accounts Receivable Loans Accounts receivable loan is simply a loan secured by a firm's accounts receivable by way of hypothecation or assignment of such receivables with the power to collect the debts under a power of attorney. In case of factoring however, there is an outright sale of receivables. Thus, in case of the former, the bank may debit client's account for 'handling charges' if the debt turns out to be bad as against non-recourse factoring.	**Factoring vs. Bill Discounting** Under a bill discounting arrangement, the drawer undertakes the responsibility of collecting the bills and remitting the proceeds to the financing agency, whereas under factoring agreement, the factor collects client's bills. Moreover, bill discounting is always with recourse whereas factoring can be either with recourse or without recourse. The finance house discounting bills does not offer any non-financial services unlike a factor which finances and manages the receivables of a client.

Mechanics of Factoring:

Factoring offers a very flexible mode of cash generation against receivables. Once a line of credit is established, availability of cash is directly geared to sales so that as sales increase so does the availability of finance. The dynamics of factoring comprises of the sequence of events outlined in figure.
(1) Seller (client) negotiates with the factor for establishing factoring relationship.
(2) Seller requests credit check on buyer (client).
(3) Factor checks credit credentials and approves buyer. For each approved buyer a credit limit and period of credit are fixed.

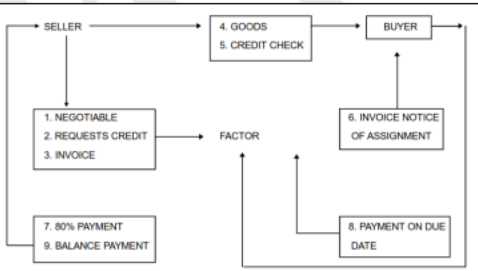


Figure: Mechanics of Factoring

(4) Seller sells goods to buyer.	(5) Seller sends invoice to factor. The invoice is accounted in the buyers account in the factor's sales ledger.	(6) Factor sends copy of the invoice to buyer.
(7) Factor advices the amount to which seller is entitled after retaining a margin, say 20%, the residual amount paid later.	(8) On expiry of the agreed credit period, buyer makes payment of invoice to the factor	(9) Factor pays the residual amount to seller.

OTHER TECHNIQUES FOR CONTROL OF WORKING CAPITAL

1. Fund Flow Statement

Fund flow statements are used to find changes in assets over a period of time showing uses of funds and sources of funds. Funds flow represent movement of all assets particularly of current assets because movement in fixed asserts is expected to be small except at times of expansion or diversification.

2. Forfaiting Services

Forfaiting is a form of financing of receivables pertaining to international trade. It denotes the purchase of trade bills/promissory notes by a bank/financial institution without recourse to the seller. The purchase is in the form of discounting the documents covering entire risk of non-payment in collection. All risks and collection problems are fully the responsibility of the purchaser (forfeiter) who pays cash to seller after discounting the bills/notes.

The salient features of forfaiting as a form of export relating financing are as under:

(i) The exporter sells and delivers goods to the importer on deferred payment basis.	(ii) The importer draws a series of promissory notes in favour of the exporter for payment including interest charge. Alternatively the exporter draws a series of bill which are accepted by the importer.	(iii) The bills/notes are sent to the exporter. The promissory notes/bills are guaranteed by a bank which may not necessarily be the importer's bank. The guarantee by the bank is referred to as an Aval, defined as an endorsement by a bank guaranteeing payment by the importer.
(iv) The exporter enters into a forfaiting agreement with a forfeiter which is usually a reputed bank. The exporter sells the avalled notes/bills to the bank at a discount without recours and recives the payment.		(v) The forfeiter may hold these notes/bills till maturity for payment by the importers bank.

Forfaiting vs. Export Factoring

Forfaiting is similar to cross border factoring to the extent both have common features of non recourse and advance payment. But they differ in several important respects:

(a) A forfeiter discounts the entire value of the note/bill but the factor finances between 75-85% and retains a factor reserve which is paid after maturity.	b) The avalling bank which provides an unconditional and irrevocable guarantee is a critical element in the forfaiting arrangement wheras in a facoring deal, particularly non-recourse type, the export factor bases his credit decision on the credit standards of the exporter.
(c) Forfaiting is a pure financing arrangement while factoring also includes ledger administration, collection and so on.	(d) Factoring is essentially a short term financing deal. Forfaiting finances notes/bills arising out of deferred credit transaction spread over three to five years.
(e) A factor does not guard against exchange rate fluctuations; a forfeiter charges a premium for such risk.	

3. Ratio Analysis

Ratio Analysis is normally used for working capital control. The following ratios are commonly used:	Besides above, for managing current assets, it is advisable to calculate the following ratios also:		
	1. Quantum of shareholders funds invested in current assets.	2. Quantum of shareholders funds and long-term debts invested in current assets.	3. Relationship between the shareholders and long term funds on one hand and the

1. Current Ratio $= \frac{\text{Current Assets}}{\text{Current Liabilities}}$ 2. Acid Test Ratio $= \frac{\text{Current Assets} - \text{Inventories}}{\text{Current Liabilities}}$ 3. Inventory Turnover $= \frac{\text{Cost of goods sold}}{\text{Average Inventory}}$ 4. Current Assets Turnover $= \frac{\text{Annual Sales}}{\text{Current Assets}}$ 5. Receivable Turnover $= \frac{\text{Sales}}{\text{Debtors}}$ 6. Debt-equity ratio $= \frac{\text{Total long term debts}}{\text{Shareholder funds}}$			short term funds on the other pertaining to current assets

Lesson 8 Security Analysis

Investment Analysis	Differences between Investment, Speculation and Gambling	Measuring of Systematic and Unsystematic Risk
Return of the Security	Fundamental Analysis (Economic, Industry and Company)	Technical Approach and Efficient Capital Market Theory

WHAT ARE SECURITIES

Securities may be defined as instruments issued by seekers of funds in the investment market to the providers of funds in lieu of funds. These instruments prima facie provide evidence of ownership to the holder of the instrument. The owner is entitled to receive all the benefits due on the instrument and to retrieve his investment at the time of redemption. Securities can broadly be divided into two categories – Debt Securities and Equity Securities.

Securities include –

<table>
<tr>
<td colspan="2">(i) shares, scrips, stocks, bonds, debentures, debenture stock or other marketable securities of a like
nature in or of any incorporated company or other body corporate.</td>
<td rowspan="3">(ii) Government securities.
(iia) such other instruments as may be declared by the Central Government to be securities and</td>
<td rowspan="3">(iii) rights or interests in securities.</td>
</tr>
<tr>
<td>(ia) derivative.</td>
<td>(ib) units or any other instrument issued by any collective investment scheme to the Investors in such schemes.</td>
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<tr>
<td>(ic) security receipt as defined in clause (zg) of Section 2 of the Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002.</td>
<td>(id) units or any other such instrument issued to the investors under any mutual fund scheme.</td>
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INVESTMENT

Investment is the employment of funds on assets with the aim of earning income or capital appreciation. Investment has two attributes namely time and risk. Present consumption is sacrificed to get a return in the future. The sacrifice that has to be borne is certain but the return in the future may be uncertain. This attribute of investment indicates the risk factor. The risk is undertaken with a view to reap some return from the investment.	The investor makes a comparison of the returns available from each avenue of investment, the element of riskminvolved in it and then makes the investment decision that he perceives to be the best having regard to the time frame of the investment and his own risk profile.

INVESTMENT VS. SPECULATION

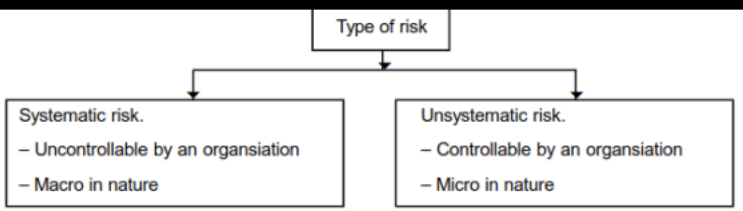
According to Benjamin Graham "An investment operation is one which, upon thorough analysis, promises safety of principal and an adequate return. Operations not meeting these requirements are speculative." Thus investment differs from speculation. Speculation also involves deployment of funds but it is not backed by a conscious analysis of pros and cons. Mostly it is a spur of the moment activity that is promoted and supported by half-baked information and rumours.	Mostly it is a spur of the moment activity that is promoted and supported by half-baked information and rumours. Speculative deployment of funds is generally prevalent in the secondary equity market. What attracts people to speculation is a rate of return that is abnormally higher than the prevailing market rates. The balancing of risk and return nevertheless operates in speculative activity also and as such the risk element in speculation is very high.

BASIS FOR COMPARISON	INVESTMENT	SPECULATION
Meaning	The purchase of an asset with the hope of getting returns is called investment.	Speculation is an act of conducting a risky financial transaction, in the hope of substantial profit.
Basis for decision	Fundamental factors, i.e. performance of the company.	Hearsay, technical charts and market psychology.
Time horizon	Long term	Short term
Risk involved	Moderate risk	High risk
Intent to profit	Changes in value	Changes in prices
Expected rate of return	Modest rate of return	High rate of return
Funds	An investor uses his own funds.	A speculator uses borrowed funds.
Income	Stable	Uncertain and Erratic
Behavior of participants	Conservative and Cautious	Daring and Careless

INVESTMENT VS. GAMBLING

BASIC FOR COMPARISION	INVESTMENT	GAMBLING
PlanningHorizon	Longer Planning Horizon	Short Planning Horizon
Basis for Decisions	Scientific Analysis of Intrinsic worth of the security	Based on tips and rumors
Nature	Planned activity	Unplanned activity
Risk	Commercial Risk	Artificial Risk
Return Expectation	Risk-return trade-off determines return	Negative returns are expected
Motive	Safety of principal and stability of returns	Entertainment while earning

RISK AND ITS TYPES

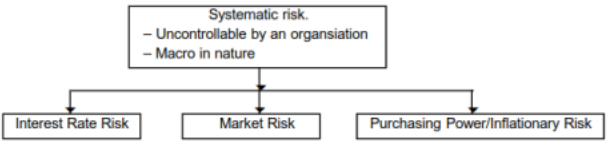


A. Systematic Risk

Those forces that are uncontrollable, external and broad in their effect are called sources of systematic risk. Systematic risk is due to the influence of external factors on an organization. Such factors are normally uncontrollable from an organization's point of view. Systematic risk is a macro in nature as it affects a large number of

In this way economic, political and sociological changes are sources of systematic risk. For example, if an economy moves into recession or if there is a political upheaval, it will cause the prices of nearly all the securities, whether bond or equity to decline. Firms with high systematic risk tend to be those whose sales, profits and stock prices follow the general trend in the level of economic or stock market activity. These may include

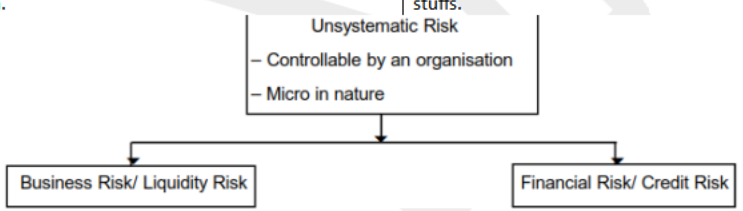
organizations operating under a similar stream or same domain. It cannot be planned by the organization.	companies that deal in basic industrial goods like automobile manufactures.



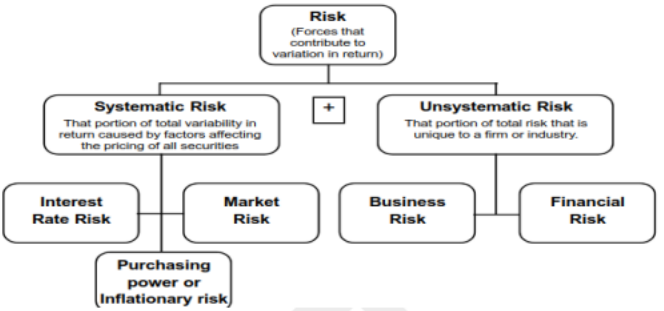
1. Interest rate risk Interest-rate risk is the variation in the single period rates of return caused by the fluctuations in the market interest rate. It particularly affects debt securities as they carry the fixed rate of interest.	**2. Market risk** Market risk is associated with consistent fluctuations seen in the trading price of any particular shares or securities That is, it arises due to rise or fall in the trading price of listed shares or securities in the stock market.
3. Purchasing power or inflationary risk Purchasing power risk is also known as inflation risk. It is so, since it emanates (originates) from the fact that it affects a purchasing power adversely. It is not desirable to invest in securities during an inflationary period.	

B. Unsystematic Risk

Unsystematic risk is due to the influence of internal factors prevailing within an organization. Such factors are controllable, internal factors which are peculiar to a particular industry or firm/(s). It may be because of change in management, labour strikes which will impact the returns of only specific firms which are facing the problem.	It is a micro in nature as it affects only a particular organization. It can be planned, so that necessary actions can be taken by the organization to mitigate (reduce the effect of) the risk. Higher proportion of unsystematic risk is found in firms producing non durable consumer goods. Examples include suppliers of telephone, power and food stuffs.



1. Business or liquidity risk Business risk is also known as liquidity risk. It is so, since it emanates (originates) from the sale and purchase of securities affected by business cycles, technological changes, etc.	**2. Financial or credit risk** Financial risk is also known as credit risk. It arises due to change in the capital structure of the organization. The capital structure mainly comprises of three ways by which funds are sourced for the projects.



RETURN OF THE SECURITY

Return is the primary motivating force that drives investment. It represents the reward for undertaking investment. One of the important property of a security that the investors are concerned with is the return that can be expected from holding a security. Earning a return on an investment requires a passage of time. After some time has passed, one may make an objective measurement of the rate of an investment return that has been achieved.

The word "return" can be misleading, since no single measure of return can answer all possible questions regarding results. The reasons lie in the fact that taxes, inflation, commissions, and the timing of cash flows all play major roles in "correct" calculation of returns.

The return of an investment consists of two components:

Current Return- The first component that comes to mind when one is thinking about return is the periodic cash flow (income), such as dividend or interest, generated by the investment. Current return is measured as the periodic income in relation to the beginning price of the investment.

Capital Return – The second component of return is reflected in the price change called the capital return – it is simply the price appreciation (or depreciation) divided by the beginning price of the asset. For assets like equity stocks, the capital return predominates.

Thus, the total return for any security is defined as:
Total return = Current return + Capital return
The current return can be zero or positive, whereas the capital return can be negative, zero or positive.

MEASURING RETURN

Total return, or holding period return (r), is perhaps the best unique, rational and comparable measures of results, no matter what type of asset is under discussion. Holding period return is the total return received from holding an asset or portfolio of assets over a period of time, generally expressed as a percentage. Holding period return is calculated on the basis of total returns from the asset or portfolio – i.e. income plus changes in value. It is particularly useful for comparing returns between investments held for different period of time.

Holding Period Return (HPR) and annualized HPR for returns over multiple years can be calculated as follows:
Holding Period Return = Income + (End of Period Value – Initial Value) / Initial Value

Annualized HPR = [[(Income + (End of Period Value – Initial Value)] / Initial Value+ 1]$^{1/n}$ – 1, where n = number of years.

Returns for regular time periods such as quarters or years can be converted to a holding period return through the following formula:

$(1 + HPR) = (1 + r_1) \times (1 + r_2) \times (1 + r_3) \times (1 + r_n)$ where r_1, r_2, r_3 and r_n are periodic returns.

Thus,

$$HPR = [(1 + r_1) \times (1 + r_2) \times \ldots (1 + r_n)] - 1$$

r = % return per period

n = number of periods

APPROACHES TO VALUATION OF SECURITY

(1) The Fundamental Approach: The Fundamental approach suggests that every stock has an intrinsic value.
Estimate of intrinsic worth of a stock is made by considering the earnings potential of firm which depends upon investment environment and factors relating to specific industry, competitiveness, quality of management, operational efficiency, profitability, capital structure and dividend policy. The earning potential is converted into the present value of the future stream of income from that stock discounted at an appropriate risk related rate of interest. Security analysis is done to compare the current market value of particular security with the intrinsic or theoretical value. Decisions about buying and selling an individual security depends upon the comparison. If the intrinsic value is more than the market value, the fundamentalists recommend buying of the security and vice versa.

(2) Technical Approach: The technical analyst endeavours to predict future price levels of stocks by examining one or many series of past data from the market itself. The basic assumption of this approach is that history tends to repeat itself and the price of a stock depends on supply and demand in the market place and has little relationship with its intrinsic value. All financial data and market information of a given security is reflected in the market price of a security. Therefore, an attempt is made through charts to identify price movement patterns which predict future movement of the security. The main tools used by technical analysis are:
(1) The Dow Jones theory which asserts that stock prices demonstrate a pattern over four to five years and these patterns are mirrored by indices of stock prices. The theory employs two Dow Jones averages – the industrial average and the transportation average. If industrial average is rising, then transport average should also rise. Simultaneous price movement is the main prediction which may show bullish as well as bearish results. Chart Patterns are used along with Dow Jones Theory to predict the market movements.

(3) Efficient Capital Market Theory : The theory is popularly known as "Efficient Capital Market Hypothesis: (ECMH). The advocates of this theory contend that securities markets are perfect, or at least not too imperfect. The theory states that it is impossible to beat the market because stock market efficiency causes existing share prices to always incorporate and reflect all relevant information. It is based on the assumption that in efficient capital markets prices of traded securities always fully reflect all publicly available information concerning those securities. Market efficiency was development in 1970 by the economist Eugene Fama, whose theory of efficient market hyphothesis stated that it is not possible for an investor to outperform the market because all available information built in to all stock prices. For market efficiency, there are three essential conditions; (i) all available information is cost free to all market participants; (ii) no transaction costs; and (iii) all investors similarly view the implications of available information on current prices and distribution of future prices of each security.

FUNDAMENTAL APPROACH TO VALUATION

The investor seeks to arrive at the real value or the intrinsic value of a security through the process of security analysis. This value is arrived at by using a number of tools of financial analysis and it approximates the level at which the demand and supply of stock of the security would be in equilibrium leading to stability of prices. Price of the security below and above this level would tend to be unstable.

Money has a "time value." the powerful tools of compounding and discounting can help us build a theoretical framework of valuation of bonds and stocks. Bond values are reasonably easy to determine. As long as a bond is not expected to go into default, the value of the bond is made up of present values of annual interest payments plus the principal amount to be recovered at maturity or sooner. Valuation of equity is different because earnings and dividend streams are uncertain as to timing of receipt and the amount of dividend. The value of an equity stock at any moment in time can be thought of as the discounted value of a series of uncertain future dividends that may grow or decline at varying rates over time.

$$P_0 = \frac{D_1}{(1+r)} + \frac{P_1}{(1+r)}$$

where:

D_1 = dividend to be received at the end of year 1

r = investor's required rate of return or discount rate

P_1 = selling price at the end of year 1

P_0 = selling price today

Now let us look at a multiple year holding period. In most cases dividends will grow from year to year. We can similarly add the present value of all dividends to be received over the holding period and the present value of the selling price of the stock to the end of the holding period to arrive at the present value of the stock.

To simplify, let us assume that dividends will grow at the constant rate into the indefinite future. Under this assumption the value of a share is:

$$P_0 = \frac{D(1+g)}{(1+r)^1} + \frac{D(1+g)^2}{(1+r)^2} + \frac{D(1+g)^3}{(1+r)^3} + \ldots\ldots\ldots\ldots \frac{D(1+g)^n}{(1+r)^n}$$

where n approaches infinity, this equation reduces simply to

$$P_0 = \frac{D_1}{r-g}$$

This model states that the price of a share should be equal to next year's expected dividend divided by the difference between the appropriate discount rate for the share and its expected long term growth rate. Alternatively, this model can be stated in terms of the rate of return on an equity share as

$$r = (D_1/P_0) + g$$

Analysis of the economy

Performance of a company is intimately related to the overall economic environment of the country because demand for products and services of the company would under normal circumstances be directly related to growth of the country's economy. If the country has an improving GDP growth rate, controlled inflation and increasing investment activity then chances are that the valuation of securities shall be liberal. The capital market is said to be in a bullish phase with share values shooting up across the board.	As the economy is growing, the analyst expects almost every industry to do well. On the other hand, if the GDP growth rate slackens, inflation is out of control and investment activity is stagnant or declining, the investor or the analyst will expect the performance of industries to slow down. Under such circumstances, valuation of securities tends to be conservative. The capital market enters a bearish phase and share values decline across to board.

Industry Level Analysis

Industry level analysis focuses on a particular industry rather than on the broader economy. In this analysis, the analyst has to look for the composition of the industry, its criticality vis-à-vis the national economy, its position along the industrial life cycle, entry and exit barriers. All these factors have a bearing upon the performance of the company. Industry is a combination or group of units whose end products and services are similar. Having a common market, the participants in the industry group face similar problems and opportunities. To the extent that an industry loses or gains from certain happenings, the performance of the participants is sure to be similarly impacted.	Industry level analysis focuses on a particular industry rather than on the broader economy. In this analysis, the analyst has to look for the composition of the industry, its criticality vis-à-vis the national economy, its position along the industrial life cycle, entry and exit barriers. All these factors have a bearing upon the performance of the company. Industry is a combination or group of units whose end products and services are similar. Having a common market, the participants in the industry group face similar problems and opportunities. To the extent that an industry loses or gains from certain happenings, the performance of the participants is sure to be similarly impacted.
At the end of the pioneering stage, selected leading companies remain in the industry. In the expansion stage of the growth cycle the demand for the products increases but at a lower rate. There is less volatility in prices and production. Capital is easily available in plenty for these units. Due to retention of profits, internal accruals increase. At the stagnation stage, the growth rate initially slows down, then stagnates and ultimately turns negative. There is no product innovation. External capital is hard to come by. Even the internal capital takes flight. This stage of the industry is most valuable during times of slow down in national economy.	

Company Analysis

Armed with the economic and industry forecasts, the analyst looks at the company specific information. Company information is generated internally and	There are traditional and modern techniques of company analysis. Among the traditional techniques are forecasting expected dividends and earnings using price-

externally. The principle source of internal information about a company is its financial statements. Quarterly and annual reports including the income statement, the balance sheet and cash flows must be screened to assure that the statements are correct, complete, consistent, and comparable. Many popular and widely circulated sources of information about the companies emanate from outside, or external sources. These sources provide supplements to company-generated information by overcoming some of its bias, such as public pronouncements by its officers. External information sources also provide certain kinds of information not found in the materials made available by companies themselves	earning ratios which help us to determine whether a stock is fairly valued at a point in time. Such approaches allow us to evaluate an equity share for a short term horizon. Moreover, an approach combining the dividend discount model (with variable growth rates) and the concept of systematic risk can also be helpful in evaluating a stock for a longer term holding period. Among the modern methods are regression analysis, and the related tools of trend and correlation analysis, decision tree analysis and simulation. Modern methods have strengths of the tradition methods while attempting to overcoming their shortcomings.

TECHNICAL ANALYSIS

In the fundamental analysis, share prices are predicted on the basis of a three stage analysis. After the analysis has been completed, the deciding factors that emerge are the financial performance indicators like earnings and dividends of the company. The fundamentalist makes a judgement of the equity share value with a risk return framework based upon the earning power and the economic environment. However, in actual practice, it often happens that a share having sound fundamentals refuses to rise in value and vice versa. We would now examine an alternative approach to predict share price behavior. This approach is called the Technical Analysis. It is used in conjunction with fundamental analysis and not as its substitute.	Technical analysis assumes that market prices of securities are determined by the demand-supply equilibrium. The shifts in this equilibrium give rise to certain patterns of price and volume of trading which have a tendency to repeat themselves over a period of time. An analyst who is familiar with these patterns can predict the future behaviour of stock prices by noticing the formation of these patterns. It is a science of predicting the share price movements from the past data about share price movements. These predictions are indicative and do not provide irrefutable declarations about future trends. In this type of analysis, no weightage is given to intangible items like investors' attitude, market sentiment, optimism, pessimism etc.

Technical analysis is based on the following assumptions:

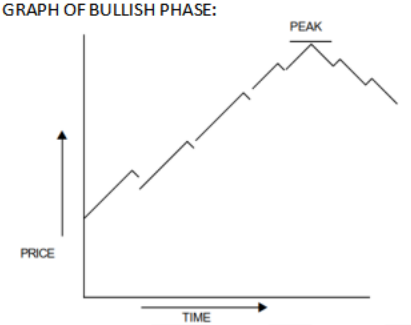
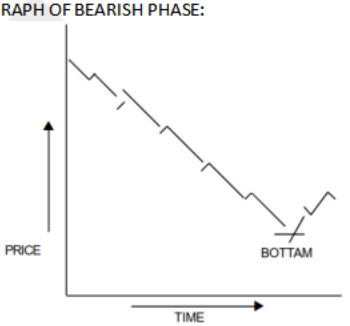
– The inter-play of demand and supply determines the market value of shares.	– Supply and demand are governed by various factors – both rational and irrational.	– Stock values tend to move in trends that persist for a reasonable time.	– These trends change as a result of change in demand-supply equilibrium.
– Shifts in demand and supply can be detected in charts of market action.	– Chart patterns tend to repeat themselves and this repetition can be used to forecast future price movements.	– Markets behave in a random style.	– Markets discount every future event that has a bearing upon share values.

DOW JONES THEORY

It is one of the earliest theories of technical analysis. The theory was formulated by Charles H. Dow of Dow Jones & Co. who was the first editor of Wall street Journal of USA. According to this theory, share prices demonstrate a pattern over four to five years. These patterns can be divided into three distinct cyclical trends- primary, secondary or intermediate and minor trends.

Primary Trends

The primary trend lasts from one to three years. Over this period, the markets exhibit definite upward or downward movement which is punctuated by shorter spans of trend reversal in the opposite directions. The trend reversal is called the secondary trend. Primary trend is indicative of the overall pattern of movement.	In Dow theory, the primary trend is the major trend of the market, which makes it the most important one to determine. This is because the overriding trend is the one that affects the movements in stock prices. The primary trend will also impact the secondary and minor trends within the market. If the primary trend is upward, it is called a bullish phase of the market. If the primary trend is downwards, it

GRAPH OF BULLISH PHASE:	GRAPH OF BEARISH PHASE:
	
In a bullish phase, after each peak, there is a fall but the subsequent rise is higher than the previous one. The prices reach higher level with each rise. After the peak has been reached, the primary trend now turns to a bearish phase.	In a bearish phase, the overall trend is that of decline in share values. After each fall, there is slight rise but the subsequent fall is even sharper.

Secondary Trends

In Dow theory, a primary trend is the main direction in which the market is moving. Conversely, a secondary trend moves in the opposite direction of the primary trend, or as a correction to the primary trend. For example, an upward primary trend will be composed of secondary downward trends. This is the movement from a consecutively higher high to a consecutively lower high.	In a primary downward trend the secondary trend will be an upward move, or a rally. This is the movement from a consecutively lower low to a consecutively higher low. In general, a secondary, or intermediate, trend typically lasts between three weeks and three months, while the retracement of the secondary trend generally ranges between one-third to two-thirds of the primary trend's movement.

Minor Trend

The last of the three trend types in Dow theory is the minor trend, which is defined as a market movement lasting less than three weeks. Minor trends are changes occurring every day within a narrow range. These trends are not decisive of any major movement. The minor trend is generally the corrective moves within a secondary move, or those moves that go against the direction of the secondary trend.

The two variables concerning groups of securities or individual securities that technicians watch are the behaviour of prices and volume of trading contributing to and influenced by changing prices. Technical analysts use two major types of tools for their analysis. These are the charts and the price indicators.

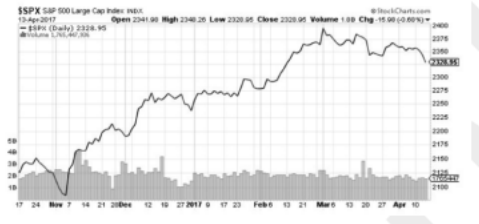
1. TECHNICAL CHARTS

These are the plottings of prices and trading volumes on charts. The purpose of reading and analysing these charts is to determine the demand-supply equation at various levels and thus to predict the direction and extent of future movement of the prices.	The charts are not infallible but because of their repeated accuracy, they have come to be accepted. In all the charts, a correlation exists between market price action and the volume of trading when the price increase is accompanied by a surge in trading volumes, it is a sure sign of strength. On the other hand, when the decline in share prices is accompanied by increased volumes, it is indicative of beginning of bearish trend.

There are four ways to construct a chart. These are the Line Chart, Bar Chart, Candle Stick Chart and Point & Figure Chart.

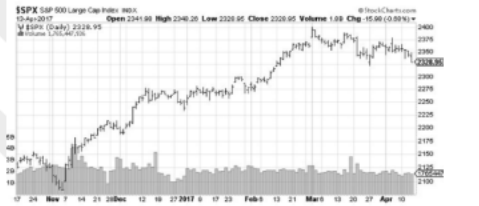
Line Chart

A Line chart is a style of chart that is created by connecting a series of data points together with a line. This is the most basic type of chart used in finance and it is generally created by connecting a series of past prices together with a line. Line charts are the most basic type of chart because it represents only the closing prices over a set period. The line is formed by connecting the closing prices for each period over the timeframe and the intra period highs and lows of stock prices are ignored. This type of chart is useful for making broad analysis over longer period of time.



Bar Chart

Bar charts expand upon the line chart by adding the open, high, low, and close – or the daily price range, in other words – to the mix. The chart is made up of a series of vertical lines that represent the price range for a given period with a horizontal dash on each side that represents the open and closing prices. The opening price is the horizontal dash on the left side of the horizontal line and the closing price is located on the right side of the line. If the opening price is lower than the closing price, the line is often shaded black to represent a rising period. The opposite is true for a falling period, which is represented by a red shade.

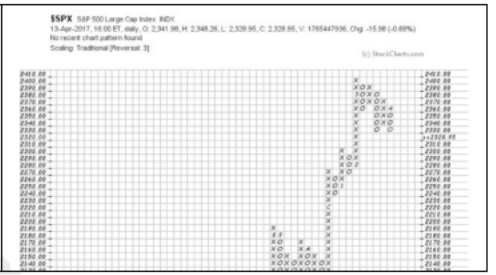


Candlestick Charts

Like a bar chart, candlestick charts have a thin vertical line showing the price range for a given period that is shaded different colors based on whether the stock ended higher or lower. The difference is a wider bar or rectangle that represents the difference between the opening and closing prices. Falling periods will typically have a red or black candlestick body, while rising periods will have a white or clear candlestick body. Days where the open and closing prices are the same will not have any wide body or rectangle at all.

Point and Figure Charts

In this type of charts, emphasis is laid on charting price changes only and time and volume elements are ignored. The first step in drawing a figure and point chart is to put a X in the appropriate price column of a graph. Successive price increases are added vertically upwards in the same column as long as the uptrend continues. Once the price drops, the figures are moved to another column and Os are entered in downward series till the downward trend is reversed.



Patterns created by charts

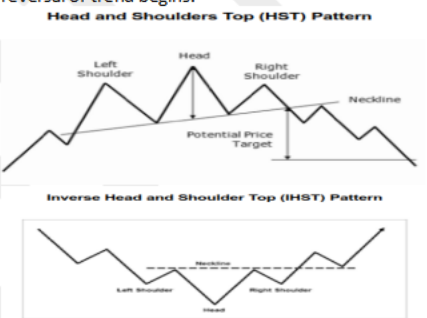
Once the charts have been constructed, analysts seek to locate certain indicators/patterns in the charts. The common patterns are being described below:

1. Support and resistance levels

A support level indicates the bottom which the share values are unable to pierce. After rising time and again, the share price dips to a particular level and then starts rising again. At this level, the share gets buying support. A resistance level is that level after which the share price refuses to move up in repeated efforts. At this level, selling emerges. Support and resistance levels are valid for a particular time period. Once these levels are breached, beginning of a new bull or bear phase is signaled.

2. Heads and Shoulders configuration

In this type of chart configuration, a formation similar to heads and shoulders is created wherein the neckline acts as the resistance or support line. As the head and shoulder top is formed, a resistance level appears at the top of the head. The volumes start declining near the head top and reversal sets in. The volumes become heavy again and shrink near the neckline where another reversal of trend begins.

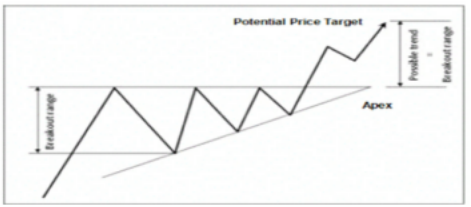


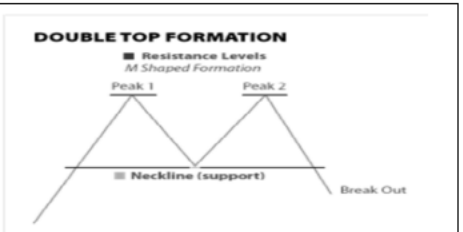
3. Triangle or coil formation

This pattern represents a pattern of uncertainty. Hence it is difficult to predict which way the price will break out.

4. Double Top Formation

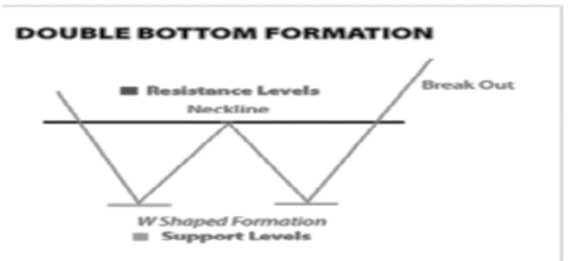
It represents a bearish development, signaling that the price is expected to fall.





5. Double bottom formation

It represents a bullish development, signaling that the price is expected to rise.



Limitations of charts

Interpretation of charts is prone to subjective analysis. This factor is a major cause of often contradictory analysis being derived from the same charts. Also the changes in charts are quite frequent in the short term perspective leading to a host of buy and sell recommendations which are not in the best interest of the investor. Another disadvantage is that decisions are made on the basis of chart alone and other factors are ignored.

2. TECHNICAL INDICATORS

Apart from the charts, technical analysts use a number of indicators generated from prices of stocks to finalise their recommendations. These indicators are often used in conjunction with charts. Some of the important indicators are the Advance Decline Ratio, the Market Breadth Index and Moving Averages.

(a) Advance-Decline Ratio	**(b) Market Breadth Index**
It is the ratio of the number of stocks that increase to the number of stocks that have declined. If the ratio is more than one, the trend is assumed to be bullish. If the ratio starts declining, a change of trend is signaled.	This index is a variation of the Advance-Decline Ratio. This index is computed by taking the difference between the number of stocks rising and the number of stocks falling. If during a month, 400 out of 1000 stocks in the market have risen and 300 have declined while 300 have remained unchanged, then market breadth would be calculated as = 2(400–300)/300. The figure of each time period is added to the previous period. If market breadth is increasing along with rise in stock indices, it confirms the bullish trend and vice Versa.

(c) Moving Averages

A moving average is the average of share values of a set of consecutive number of days. If we have to calculate 50 days moving average, we calculate the average for days 1–50. Then on day 51, we add the value of day 51 and deduct the value of day 1 and so on . Similarly, moving averages for 100 days, 200 days and 300 days can be

calculated. Moving averages provide a benchmark for future valuation. If share value is below the moving average, it has scope for appreciation. If the value is above the moving average, the upside is limited in the near term.

ALTERNATIVE APPROACHES TO VALUATION

1. Random walk theory

In the Fundamental Analysis, factors such as economic influences, industry factors and particular company information are considered to form a judgement on share value. On the other hand, price and volume information is analysed in Technical Analysis to predict the future course of share values. There is another approach which negates both Fundamental and Technical analysis. This approach has been based upon the research aimed at testing whether successive price changes are independent in different forms of market efficiency.	According to the theory, share prices will rise and fall on the whims and fancies of manipulative individuals. As such, the movement in share values is absolutely random and there is no need to study the trends and movements prior to making investment decisions. No sure prediction can be made for further movement or trend of share prices based on the given prices as at a particular moment. The Random Walk Theory is inconsistent with technical analysis. Whereas, it states that successive price changes are independent, the technicians claim that they are dependent.

But believing in random walk does not mean that one should not believe in analysing stocks . The random walk hypothesis is entirely consistent with an upward and downward movement in price, as the hypothesis supports fundamental analysis and certainly does not attack it. One of the advantages of this theory is that one is not bothered about good or bad judgement as shares are picked up without preference or evaluation. It is easier for believers in this theory to invest with confidence. The second advantage is that there is no risk of being ill informed while making a choice as no information is sought or concealed.Random walk theory implies that short term price changes i.e day to day or week to week changes are random but it does not say anything about trends in the long run or how price levels are determined.

2. Efficient – Market Theory

Efficient Market Hypothesis accords supremacy to market forces. A market is treated as efficient when all known information is immediately discounted by all investors and reflected in share prices. In such a situation, the only price changes that occur are those resulting from new information. Since new information is generated on a random basis, the subsequent price changes also happen on a random basis

Major requirements for an efficient securities market are:

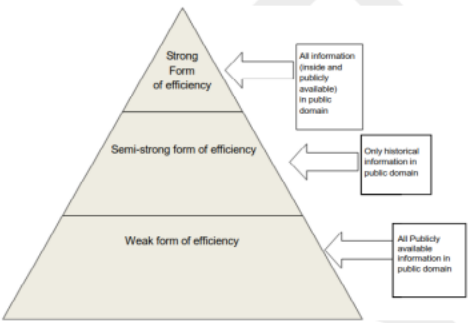
– Prices must be efficient so that new inventions and better products will cause a firms' securities prices to rise and motivate investors to buy the stocks.	– Information must be discussed freely and quickly across the nations so that all investors can react to the new information.	– Transaction costs such as brokerage on sale and purchase of securities are ignored.
– Taxes are assumed to have no noticeable effect on investment policy.	– Every investor has similar access to investible funds at the same terms and conditions.	– Investors are rational and make investments in the securities providing maximum yield.

Research studies devoted to test the random walk theory on Efficient Capital Market Hypothesis (ECMH) are put into three categories i.e.

(a) The Strong Form of Efficiency: This test is concerned with whether two sets of individuals – one having inside information about the company and the other uninformed could generate random effect in price movement. The strong form holds that the prices reflect all information that is known. It contemplates that even the corporate officials cannot benefit from the inside	**(b) Semi-strong form of Efficiency:** This hypothesis holds that security prices adjust rapidly to all publicly available information such as functional statements and reports and investment advisory reports, etc. All publicly available information, whether good or bad is fully reflected in security prices. The buyers and sellers will raise the price as soon as a favourable price of

information of the company. The market is not only efficient but also perfect. The findings are that very few and negligible people are in such a privileged position to have inside information and may make above-average gains but they do not affect the normal functioning of the market.	information is made available to the public; opposite will happen IN case of unfavourable piece of information. The reaction is almost instantaneous, thus, printing to the greater efficiency of securities market.

(c) The Weak Form theory: This theory is an extension of the random walk theory. According to it, the current stock values fully reflect all the historical information. If this form is assumed to be correct, then both Fundamental and Technical Analysis lose their relevance. Study of the historical sequence of prices, can neither assist the investment analysts or investors to abnormally enhance their investment return nor improve their ability to select stocks. It means that knowledge of past patterns of stock prices does not aid investors to make a better choice. The theory states that stock prices exhibit a random behaviour. In this way, if the markets are truly efficient, then the fundamentalist would be successful only when (1) he has inside information, or (2) he has superior ability to analyse publicly available information and gain insight into the future of the company. The empirical evidence of the random walk hypothesis rests primarily on statistical tests, such as runs test, correlation analysis and filter test. The results have been almost unanimously in support of the random walk hypothesis, the weak form of efficient market hypothesis.



Lesson 9 Portfolio Management

Meaning, Objectives; Portfolio Theory	Traditional Approach; Fixed and Variable Income Securities	Markowitz Portfolio Theory	Modern Approach - CAPM Model
Sharpe Single & Multi Index Model	Arbitrage Pricing Theory (APT)	Risk Adjusted Measure of Performance	Economic Value Added

PORTFOLIO MANAGEMENT

The Investment process consists of two tasks. The first is security analysis which focuses on assessing the risk and return characteristics of the available investment alternatives. The second task is portfolio selection which involves choosing the best possible portfolio from the set of feasible portfolios. Individual securities have risk-return characteristics of their own. In any case, given an estimate of return, the investor is always concerned about the probable downside price expectation or the risk. Portfolio, or combination of securities, helps in spreading this risk over many securities. The investors hope that if they hold different assets, even if one goes bad, the others will provide some protection from an extreme loss.

Portfolio management thus refers to managing efficiently the investment in the securities by diversifying the investments across industry lines or market types. The reasons are related to the inherent differences in the debt and equity markets, coupled with a notion that investment in companies in dissimilar industries would most likely do much better than the companies within the same industry. However, there is disagreement over the "right" kind of diversification and the "right" reason. In the following paragraphs a formal, advanced notion of diversification conceived by Harry Markowitz will be introduced. Portfolio theory was originally proposed by Harry Markowitz in 1950s, and was the first formal attempt to quantify the risk of a portfolio and develop a methodology for determining the optimal portfolio.

Markowitz assumed that investor attitudes towards portfolio depend exclusively upon (1) expected return and risk, and (2) quantification of risk. And risk is, by proxy, the statistical notion of variance, or standard deviation of return. Prior to the development of Portfolio theory, investors dealt with the concepts of return and risk somewhat loosely. Intuitively smart investors knew the benefit of diversification which is reflected in the traditional proverb "Do not put all your eggs in one basket". Harry Markowitz was the first person to show quantitatively why and how diversification reduces risk. In this chapter, we will discuss how investors can construct the best possible portfolios with the help of efficient diversification. It is based largely on the pioneering work of Harry Markowitz and further insights that evolved from his work.

PORTFOLIO ANALYSIS

While discussing Security Analysis, we had restricted our discussion to the behavior of value of individual equity securities. Portfolio Analysis seeks to analyze the pattern of returns emanating from a portfolio of securities, i.e. a number of securities that absorb a proportion of total amount of investment. Although holding two securities is probably less risky than a portfolio composed exclusively of less risky asset. How? This is done by finding two securities each of which tends to perform well whenever the other does poorly.

This makes a reasonable return for the portfolio more certain as a whole, even if one of its components happens to be quite risky. For example, if you invest in two stocks, say, one in company engaged in sugar production and other, in a company engaged in cement production, you would be always able to get a reasonable return as cement is a highly cyclical industry and sugar is non cyclical. When cement industry will rise, the sugar industry will just perform below average but when cement industry will fall sugar industry will outperform.

Risk in investment situation

Risk means that the return on investment would be less than the expected rate. Risk is a combination of possibilities because of which actual returns can be different or greatly different from expected returns. Thus risk can be high or low. In case we want to quantify how high or how low the risk in investment is going to be, we have to intimate the probability of various outcomes and their deviation from expected outcome. The risk involved in individual securities can be measured by standard deviation or variance. When two securities are combined, we need to consider their interactive risk, or covariance. If the rates of return of two securities move together, we say their interactive risk or covariance is positive. If rates of return are independent, covariance is zero. Inverse movement results in covariance that is negative.

the random variable pair (X, Y) can take on the values (xi, yi) for i = 1, ... , n, with equal probabilities 1/n, then the covariance can be equivalently written in terms of the means E (X) and E (Y) as:

$$COV_{xy} = \frac{1}{n}\sum_{i=1}^{n}[x_i - E(x)(y_i - E(y)]$$

Where the probabilities are equal and

COV_{xy} = covariance between x and y

x_i = return on security x

y_i = return on security y

E(X) = expected return to security x

E(Y) = expected return to security y

n = number of observations

Coefficient of Correlation

Covariance and correlation are conceptually analogous in the sense that both of them reflect the degree of comovements between two variables. The coefficient of correlation is a measure designed to indicate the similarity or dissimilarity in the behavior of two variables. We define it as :

$$Cor_{(xy)} = r_{xy} = \frac{cov_{(xy)}}{\sigma x \sigma y}$$

where:

r_{xy} = coefficient of correlation of x and y

COV_{xy} = covariance between x and y

σ_x = standard deviation of x

σ_y = standard deviation of y

The coefficient of correlation is, essentially, the covariance taken not as an absolute value but relative to the standard deviations of the individual securities (variables). It indicates, in effect, how much x and y vary together as a proportion of their combined individual variations, measured by x y In our example, the coefficient of correlation is : rxy = (–) 8/[(2)(4)] = -8/8 = -1. If the coefficient of correlation between two securities is -1.0, then a perfect negative correlation exists (rxy cannot be less than -1.0). If the correlation coefficient is zero, then returns are said to be independent of one another. If the returns on two securities are perfectly correlated, the correlation coefficient will be +1.0, and perfect positive correlation is said to exist (rxy cannot exceed +1.0). Thus, correlation between two securities depends upon (1) the covariance between the two securities, and (2) the standard deviation of each security.

Calculation of Portfolio Risk

We have shown the effect of diversification on reducing risk. The key was not that two stocks provided twice as much diversification as one, but that by investing in securities with negative or low covariance among themselves, we could reduce the risk. Markowitz's efficient diversification involves combining securities with less than positive correlation in order to reduce risk in the

In considering a two-security portfolio, portfolio risk can be defined more formally now as:

portfolio without sacrificing any of the portfolio's return. In general, the lower the correlation of securities in the portfolio, the less risky the portfolio will be. This is true regardless of how risky the stocks of the portfolio are when analyzed in isolation. It is not enough to invest in many securities; it is necessary to have the right securities.	$\sigma_p = \sqrt{W_x^2.\sigma_x^2 + W_y^2.\sigma_y^2 + 2W_xW_y(r_{xy}\sigma_x\sigma_y)}$ Eq.9.1 Where: σ_p = portfolio standard deviation w_x = percentage weightage of total portfolio value in stock X w_y = percentage weightage of total portfolio value in stock Y σ_x = standard deviation of stock X σ_y = standard deviation of stock Y r_{xy} = correlation coefficient of X and Y

MARKOWITZ MODEL

Dr. Harry M. Markowitz is credited with developing the first modern portfolio analysis model. It provides a theoretical framework for analysis of risk-return choices. The concept of efficient portfolios has been enunciated in this model A portfolio is efficient when it yields highest return for a particular level of risk or minimizes risk for a specified level of expected return.

The Markowitz model makes the following assumptions regarding investor behaviour:

– Investors consider each investment alternative as being represented by a probability distribution of expected returns over some holding period.	– Investors maximize one period expected utility and possess utility curve, which demonstrates diminishing marginal utility of wealth.	– Individuals estimate risk on the basis of variability of expected returns.
– Investors base decisions solely on expected return and variance of returns only.	– At a given risk level, higher returns are preferred to lower returns. Similarly for a given level of expected returns, investors prefer less risk to more risk.	

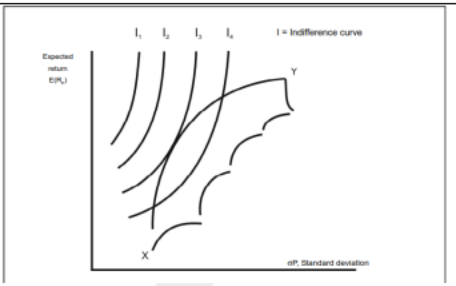
Simple Markowitz Portfolio Optimization

It is possible to develop a fairly simply decision rule for selecting an optimal portfolio for an investor that can take both risk and return into account. This is called a risk-adjusted return. For simplicity, it can be termed the utility of the portfolio for the investor in question. Utility is the expected return of the portfolio minus a risk penalty. This risk penalty depends on portfolio risk and the investor's risk tolerance.

The Risk Penalty

The more risk one must bear, the more undesirable is an additional unit of risk. Theoretically, and as a computational convenience, it can be assumed that twice the risk is four times as undesirable. The risk penalty is as follows: **Risk penalty = Risk squared/Risk tolerance**	Risk squared is the variance of return of the portfolio. Risk tolerance is a number from zero through 100. The size of the risk tolerance number reflects the investor's willingness to bear more risk for more return. Low (high) tolerance indicates low (high) willingness. Risk penalty is less as tolerance is increased.

Standard Deviation

In the above graphic presentation, arc XY is the efficient frontier. All points on this arc provide a superior combination of risk and return to other combinations with the shaded area, which represent attemptable portfolios. Each portfolio has its own combination of risk and return. Investor's final choice out of the range depends on his taste.		The investor has four indifference curves. In I1 to I4 , I1 provides greatest satisfaction but since the efficient range touches only I3 is the maximum that can be achieved.

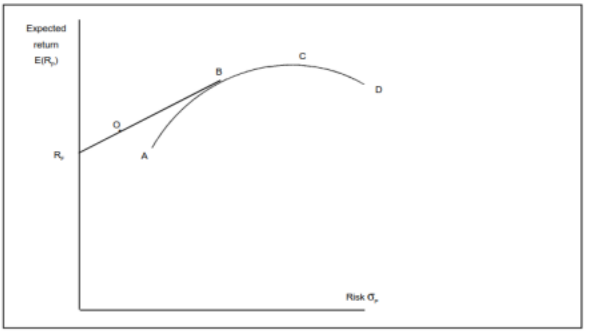
Limitation of Markowitz Model

The Markowitz approach requires several inputs for portfolio analysis. These are expected return of the securities, variances of their return and co variances. Calculation of efficient portfolios is easy when the number of securities in the portfolio is two or three. As the number of securities in the portfolio increases, which indeed is the case in real life situations, the amount of calculations required to be done becomes enormous. Further, in the real world, portfolio analysts do not keep track of correlations between stocks of diverse industries.	As such, correlating a security to a common index is much more convenient than correlating to a large number of individuals securities. Secondly, the assumption that correlation in the values of two securities depends on the characteristics of these two securities alone is not valid. In fact movement in value of securities is affected by a variety of other factors. A stock index is more representative benchmark that incorporates the general economic conditions more authentically.

CAPITAL ASSET PRICING MODEL

The CAPM developed by William F Sharpe, John Linter and Jan Mossin establishes a linear relationship between the required rate of return of a security and its beta. Beta, as we know is the non-diversifiable risk in a portfolio. A portfolio's standard deviation is a good indicator of its risk. Thus if adding a stock to a portfolio increases its standard deviation, the stock adds to the risk of the portfolio. This risk is the un-diversified risk that can not be eliminated. Beta measures the relative risk associated with any individual portfolio as measured in relation to the risk of the market portfolio. $\text{Beta} = \frac{\text{Non-diversifiable risk of asset or portfolio}}{\text{Risk of market portfolio}}$	Thus Beta is a measure of the non-diversifiable or systematic risk of an asset relative to that of the market portfolio. A beta of 1 indicates an asset of average risk. If beta is more than 1, then the stock is riskier than the market. On the other hand, if beta is less than one, market is riskier. Recall that portfolio theory implied that each investor faced an efficient frontier. In general, the efficient frontier will differ among investors because of differences in expectations. When we introduce riskless borrowing and lending there are some significant changes involved. Lending is best thought of as an investment in a riskless security. This security might be a savings account, Treasury bills, or even high-grade commercial paper. Borrowing can be thought of as the use of margin. Borrowing and lending options transform the efficient frontier into a straight line. See Figure below for the standard efficient frontier ABCD. Assume that an investor can lend at the rate of RF = .05, which represents the rate on Treasury bills.

Frontier with introduction of Lending



Hence the point RF represents a risk-free investment (RF = .05; p = 0). The investor could place all or part of his funds in this riskless asset. If he placed part of his funds in the risk-free asset and part in one of the portfolios of risky securities along the efficient frontier, what would happen? He could generate portfolios along the straight- line segment RF B. Let us examine the properties of a given portfolio along the straight-line segment RF B. Consider point B on the original efficient frontier ABCD where, say, Rp = .10 and p = .06. If we placed one-half of available funds in the riskless asset and one-half in the risky portfolio, B, the resulting combined risk-return measures for the mixed portfolio, O, can be found from Equation A and B:

$$Rp = XR_M + (1 - X)R_F \quad \text{(Equation A)}$$

where:

Rp = expected return on portfolio

X = percentage of funds invested in risky portfolio

(1 – X) = percentage of funds invested in riskless asset

R_M = expected return on risky portfolio

R_F = expected return on riskless asset

and:

$$\sigma_p = X\,\sigma_M \quad \text{(Equation B)}$$

where:

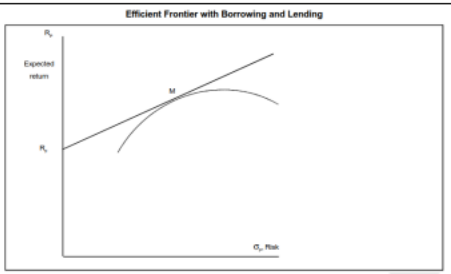
σ_p = expected standard deviation of the portfolio

X = percentage of funds invested in risky portfolio

σ_M = expected standard deviation on risky portfolio

The introduction of borrowing and lending has given us an efficient frontier that is a straight line throughout. In Figure below, we show the new efficient frontier. Point M now represents the optimal combination of risky securities. The existence of this combination simplifies our problem of portfolio selection. The investor need only decide how much to borrow or lend. No other investments or combination of investments available is as efficient as point M. the decision to purchase M is the Investment decision. The decision to buy some riskless asset (lend) or to borrow (leverage the portfolio) is the financing decision.

These conditions give rise to what has been referred to as the separation theorem. The theorem implies that all investors, conservative or aggressive, should hold the same mix of stocks from the efficient set. They should use borrowing or lending to attain their preferred risk class. This conclusion flies in the face of more traditional notions of selection of portfolios for conservative clients and others for investors who are more daring. This analysis suggests that both types of investors should hold identically risky portfolios. Desired risk levels are then achieved through combining portfolio M with lending and borrowing.

	f all investors face similar expectations and the same lending and borrowing rate, they will face a diagram such as that in Figure above and, furthermore, all of th diagrams will be identical. The portfolio of assets held by any investor will be identical to the portfolio of risky assets held by any other investor. If all investors hold the sam risky portfolio, then, in equilibrium, it must be the market portfolio (M). The market portfolio is a portfolio comprised of all risky assets. Each asset will be held in the proportion which the market value of the asset represents to the total market value of all risky assets. This is the key: All investors will hold combinations of only two portfolios, the market portfolio and a riskless security.

The straight line depicted in Figure above is referred to as the Capital Market Line. All investors will end up with portfolios somewhere along the capital market line and all efficient portfolios would lie along the capital market line. However, not all securities or portfolios lie along the capital market line. From the derivation of the efficient frontier we know that all portfolios, except those that are efficient, lie below the capital market line.

Observing the capital market line tells us something about the market price of risk. The equation of the capital market line (connecting the riskless asset with a risky portfolio) is $R_e = R_F + \frac{R_M - R_F}{\sigma_M} \sigma_e$ where the subscript e denotes an efficient portfolio. The term $(R_M - R_F)/$ M can be thought of as the extra return that can be gained by increasing the level of risk (standard deviation) on an efficient portfolio by one unit.	The entire second term on the right side of the equation is thus the market price of risk times the amount of risk in the portfolio. The expression RF is the price of time. That is, it is the price paid for delaying consumption for one period. The expected return on an efficient portfolio is : (Price of time) + (Price of risk) (Amount of risk) Although this equation sets the return on an efficient portfolio, we need to go beyond to deal with returns on nonefficient portfolios or on individual securities.

Security Market Line

For well-diversified portfolios, nonsystematic risk tends to go to zero, and the only relevant risk is systematic risk measured by beta. Since we assume that investors are concerned only with expected return and risk, the only dimensions of a security that need be of concern are expected return and beta.	We have seen that all investments and all portfolios of investments lie along a straight line in the return-to-beta space. To determine this line we need only connect the intercept (beta of zero, or riskless security) and the market portfolio (beta of one and return of RM). These two points identify the straight line shown in Figure below The equation of a straight line is

$Ri = \alpha + b\beta i$

The first point on the line is the riskless asset with a beta of zero, so

$R_f = \alpha + b(0)$

$R_f = \alpha$

The second point on the line is the market portfolio with a beta of 1. Thus,

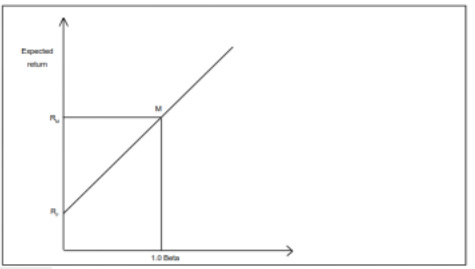
$R_M = \alpha + b(1)$

$R_M - \alpha = b$

$(R_M - R_f) = b$

Combining the two results gives us :

$R_i = R_f + \beta i\,(R_M - R_f)$



This is a key relationship. It is called the Security Market Line. It describes the expected return for all assets and portfolios of assets, efficient or not. The difference between the expected return on any two assets can be related simply to their difference in beta. The higher beta is for any security, the higher must be its expected return. The relationship between beta and expected return is linear.

Recall that the risk of any stock could be divided into systematic and unsystematic risk. Beta is an index of systematic risk. This equation suggests that systematic risk is the only important ingredient in determining expected returns. Unsystematic risk is of no consequence. It is not total variance of returns that affects returns, only that part of the variance in returns that cannot be eliminated by diversification.

The CAPM is based on a list of critical assumptions:

– Investors are risk averse and use the expected rate of return and standard deviation of return as appropriate measures of risk and return for their portfolio.

– Investors make their investments decisions based on a single period horizon which is the immediate next time period.	– Transaction costs are either absent or so low that these can be ignored.	– Assets can be bought and sold in any desired unit.

– The investor is limited by his wealth and the price of the asset only.	– Taxes do not affect the choice of buying assets.	– All individuals assume that they can buy the assets at the going market price and they all agree on the nature of the return and risk associated with each investment.

In the CAPM, the expected rate of return is equal to the required rate of return because the market is in equilibrium. The risk-less rate can be earned by investing in instruments like treasury bills. In addition to the risk free rate, investors also expect a premium over and above the risk free rate to compensate them for investing in risky assets since they are risk averse. Thus, the required rate of return for the investors becomes equal to the sum of Risk-free rate and the risk premium. The risk premium can be calculated as the product of Beta and market risk premium, i.e. difference between expected rate of return and risk-free rate of return.

ARBITRAGE PRICING THEORY

The capital asset pricing model (CAPM) asserts that only a single number – a security's beta against the market – is required to measure risk. At the core of arbitrage pricing theory (APT) is the recognition that several systematic factors affect security return. The returns on an individual stock will depend upon a variety of anticipated and unanticipated events. Anticipated events will be incorporated by investors into their expectations of returns on individual stocks and thus will be incorporated into market prices.

Generally, however, most of the return ultimately realized will result from unanticipated events. Of course, change itself is anticipated, and investors know that the most unlikely occurrence of all would be the exact realization of the most probable future scenario. But even though we realize that some unforeseen events will occur, we do not know their direction or their magnitude. What we can know is the sensitivity of returns to these events.

Systematic factors are the major sources of risk in portfolio returns. Actual portfolio returns depend upon the same set of common factors, but this does not mean that all portfolios perform identically. Different portfolios have different sensitivities to these factors. Because the systematic factors are primary sources of risk, it follows that they are the principal determinants of the expected, as well as the actual, returns on portfolios	It is possible to see that the actual return, R, on any security or portfolio may be broken down into three constituent parts, as follows: (Z) R = E + bf + e where: E = expected return on the security b = security's sensitivity to change in the systematic factor f = the actual return on the systematic factor e = returns on the unsystematic, idiosyncratic factors
Equation Z merely states that the actual return equals the expected return, plus factor sensitivity times factor movement, plus residual risk. Empirical work suggests that a three-or-four-factor model adequately captures the influence of systematic factors on stock-market returns. Equation Z may thus be expanded to: R = E + (b1) (f1) + (b2) (f2) + (b3) (f3) + (b4) (f4) + e	Each of the four middle terms in this equation is the product of the returns on a particular economic factor and the given stock's sensitivity to that factor. Suppose f3 is associated with labor productivity. As labor productivity unexpectedly increases, f3 is positive, and firms with high b3 would find their returns very high. The subtler rationale and higher mathematics of APT are left for development elsewhere.

What are these factors? They are the underlying economic forces that are the primary influences on the stock market. Research suggests that the most important factors are unanticipated inflation, changes in the expected level of industrial production, unanticipated shifts in risk premiums, and unanticipated movements in the shape of the term structure of interest rates. The biggest problems in APT are factor identification and separating unanticipated from anticipated factor movements in the measurement of sensitivities. Any one stock is so influenced by idiosyncratic forces that it is very difficult to determine the precise relationship between its return and a given factor.	Far more critical is the measurement of the b's. The b's measure the sensitivity of returns to unanticipated movements in the factors. By just looking at how a given stock relates to, say, movements in the money supply, we would be including the influence of both anticipated and unanticipated changes, when only the latter are relevant. Empirical testing of APT is still in its infancy, and concrete results proving the APT or disproving the CAPM do not exist. For these reasons it is useful to regard CAPM and APT as different variants of the true equilibrium pricing model. Both are, therefore, useful in supplying intuition into the way security prices and equilibrium returns are established.

SINGLE AND MULTI INDEX MODELS

Sharpe Index Model

One Simplification of CAPM formula was done by Sharpe (1963), who developed the Single-Index Model. The single-index model imposes restrictions on how security returns can covary. In particular, it is assumed that all covariance arises through an "index." As we will see, this leads to a dramatic reduction in complexity. Sharpe's model has since been extended to multi-index models, and leads to a more general theory called the Arbitrage Pricing Theory, developed by Ross (1976). Besides simplifying the covariance matrix, this approach is easily extended to take account of non-financial factors. In the multi-index model, for example, one of the indexescould easily be the rate of inflation.

Single-Index Model

The major assumption of Sharpe's single-index model is	A beta of +1.0 means that a 10% change in index value

that all the covariation of security returns can be explained by a single factor. This factor is called the index, hence the name "single-index model." According to the Sharpe single index model the return for each security can be given by the following equation:

$R_i = \alpha_i \beta_i R_m + e_i$

Where R_i = Expected return on a security

α_i = Alpha Coefficient

β_i = Beta Coefficient

R_m = Expected Return in market (an Index)

e = Error term with a mean of zero and a constant standard deviation.

Alpha Coefficient refers to the value of Y in the equation Y = + x when x = 0. Beta Coefficient is the slope of the regression line and is a measure of the changes in value of the security relative to changes in values of the index.

would result in a 10% change in the same direction in the security value. A beta of 0.5 means that a 10% change in index value would result in 5% change in the security value. A beta of – 1.0 means that the returns on the security are inversely related. The equation given above can also be rearranged as shown below:

R = RM + + e

Here the component RM is the market related or systematic component of the return. The other component represents the unsystematic component. As is assumed to be near zero the unsystematic return is given by alpha only.

Multi-Index Model

The single index model is in fact an oversimplification. It assumes that stocks move together only because of a common co-movement with the market. Many researchers have found that there are influences other than the market that cause stocks to move together. Multi-index models attempt to identify and incorporate these non- market or extra-market factors that cause securities to move together also into the model. These extra-market factors are a set of economic factors that account for common movement in stock prices beyond that accounted for by the market index itself. Fundamental economic variables such as inflation, real economic growth, interest rates, exchange rates etc. would have a significant impact in determining security returns and hence, their co-movement.

A multi-index model augments the single index model by incorporating these extra market factors as additional independent variables. For example, a multi-index model incorporating the market effect and three extra-market effects takes the following form:

$$\bar{R}_i = \alpha_i + \beta_m R_m + \beta_1 R_1 + \beta_2 R_2 + \beta_3 R_3 + e_i$$

The model says that the return of an individual security is a function of four factors – the general market factor Rm and three extra-market factors R1 , R2 , R3. The beta coefficients attached to the four factors have the same meaning as in the single index model. They measure the sensitivity of the stock return to these factors

The alpha parameter i and the residual term ei also have the same meaning as in the single index model. Calculation of return and risk of individual securities as well as portfolio return and variance follows the same pattern as in the single index model. These values can then be used as inputs for portfolio analysis and selection. A multi-index model is an alternative to the single index model. However, it is more complex and requires more data estimates for its application. Both the single index model and the multi-index model have helped to make portfolio analysis more practical.

SIMPLE SHARPE PORTFOLIO OPTIMIZATION

The construction of an optimal portfolio is simplified if there is a single number that measures the desirability of including a stock in the optimal portfolio. If we accept the single index model (Sharpe), such a number exists. In this case, the desirability of any stock is directly related to its excess return-to-beta ratio.

If stocks are ranked by excess return to beta (from highest to lowest), the ranking represents the desirability of any stock's inclusion in a portfolio. The number of stocks selected depends on a unique cutoff rate such that all stocks with higher ratios of (Ri – RF)/ ßi wil be included and all stocks with lower ratios excluded.

To determine which stocks are included in the optimum

$(R_i - R_F)/ß_i$ where: R_i = expected return on stock i R_F = return on a riskless asset	portfolio, the following steps are necessary: 1. Calculate the excess return-to-beta ratio for each stock under review and the rank from highest to lowest. 2. The optimum portfolio consists of investing in all stocks for which (Ri – RF)/ ßi is greater than a particular cutoff point C.

Sharpe notes that proper diversification and the holding of a sufficient number of securities can reduce the unsystematic component of portfolio risk to zero by averaging out the unsystematic risk of individual stocks. What is left is systematic risk which, is determined by the market (index), cannot be eliminated through portfolio balancing. Thus, the Sharpe model attaches considerable significance to systematic risk and its most important measure, the beta coefficient (ß).	According to the model, the risk contribution to a portfolio of an individual stock can be measured by the stock's beta coefficient. The market index will have a beta coefficient of +1.0. A stock with a beta of, for example, +2.0 indicates that it contributes far more risk to a portfolio than a stock with, say,a beta of + .05. Stocks with negative betas are to be coveted, since they help reduce risk beyond the unsystematic level.

Since efficient portfolios eliminate unsystematic risk, the riskiness of such portfolios is determined exclusively by market movements. Risk in an efficient portfolio is measured by the portfolio beta. The beta for the portfolio is simply the weighted average of the betas of the component securities. For example, an optimal portfolio which has a beta of 1.35, suggests that it has a sensitivity above the + 1.0 attributed to the market. If this portfolio is properly diversified (proper number of stocks and elimination of unsystematic risk), it should move up or down about one-third more than the market. Such a high beta suggests an aggressive portfolio	Should the market move up over the holding period, this portfolio will be expected to advance substantially. However, a market decline should find this portfolio falling considerably in value. In this way, establishing efficient portfolios (minimum risk for a given expected return) comprising broad classes of assets (e.g., stocks, bonds, real estate) lends itself to the mean-variance methodology suggested by Markowitz. Determining efficient portfolios within an asset class (e.g., stocks) can be achieved with the single index (beta) model proposed by Sharpe.

RISK ADJUSTED MEASURE OF PERFORMANCE

Risk-adjusted performance measures are an important tool for investment decisions. Whenever an investor evaluates the performance of an investment he will not only be interested in the achieved absolute return but also in the risk-adjusted return – i.e. in the risk which had to be taken to realize the profit.	The first ratio to measure risk-adjusted return was the Sharpe Ratio introduced by William F. Sharpe in 1966. It has been one of the most referenced risk/return measures used in finance, and much of this popularity can be attributed to its simplicity. The ratio's credibility was boosted further when Professor Sharpe won a Nobel Memorial Prize in Economic Sciences in 1990 for his work on the capital asset pricing model (CAPM).

The Ratio Defined

Most people with a financial background can quickly comprehend how the Sharpe ratio is calculated and what it represents. The ratio describes how much excess return you are receiving for the extra volatility that you endure for holding a riskier asset. Remember, you always need to be properly compensated for the additional risk you take for not holding a risk-free asset.	$S(X)=(r_x - R_f)/StdDev(X)$ where – X is the investment – r_x is the average rate of return of x – R_f is the best available rate of return of a risk-free security (i.e. T-bills) – StdDev(X) is the standard deviation of x

Return (rx) The returns measured can be of any frequency (i.e. daily, weekly, monthly or annually), as long as they are normally distributed, as the returns can always be annualized. Herein lies the underlying weakness of the ratio - not all asset returns are normally distributed. Abnormalities like kurtosis, fatter tails and higher peaks, or skewness on the distribution can be a problematic for the ratio, as standard deviation doesn't have the same effectiveness when these problems exist. Sometimes it can be downright dangerous to use this formula when returns are not normally distributed.	**Risk-Free Rate of Return (rf)** The risk-free rate of return is used to see if you are being properly compensated for the additional risk you are taking on with the risky asset. Traditionally, the risk-free rate of return is the shortest dated government T-bill. While this type of security will have the least volatility, some would argue that the risk-free security used should match the duration of the investment it is being compared against. For example, equities are the longest duration asset available, so shouldn't they be compared with the longest duration risk-free asset available - government issued inflation-protected securities (IPS)?
Standard Deviation [StdDev(x)] Now that we have calculated the excess return from subtracting the return of the risky asset from the risk-free rate of return, we need to divide this by the standard deviation of the risky asset being measured. As mentioned above, the higher the number, the better the investment looks from a risk/return perspective. However, unless the standard deviation is very large, leverage may not affect the ratio. Both the numerator (return) and denominator (standard deviation) could be doubled with no problems. Only if the standard deviation gets too high do we start to see problems. For example, a stock that is leveraged 10 to 1 could easily see a price drop of 10%, which would translate to a 100% drop in the original capital and an early margin call.	**Using the Sharpe Ratio** The Sharpe ratio is a risk-adjusted measure of return that is often used to evaluate the performance of a portfolio. The ratio helps to make the performance of one portfolio comparable to that of another portfolio by making an adjustment for risk. The Sharpe ratio is quite simple, which lends to its popularity. It's broken down into just three components: asset return, risk-free return and standard deviation of return. After calculating the excess return, it's divided by the standard deviation of the risky asset to get its Sharpe ratio. The idea of the ratio is to see how much additional return you are receiving for the additional volatility of holding the risky asset over a risk-free asset - the higher the better.

ECONOMIC VALUE ADDED

Adam Smith, one of the fathers of classical economic thought, observed that firms and resource suppliers, seeking to further their own self-interest and operating within the framework of a highly competitive market system, will promote the interest of the public, as though guided by an "invisible hand. " (Smith, 1776) The market mechanism of supply and demand communicates the wants of consumers to businesses and through businesses to resource suppliers. Competition forces business and resource suppliers to make appropriate responses.	The impact of an increase in consumer demand for some product will raise that goods price. The resulting economic profits signal other producers that society wants more of the product. Competition simultaneously brings an expansion of output and a lower price. Profits cause resources to move from lower valued to higher valued uses. Prices and sales are dictated by the consumer. In the quest for higher profits, businesses will take resources out of areas with lower than normal returns and put them into areas in which there is an expectation of high profits.

Profits allocate resources	
The primary objective of any business is to create wealth for its owners. If nothing else the organization must provide a growth dividend to those who have invested expecting a value reward for their investment. A companies generate value and grow, society also benefits. The quest for value directs scarce resources to their most promising uses and most productive uses. The more effectively resources are employed and managed, the more active economic growth and the rate of improvement in our standard of living as a society. Although there are exceptions to the rule relating to the value of economic wealth, most of the time there is a distinct harmony between creating increased share value of an organization and enhancing the quality of life of people in society.	In most companies today the search for value is being challenged by a seriously out of date financial management system. Often, the wrong financial focus, cash strategies, operating goals, and valuation processes are emphasized. Managers are often rewarded for the wrong achievements and in many cases they are not rewarded for the efforts that lead to real value. Balance sheets are often just the result of accounting rules rather than the focus of value enhancement. These problems beg for approaches to financial focus that are completely different from current approaches. New approaches must start nothing less than an evolution in thinking in the process of economic evaluation. One of the focuses that have proved to be incorrect in the valuation of economic worth is earnings per share (EPS). EPS has long been the hallmark of executives that appear in meetings of the shareholders, as the measure of their accomplishments.
This, along with return on equity has long been thought of as the way to attract investment. There is nothing that points to EPS as anything more than a ratio that accounting has developed for management reporting. Many executives believe that the stock market wants earnings and that the future of the organization's stock depends on the current EPS, despite the fact that not one shred of convincing evidence to substantiate this claim has ever been produced. To satisfy the desire for reported profits, executives feel compelled to create earnings through creative accounting. Accounting tactics that could be employed to save taxes and increase value are avoided in favor of tactics that increase profit. Capital acquisitions are often not undertaken because they do not meet a hypothetical profit return. R&D and market expanding investments get only lip service	Often increased earnings growth is sustained by overzealous monetary support of businesses that are long past their value peak. We must ask then, what truly determines increased value in stock prices. Over and over again the evidence points to the cash flow of the organization, adjusted for time and risk that investors can expect to get back over the life of the business. Economic Value Added (EVA) is a measurement tool that provides a clear picture of whether a business is creating or destroying shareholder wealth. EVA measures the firm's ability to earn more than the true cost of capital. EVA combines the concept of residual income with the idea that all capital has a cost, which means that it is a measure of the profit that remains after earning a required rate of return on capital. If a firm's earnings exceed the true cost of capital it is creating wealth for its shareholders.
Definition of Economic Value Added	
A discussion on Economic Value Added has to begin with the origin of the concept. EVA is based on the work of Professors Franco Modigliani and Merton H. Miller. In October, 1961, these two finance professors published "Dividend Policy, Growth and the Valuation of Shares", in the Journal of Business. The ideas of free cash flow and the evaluation of business on a cash basis were	Capital includes cash, inventory, and receivables (working capital), plus equipment, computers and real estate. The cost of capital is the rate of return required by the shareholders and lenders to finance the operations of the business. When revenue exceeds the cost of doing business and the cost of capital, the firm creates wealth for the shareholders.

developed in this article. These ideas were extended into the concept of EVA by Bennett Stewart and Joel Stern of Stern, Stewart & Company. Economic Value Added is defined as net operating profit after taxes and after the cost of capital.	**EVA = Net Operating Profit – Taxes – Cost of Capital**

Chapter 1 Nature & Scope of Financial Management

1. . If 'Profit Maximization' concept is applied then which of the following Product will be selected?

Year	Product A	Product B	Product C	Product D
1	14,000	6,000	35,000	22,000
2	14,000	8,000	10,000	5,000
3	14,000	10,000	8,000	18,000
4	14,000	18,000	4,000	6,000
5	14,000	34,000	2,000	10,000

A)Product-A | B) Product B | C) Product C | D) Product D

2. In the ..... , the future value of all cash inflow at the end of time horizon at a particular rate of interest is calculated

A) Compounding technique | B) Discounting technique | C) Risk-free rate | D) Risk Premium

3. If you invest Rs.10,000 (P0) in a bank at simple interest of 7% p.a., what will be the amount at the end of 3 (n) years?
Note: Use simple interest rate method.

A) Rs.17,500 | B) Rs.20,600 | C) Rs.15,400 | D) Rs.12,100

4. Theory on cost of capital as propounded by Modigliani and Miller argues that -

A) Cost of capital is independent of the capital structure | B) Business works as a system comprised of sub-systems. | C) Risk is associated with fixed charges in the shape of interest on debt capital. | D) High financial gearing will increase the earnings per share of a company if earnings before interest and taxes are rising

5. Financial management is broadly concerned with -

A) Creating value to the assets of the business enterprise | B) Raising of funds | C) Efficient allocation of funds | D) All of the above

6. Match the following:

List I		List II	
(I)	Profit maximization	(P)	Recognizes risk or uncertainty
(II)	Wealth maximization	(Q)	Ignores the timing of returns
(IIII)	Liquidity	(R)	ability to meet short obligations
(IV)	Profitability	(S)	evaluating the performance in different spheres

Select the correct answer from the options given below.

A) Q P R S | B) Q P S R | C) P Q S R | D) P Q R s

7. Dividend decision is to decide -

A) Whether the firm should | B) How to improve dividend | C) Where the fund should be | D) How much profit to earn

distribute all profits or retain them or distribute a portion and retain the balance.	yield ratio	invested so that maximum dividend can be earned on investment	

8.	Determine the compound interest for an investment of Rs.7,500 at 6% compounded half yearly. Given that (1+i)n for i = 0.03 and n = 12 is 1.42576.

A) Rs.3,913.20	B) Rs.3,319.20	C) Rs.3,193.20	D) Rs.3,139.20

9.	Assume that the interest rate is greater than zero. Which of the following cash-inflow streams should you prefer?

A) 100 200 300 400	B) 400 300 200 100	C) 250 250 250 250	D) Any of the above, since they each sum toRs. 1,000.

10.	Find out the present value of proj ects cash flow from the following data if the cost of capital of the firm is 12%:

Year	Cash flow	PV Factor
1	20,000	0.893
2	20,000	0.797
3	20,000	0.712
4	20,000	0.636
5	20,000	0.567

A) 72,001	B) 72,100	C) 71,200	D) 72,430

11.	The long-run objective of financial management is to:

A) Maximize the value of the firm's common stock	B) Maximize market share.	C) Maximize earnings per share.	D) Maximize return on investment.

12.	Which of the following statement is correct? (1) The term profit is vague. (2) Profit maximization as an objective is too narrow. (3) Value/wealth maximization decision do not takes into consideration time value of money and uncertainty of risk. (4) Investment decisions relate to the determination as to how much and how frequently cash can be paid out of the profits of an organization as income. Select the correct answer from the options given below.

A) (2)&(1)	B) (3) & (1)	C) (1) & (4)	D) (2) & (4)

13.	Y bought a TV costingRs. 13,000 by making a down payment ofRs. 3,000 and agreeing to make equal annual payment for 4 years. How much would be each payment if the interest on unpaid amount be 14% compounded annually?

A) 3,413.17	B) 3,134.17	C) 3,431.71	D) 3,341.71

14.	..... is a series of equal payments or receipts occurring over a specified number of periods

A) An annuity	B) Present value factor	C) Present cash flow	D) Annuity factor

15.	.....and ..... carry a fixed rate of interest and are to be paid off irrespective of the firm's revenues.		
A) Dividends, Bonds	B) Dividends, Treasury notes	C) Debentures, Dividends	D) Debentures, Bonds

16.	Rs.2,000 is invested at annual rate of interest of 10%. What is the amount after 2 years if the compounding is done monthly		
A) Rs.2,431.00	B) Rs.2,442.70	C) Rs. 2,440.58	D) Rs.2,420.00

17.	Ramu wants to retire and receive Rs.3,000 a month. He wants to pass this monthly payment to future gen erations after his death. He can earn an interest of 8% compounded annually. How much will he need to set aside to achieve his perpetuity goal?		
A) Rs.4,49,577	B) Rs.4,49,775	C) Rs.4,94,775	D) Rs.4,47,975

18.	Financing decisions are concerned with -		
A) the determination of how much funds to procure from amongst the various avenues available	B) question whether adding to capital assets today will increase the revenue of tomorrow to cover costs.	C) problem of accepting one proposal and leaving other persists.	D) commitments of monetary resources at different times in expectation of economic returns in future.

19.	What is the present value ofRs. 1 to be received after 2 years compounded annually at 10%?		
A) 0.83	B) 0.75	C) 0.68	D) 0.91

20.	XYZ is an oil based business company, which does not have adequate working capital. It fails to meet its current obligation, which leads to bankruptcy. Identify the type of decision involved to prevent risk of bankruptcy.		
A) Dividend decision	B) Finance decision	C)Investment decision	D) Liquidity decision

21.	If you invest Rs.10,000 (P0) in a bank at simple interest of 7% p.a., what will be the amount at the end of 3 (n) years? Note: Use simple interest rate method.		
A) Rs.17,500	B) Rs.20,600	C) Rs.15,400	D) Rs.12,100

22.	How earnings per share is calculated?		
A) Use the income statement to determine earnings after taxes (net income) and divide by the forecasted period's earnings after taxes. Then subtract 1 from the previously calculated value	B) Use the income statement to determine earnings after taxes (net income) and divide by the number of common shares outstanding	C) Use the income statement to determine earnings after taxes (net income) and divide by the previous period's earnings after taxes. Then subtract 1 from the previously calculated value.	D) Use the income statement to determine earnings after taxes (net income) and divide by the number of common and preferred shares outstanding

23.	Time value of money indicates that		
A) A unit of money obtained today is worth more than a unit of money obtained in future.	B) A unit of money obtained today is worth less than a unit of money obtained in future.	C) There is no difference in the value of money obtained today and tomorrow.	D) None of the above

24.	The ability of a firm to convert an asset to cash s called.....		
A) Marketability	B) Liquidity	C) Return	D) Solvency

25.	Financial Management can be judged by the study of the nature of -		
A) Accounting, financing & dividend decisions	B) Investment, financing & dividend decisions.	C) Corporate, social & benefit decisions.	D) Personnel, human cost & economic decisions.

Chapter 2 Investment Decisions

1.	If A is carried out, but not B, it has an NPV of Rs.1,25,000. If B is done, but not A, B has an NPV of Rs.45,000. However, if both are done, then NPV is Rs.2,00,000. The NPV of the delivery system C is Rs.90,000. Its NPV is not dependent on whether A or B is adopted and the NPV of A or B does not depend on whether C is adopted. Which of the investments should be made by the company if Firm has no budget constraint Rs.

A) The firm should adopt all the three modes of attracting customers. Its outlay would be Rs.4,00,000 and the expected NVP would be Rs.2,90,000.	B) The firm should adopt mode A + C only. The outlay would be Rs.2,50,000 & total NPV would be Rs.2,15,000.	C) The firm should adopt mode B + C only. The outlay would be Rs.3,00,000 & total NPV would be f 1,35,000	D) The firm should adopt mode A only. The outlay would be Rs.1,00,000 & total NPV would be Rs.1,25,000

2.	Nishce Ltd. is an all equity financed company. The current market price of the share is Rs.180. It had just paid a dividend of Rs.15 per share and expected future growth in dividends is 12%. Currently, it is the evaluating a proposal requiring funds of Rs.20,00,000 with annual inflow of Rs.10,00,000 for 3 years. Find out the NPV of the proposal if it is financed from retained earnings.

A) Rs.63,400	B) Rs.64,300	C) Rs.63,600	D) Rs.66,400

3.	Project X involves an initial outlay of Rs. 16.2 million. Its life span is expected to be 3 years. The cash streams generated by it are expected to be as follows:

			(Rs. in millions)
Year	1	2	3
Cash inflow	8	.7	6
IRR = Rs.			

A) 12.40%	B) 14.33%	C) 15.79%	D) 15.30%

4.	. Electrofast Ltd. is manufacturing electronic equipments in which Component-X is used, which is purchased from a local supplier at a cost of Rs.40 each. In order to bring down cost and improve its competitiveness, the company has a proposal to install a machine for the manufacture of Component-X. It has the following two options: Installation of semi-automatic machine involving annual fixed expenses of Rs.22 lakh and a variable cost of Rs.18 per component manufactured. Installation of automatic machine involving an annual fixed cost of Rs.40 lakh and a variable cost of Rs.15 per component manufactured. Calculate components required to be produced to justify the installation of the machine

A) 1,40,000 units & 1,80,000 units	B) 1,00,000 units & 1,60,000 units	C) 50,000 units & 80,000 units	D) 1,50,000 units & 1,00,000 units

5.	Narayan Ltd. is an all equity financed company. The current market price of the share is Rs.180. It had just paid a dividend of Rs.15 per share and expected future growth in dividends is 12%. Currently, it is the

	evaluating a proposal requiring funds of Rs.20,00,000 with annual inflow of Rs.10,00,000 for 3 years. Find out the NPV of the proposal if it is financed by issuing fresh equity (floatation costs 5%).

A) Rs.42,445	B) Rs.47,400	C) Rs.47,900	D) Rs.46,488

6.	A company is considering whether it should spend Rs.10 lakhs on a project to manufacture and sell a new product. Unit variable cost of the product is Rs.15. It is expected that the new product can be sold at Rs.25 per unit. The annual fixed costs are Rs.50,000. The project will have a life of 6 years with scrap value of Rs.50,000 Cost of capital is 15%. The only uncertain factor is the volume of sales. Ignore taxation. Minimum volume oi sales required to justify the project is -

A) 34,741 units	B) 30,852 units	C) 33,487 units	D) 28,453 units

7.	James Co. is considering a project with an initial cost of Rs.6.2 Million. The project will produce cash inflows of Rs.1.8 Million a year for 5 years. Firm uses the subjective approach to assign discount rates to projects. For this project, the subjective adjustment is +2%. Firm has a pre-tax cost of debt of 6.7% and a cost of equity of 9.4%. The debt-equity ratio is 0.6 and the tax rate is 35%. What is the NPV of the project?

A) Rs.7,10,200	B) Rs.8,11,000	C) Rs.7,90,900	D) Rs.6,89,000

8.	The initial outlay of the project is Rs.1,00,000 and it generates cash inflow of Rs.50,000, Rs.40,000, Rs.30,000 & Rs.20,000 in the 4 years of its life span. Cost of capital is 10%. You are required to calculate Cost Benefit Ratio.

A) 1.147	B) 1.474	C) 1.389	D) 1.578

9.	. Xpert Engineering Ltd. is considering buying one of the following two mutually exclusive investment projects: Project A: Buy a machine that requires an initial investment outlay of Rs.1,00,000 and will generate CFAT of Rs.30,000 per year for 5 years. Project B: Buy a machine that requires an initial investment outlay of Rs.1,25,000 and will generate CFAT of Rs.27,000 per year for 8 years. The company uses 10% cost of capital to evaluate the projects. The company will select -

A) Project A as its NPV is high than Project B.	B) Project B as its NPV is high than Project A.	C) Project B as its equivalent NPV is high than Project A.	D) Proj ect A as its equivalent NPV is high than Proj ect B.

10.	. Yogesh Ltd. has to make a choice between two identical machines, in terms of capacity, A and B. They have been designed differently, but do exactly the same job. Machine A costs Rs.1,87,500 and will last for 3 years. It costs Rs.50,000 p.a. to run. Machine B is an economy model costing only Rs.1,25,000, but will last for only 2 years. It costs Rs.75,000 p.a. to run. The cash flows of Machine A and B are real cash flows. The costs are forecasted in rupees of constant purchasing power. Ignore taxes. The opportunity cost of capital is 9%. Which machine the Yogesh Ltd. should buy?

A) Machine A as its present value of cash outflow is less than Machine B.	B) Machine B as its present value of cash outflow is less than Machine A.	C) Machine A as its equivalent present value of cash outflow is	D) Machine B as it is cheaper than Machine A.

		less than Machine B.	

11.	.....is a project whose cash flows are not affected by the accept/reject decision for other projects.		
A) Independent project	B) Mutually exclusive project	C) Risk free project	D) Low cost project

12.	. Incorporating flotation costs into the analysis of a project will:		
A) increase the NPV of the project.	B) have no effect on the present value of the proj ect.	C) increase the initial cash outflow of the project.	D) increase the project's rate of return.

13.	With limited finance and a number of project proposals at hand, select that package of projects which has		
A) Profitability index is greater than unity	B) The maximum net present value	C) Internal rate of return is greater than cost of capital	D) Any of the above

14.	The values of the future net incomes discounted by the cost of capital are called -		
A) Net present values	B) Average capital cost	C) Discounted capital cost	D) Net capital cost

15.	Capital budgeting decisions are analyzed with help of weighted average and for this purpose-		
A) Common stock value is used	B) Component cost is used	C) Asset valuation is used	D) Cost of capital is used

16.	A Profitability Index (PI) of 0.92 for a project means that		
A) the project's NPV is greater than zero.	B) the project's costs (cash outlay) are (is) less than the present value of the project's benefits.	C) the project returns 92 cents in present value for each rupee invested.	D) the project's NPV is greater than 1.

17.	Capital budgeting is the process -		
A) By which the firm decides which long-term investments to make.	B) which help to make master budget of the organization.	C) By which the firm decides how much capital to invest in business	D) undertaken to analyze how make available various finance to the business

18.	Which of the following is demerit of payback period?		
A) This method disregards the initial investment involved.	B) It is difficult to calculate as well as understand it as compared to accounting rate of return method.	C) It fails to take into account the timing of returns and the cost of capital.	D) None of the above

19.	The decision to accept or reject a capital budgeting project depends on		
A) cost of capital that are invested in business/project.	B). an analysis of the cash flows generated by the project	C) Both (A) and (B)	D) Neither (A) nor (B)

20.	What is the difference between economic profit and accounting profit?		
A) Economic profit covers the profit over the life of the firm, while accounting profit only covers the most recent accounting period.	B) Economic profit includes a charge for all providers of capital while accounting profit includes only a charge for debt.	C)) Accounting profit is based on current accepted accounting rules while economic profit is based on cash flows.	D) All of the above Eire correct.

21.	Which of the following is demerit of payback period?		
A) This method makes no attempt to measure a percentage return on the capital invested and is often used in conjunction with other methods.	B) It does not indicate whether an investment should be accepted or rejected, unless the payback period is compared with an arbitrary managerial target.	C) The method ignores cash generation beyond the payback period and this can be seen more a measure of liquidity than of profitability.	D) All of the above

22.	. Which of the following represents the amount of time that it takes for a capital budgeting project to recover its initial cost?		
A) Payback period	B) Maturity period	C) Investment period	D) Redemption period

23.	A project is accepted when:		
A) Internal Rate of Return will be greater than cost of capital	B) Net present value is greater than zero	C) Profitability index will be greater than unity	D) Any of the above

24.	Statement I: In case of capital rationing, a company is compelled to invest in projects having shortest payback period. Statement II: The shorter the payback period, the less risky is the project. Therefore, it can be considered as an indicator of risk. Select the correct answer from the options given below:		
A) Both Statement I and Statement II are false.	B) Statement I is true but Statement II is false.	C) Statement II is true but Statement I is false.	D) Both Statement I and Statement II are true.

25.	Incorporating flotation costs into the analysis of a project will:		
A) increase the NPV of the project.	B) have no effect on the present value of the proj ect.	C) increase the initial cash outflow of the project.	D) increase the project's rate of return.

Chapter 3 Capital Structure

1	While designing a capital structure a finance manager should choose a pattern of capital which -		
A) Maximizes the owners return.	B) Minimizes cost of capital	C) Maximizes cost of capital and minimizes the owners return.	D) Both (A) and (B)

2	Which of the following shows significance of capital structure?		
A) Capital structure reflects the overall strategy of the firm.	B) One can get a reasonably accurate broad idea about the risk profile of the firm from its capital structure.	C) The capital structure acts as a tax management tool.	D) All of the above

3	Which of the following changes in capital structure would you recommend for growth at faster rate?		
A) Merge with other companies.	B) Incorporate more retained earnings out of profit and loss account.	C) Incorporate debt in its capital structure to a greater extent.	D) Pay more dividend to equity shareholders.

4	Financial structure involves creation of - (1) Long term assets (2) Short term assets Select the correct answer from the options given below.		
A) (1) only	B) (2) only	C) Both (1) and (2)	D) Neither (1) nor (2)

5	Assertion (A): The capital structure should be determined within the debt capacity of the company and this capacity should not be exceeded. Reason (R): The debt capacity of a company depends on its ability to generate future cash flows. It should have enough cash to pay creditors' fixed charges and principal sum. Select the correct answer from the options given below		
A) A is false but R is true.	B) A is true but R is false	C) Both A and R are true but R is not correct explanation of A.	D) Both A and R are true and R is correct explanation of A.

6	The term "capital structure" refers to:		
A) Long-term debt, preferred stock, and common stock equity	B) Current assets & current liabilities	C) Total assets minus liabilities	D) Shareholders' equity

7	Which of the following statement is incorrect? (1) High debt funds in capital structure increases EPS. (2) High debt funds increases the operating or business risk.

	Select the correct answer from the options given below.			
	A) Statement 1 is correct while Statement 2 is incorrect.	B) Both Statement 1 and Statement 2 are correct.	C) Both Statement 1 and Statement 2 are incorrect.	D) Statement 2 is correct while Statement 1 is incorrect.

8	Which of the following capital structure consist of zero debt components in the structure mix?			
	A) Horizontal Capital Structure	B) Pyramid Shaped Capital Structure	C) Vertical Capital Structure	D) Inverted Pyramid Shaped Capital Structure

9	Assertion (A): The capital structure acts as a tax management tool also. Reason (R): Relatively lesser component of equity capital is vulnerable to hostile takeovers. Select the correct answer from the options given below			
	A) A is false but R is true.	B) A is true but R is false	C) Both A and R are true but R is not correct explanation of A.	D) Both A and R are true and R is correct explanation of A.

10	Which of the following statement is false?			
	A) A firm having operating loss would find it worthwhile to incorporate debt in the capital structure in a greater measure.	B) The use of excessive debt threatens the solvency of the company.	C) The capital structure should be flexible.	D) None of the above

11.	Capital structure of Z Ltd. is as follows:	
		Rs.
	Equity Share (Rs. 100 each)	40,00,000
	Retained Earnings	10,00,000
	9% Preference Shares	25,00,000
	7% Debentures	25,00,000
		1,00,00,000
	Company earns 1296 on its employed capital. Tax rate is 3596. It requires a sum of Rs.25 lakhs to finance its expansion programme for which following plans are available to it: (i) Issue 20,000 equity shares of Rs.100 at a premium of Rs.25 per share or (it) Issue 8% debentures. What should be EBIT of the company so that EPS under both plans will be same?	

A) Rs.11,21,514	B) Rs.11,12,154	C) Rs.11,21,154	D) Rs.11,21,415

12.	According to Net Operating Income Approach -			
	A) Any change in the leverage will not lead to any change in the total value of the firm and the market price of shares, as the overall cost of capital is independent of the degree of leverage.	B) Capital structure decisions of the firm are irrelevant.	C) The division between debt and equity is irrelevant.	D) All of the above

13.	X Ltd. is considering the following two alternative financing plans:		
	'	Plan -1	Plan - II
	Equity Shares (Rs. 10 each)	4,00,000	4,00,000
	12% Debentures	2,00,000	-
	Pref. Shares (Rs. 100 each)	-	2,00,000
	The indifference point between the plans is Rs.2,40,000. Corporate tax rate is 30%. Calculate rate of dividend on preference shares.		

A) 8.04%	B) 8.00%	C) 8.40%	D) 8.80%

14.	EBIT is of NS Ltd. Rs.4,50,000. Which of the following capital structure will you recommend?		
	Debt	Kd	Ke
	1 Rs. 4,50,000	10%	12%
	2 Rs. 6,00,000	10%	12.5%
	3 Rs. 7,50,000	11%	13.5%
	4 Rs. 9,00,000	12%	15%
	Select the correct answer from the options given below.		

A) 1	B) 2	C) 3	D) 4

15.	As per Net Income Approach the value of the firm will be maximum at a point where -		
A) Average cost of debt is minimum.	B) Average cost of equity is minimum.	C) Weighted average cost of capital is minimum.	D) Weighted average cost of equity is maximum.

16.	Operating income of A Ltd. is Rs.5,00,000. The firms cost of debt is 10% and currently firm employs Rs.15,00,000 of debt. The overall cost of capital of the firm is 15%. You are required to determine 'total value of the firm' and 'market value of equity' using Net Operating Income Approach (NOI). Ignore taxation.		
A) Rs.33,33,333;Rs. 18,33,333	B) Rs.33,33,333; Rs.15,00,000	C) Rs.18,33,333; Rs.15,00,000	D) Rs.20,22,222;Rs. 18,22,222

17.	Sun Ltd. has 12% debt of Rs.30,00,000. It earns 24% before interest and tax on its total assets of Rs.50,00,000. Tax rate is 40% and capitalization rate is 18%. Calculate the value of the company using Net Income Approach.		
A) Rs.40,00,000	B) Rs.58,00,000	C) Rs.55,00,000	D) Rs.20,00,000

18.	Any change in the leverage will not lead to any change in the total value of the firm and the market price of shares, as the overall cost of capital is independent of the degree of leverage. This is as per -		
A) Net Income Approach	B) Net Operating Income Approach	C) Both (A) and (B)	D) Neither (A) nor (B)

19.	Moon Ltd. earns 24% before interest and tax on its total assets of Rs.50,00,000. It is unlevered company and has no debts in its capital structure. Tax rate is 40% and capitalization rate is 18%. Calculate the value of the company using Net Income Approach.		
A) Rs.40,00,000	B) Rs.60,00,000	C) Rs.50,00,000	D) Rs.55,00,000

20.	Inability to pay fixed financial payments e.g. payment of interest, preference dividend, return of the debt capital, etc. is called as -

A) Operating risk	B) Business risk	C) Financial risk	D) (A) and (C)

21.	Sun Ltd. has 12% debt of Rs.30,00,000. It earns 24% before interest and tax on its total assets of Rs.50,00,000. Tax rate is 40% and capitalization rate is 18%. Calculate the value of the company using Net Operating Income Approach.		
A) Rs.52,00,000	B) Rs.58,00,000	C) Rs.56,00,000	D) Rs.54,00,000

22.	If expected level of EBIT is more than the breakeven point, then the EPS will be -		
A) Infinite	B) Minimum	C) Negative	D) Positive

23.	Moon Ltd. earns 24% before interest and tax on its total assets of Rs.50,00,000. It is unlevered company and has no debts in its capital structure. Tax rate is 40% and capitalization rate is 18%. Calculate the value of the company using Net Operating Income Approach.		
A) Rs.30,00,000	B) Rs.40,00,000	C) Rs.20,00,000	D) Rs.50,00,000

24.	Merry Ltd. has EBIT of Rs.30,00,000 and 40% tax rate. It required rate of return on equity in the absence of borrowing is 18%. In the absence of personal taxes, what is the 'total value of the company' and 'value of equity' in an MM world with Rs.40,00,000 in debt		
A) Rs.161 lakh;Rs. 67 lakh	B) Rs.116 lakh; Rs.46 lakh	C) Rs.161 lakh;Rs. 64 lakh	D) Rs.116 lakh;Rs. 76 lakh

25.	X Ltd. has EBIT of Rs.30,00,000 and 40% tax rate. It required rate of return on equity in the absence of borrowing is 18%. In the absence of personal taxes, what is the 'total value of the company' and 'value of equity' in an MM world with Rs.70,00,000 in debt.		
A) Rs.128 lakh; Rs.58 lakh	B) Rs.128 lakh; Rs.85 lakh	C) Rs.182 lakh;Rs. 85 lakh	D) Rs.182 lakh; Rs.58 lakh

Chapter 5 Project Finanace

1.	. Derivatives include a variety of financial contracts, including ..... (1) Futures (2) Forwards (3) Swaps (4) Options Select the correct answer from the options given below.		
A) (2) & (3)	B) (1) & (4)	C) (3), (1), (4) & (2)	D) (2), (4) & (1)

2.	The project is viable when BCR is -		
A) One or more than one	B) One	C) Two	D) Two or more than two.

3.	..... means any instrument in the form of a depository receipt created by Domestic Depository in India against the underlying equity shares of a company incorporated outside India.		
A) American Depository Receipt (ADR)	B) Global Depository Receipt (GDR)	C) Indian Depository Receipt (IDR)	D) Any of the above

4.	Zero Coupon bonds are bonds issued at ..... and redeemed at par.		
A) Discount to face value	B) Face value to discount	C) Discount to face value plus premium	D) Par to discounted value

5.	.....means modes of raising funds by an Indian company outside India in foreign currency.		
A) Swiss issue	B) American issue	C) Euro issue	D) None of the above

6.	. Floating rate bonds are bonds with		
A) Variable interest rate	B) Fixed interest rate	C) Semi fixed interest rate	D) None of above

7.	Z Ltd. issued CP as per the following details: Date of issue - 17th January, 2010 Date of maturity - 17th April, 2010 Interest rate - 11.25% p.a. Amount received is - 9.73 Crore At what amount this CP will be redeemed		
A) 11 Crore	B) 10 Crore	C) 9.95 Crore	D) 9.5 Crore

8.	IDR is an instrument denominated in -		
A) Indian Rupees	B) Foreign currency	C) Either (A) or (B)	D) Partly in (A) and partly in (B)

9.	Which of following is government security?		
A) Capital indexed bonds	B) Dated securities	C) Treasury bills	D) All of above

10.	Depository receipts can be issued by way of

A) Private placement	B) Public offering	C) Neither (A) nor (B)	D) Either (A) or (B)

11.	. A bond that allows the issuer of the bond to redeem the bond before the date of maturity is called as		
A) Put bond	B) Floating rate bonds	C) Callable bond	D) Fixed rate bond

12.	. Depository Receipt (DR) is ..... 1. Denominated in foreign currency 2. Traded in foreign exchanges Select the correct answer from the options given below.		
A) 2 but not 1	B) 1 but not 2	C) 1 and 2	D) Neither 1 nor 2

13.	Capital Indexed Bonds are bonds where interest rate is a fixed percentage over the		
A) Retail price index	B) Inflation index	C) SENSEX	D) Wholesale price index

14.	A company issues 90 days commercial papers of the face value of Rs.1,000 at Rs.980. The credit rating expenses are 0.6% of the size of issue, issuing and paying agent charges are 0.25% and stamp duty is to be paid @ 0.20%. You are required to calculate cost of issuing commercial papers		
A) 12.56%	B) 10.89%	C) 14.73%	D) 15.14%

15.	A bond which has a provision that allows the holder of the bond the right to force the issuer to pay back the principal on the bond is called as -		
A) Put bond	B) Callable bond	C) Fixed rate bond	D) Floating rate bonds

16.	Project appraisal by financial institution takes into consideration		
A)) Project	B) Promoter's capacity and competence	C) Economic Aspects	D) All of above

17.	. Internal sources of finance do not include:		
A) Trade credit	B) Better management of working capital	C) Ordinary shares	D) Retained earnings

18.	The project planning activities and goals include defining: 1. The specific work to be performed and goals that define and bind the project. 2. Estimates to be documented for planning, tracking, and controlling the project. 3. Commitments that are planned, documented, and agreed to by affected groups. 4. Project alternatives, assumptions, and constraints. Select the correct answer from the options given below.		
A) 2, 3 and 4	B) 1, 2, 3 and 4	C) 1 and 4 only	D) 1 and 3 only

19.	The promoter's capacity and competence should be examined with reference to -		
A) Their management background, traits as entrepreneurs, business-	B) Industrial experience, and past performance in other concerns	C) Their integrity and reputation, market standing and legal competence	D) All of the above