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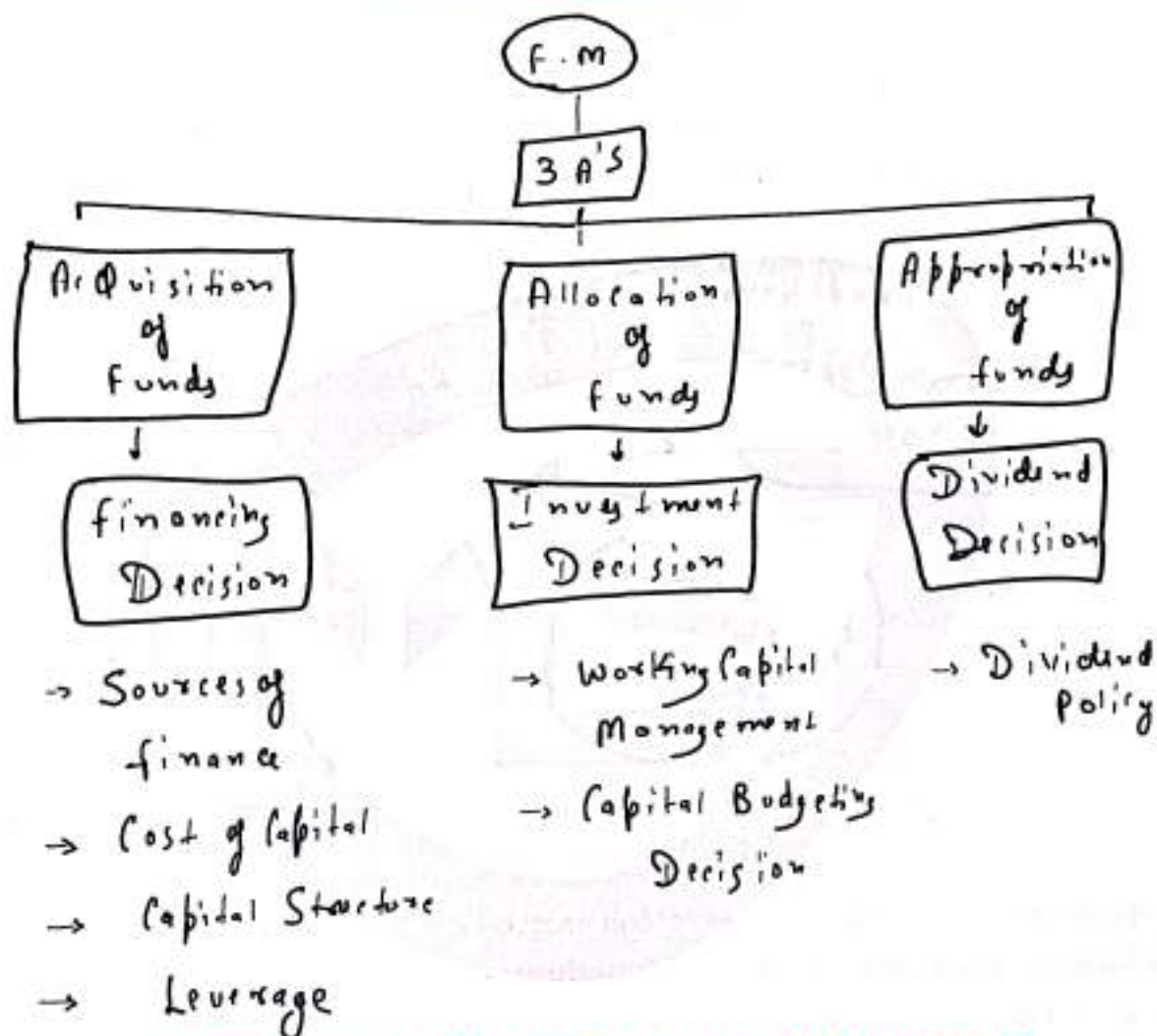
UNIT 4 BUSINESS FINANCE

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CHAPTER 1

RISK AND RETURN : BASIC DIMENSIONS OF FINANCIAL DECISIONS



Nature and Scope of Financial Management

Finance is defined as the provision of money at the time when it is required. The role of finance in business enterprise needs no emphasis. Every enterprise, whether big or small, needs finance to carry on and expand its operations. Finance holds the key to all the business activities and a firm's success and, in fact, its survival is dependent upon how efficiently it is able to acquire and utilize the funds.

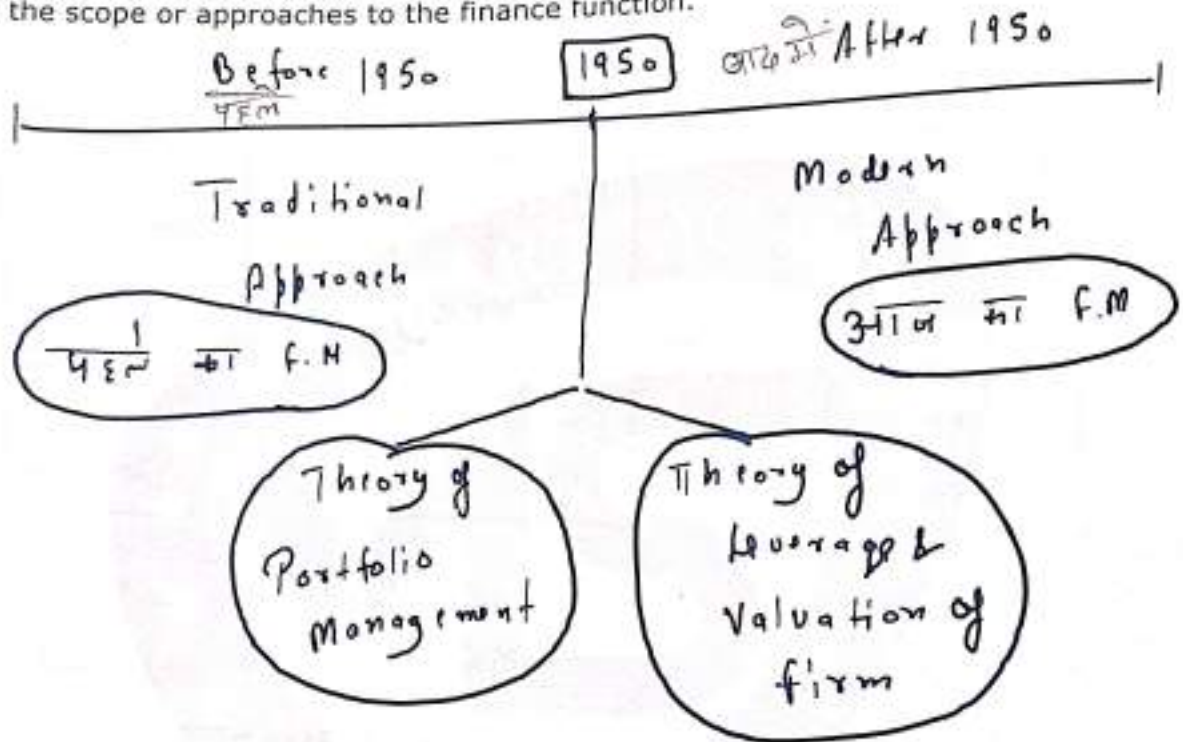
Finance has become so important for the business enterprises that it has given birth to 'Financial Management' as a separate subject. Finance management is that part of managerial process which is concerned with the planning and controlling of firm's financial resources. It is concerned with the procurement of funds from most suitable sources and making the most efficient use of such funds. In the earlier stages, financial management was a branch of economics and as a separate subject it is of recent origin. It is still developing and still it has no unique body of knowledge of its own. The subject

Statement of Profitability

is of immense importance to the managers because among the most crucial decisions of the firm are those which relate to finance.

Changing Role of Financial Manager:

Financial Management emerged as a distinct field of study at the commencement of 20th century because of the increase in size of the business enterprises. Financial management, as a separate discipline, has undergone fundamental changes in its scope and coverage. In the early years of its evolution its role was confined only to the raising of required funds. At present it is universally recognized that in addition to the procurement of funds. It includes their efficient use as well. The role of financial management is assuming greater significance in solving the complex problems of the business. In order to express the changing role of finance manager, it is essential to study the scope or approaches to the finance function.



The approaches are divided into two broad categories:

1) Traditional Approach of Finance Function:

Initially, Finance was a part of economic and no separate attention was paid to finance. Business owners were more concerned with operational activities. The finance manager used to be concerned with record keeping, preparing different report, and managing cash. A finance manager was called upon in particular only when his specialty was required to locate new sources of funds whenever there was a need felt for the funds. The traditional phase can be summarized as follows:

- I. Finance function was concerned with procuring of funds to finance the expansion or diversification activities and thus the occurrence of finance function was episodic in nature. Finance function was not part of regular managerial operations.
- II. In order to finance business growth, there was an emergence of institutional financing and institutional banking giving rise to finance industry.
- III. Finance function was viewed particularly from the point of view of supplier of funds i.e., the lenders, both individuals and institutions. The emphasis was to consider the interest of outsiders. The internal decision-making process and the persons involved in the process were of lesser importance.

IV. The focus of attention was on the long-term resources and only the long-term finance was of any concern. The concept of working capital and its management was virtually non-existent.

V. The treatment of difference aspects of finance was more of a descriptive nature rather than analytical financial decision making as such.

VI. Finance was concerned with procuring of fund primarily by issue of securities such as equity share, preference share and debt instruments. So, knowledge of the sources of funds: what securities to sell, to whom and by what techniques to sell, were needed?

Gradually, the scope of finance function widened and day- to- day problems of finance were also incorporated. Funds analysis and control on a regular basis, rather than on a casual basis started. There was, in fact, an extension of the traditional phase and around early fifties when the scope of finance function started expanding in big way.

Under this approach the role of financial management was limited to the procurement of funds on suitable terms. The utilization of funds was considered out of the scope of financial management. Under this approach, a study of the following three things was made for the procurement of funds:

- I. Institutional source of finance;
- II. Issue of financial instruments through which funds are raised from capital market;
- III. Legal and accounting relationship between a business and its source of funds.

Limitations of Traditional Approach:

- I. More Emphasis on Raising of Funds
- II. Ignores the Financial problems of Non-Corporate Enterprises
- III. More Concerned to the Problem of Raising Finance on the Occurrence of Special Events
- IV. Special Attention on Long-term Financing

(2) Modern Approach of Finance Function:

The traditional approach outlived its utility in the changed business circumstances since the mid 1950's. A number of factors such as technological innovations, increasing size of business enterprises, intense competition etc. necessitated efficient and effective utilization of firm's financial resources. As a result, the scope of financial management also changed and the modern approach was developed. Significant contribution to the development of modern theory of financial management are:

1. Theory of Portfolio Management developed by Harry Markowitz in 1950, which deals with portfolio selection with risky investments. This theory uses statistical concepts to quantify the risk- return characteristics of holding a group/portfolio of securities, investments or assets. A significant contribution of this theory is that the risk of one investor is viewed in its totality rather than evaluating the risk of one security only. This theory at a later stage lead to the development of Capital Asset Pricing Model which deals with pricing of risky assets and the relationship between risk and return.

2. The Theory of Leverage and Valuation of Firm developed by Modigliani and Miller in 1958. They have shown by introducing analytical approach as to how the financial decision making in any firm be oriented towards maximization of the value of the firm and the maximization of the shareholders wealth.

This development is in fact the start of the development of an integrates theory of financial management which now includes theory of efficient capital markets, divided policy, risk and uncertainty dimensions to the financial decision making, valuation models, working capital management, etc. The increasing use of computer science,

Propounded
By
Shalpe

operations research and econometrics and other quantitative techniques as tools of financial analysis are the characteristics of the modern theory. The modern approach considers the term financial management in a broad sense. According to this approach, the finance function covers both acquisition of funds as well as their efficient utilization. This approach presents an analytical way of looking into the financial problems of the business. According to this approach the financial management is concerned with the solution of three major problems relating to finance:

- i. What is the total volume of funds an enterprise should commit?
- ii. How should the funds required be raised?
- iii. In what specific assets the enterprise should invest its funds?

The three problems posed above cover between them the major financial problems an enterprise. Thus, in the modern approach, the financial management is responsible for taking the three decisions:

- (i) The financing decision,
- (ii) The Investment Decision, and
- (iii) The Dividend Policy Decision.

Characteristics of Modern Approach: -

1. Financial Management is an Essential Part of Top Management
2. Less Descriptive and More Analytical
3. Continuous Function
4. Different from Accounting Function
5. Wide Scope
6. Centralized Nature
7. Measurement of Performance
8. Inseparable Relationship between Finance and other activities
9. Applicable to All Types of Organizations

Meaning and Definition of Financial Management

Financial management is a vital and an integral part of business management. It refers to that part of management activity which is concerned with planning and controlling of financial resources of the enterprise. It deals with raising finance for the enterprise and the efficient utilization of such finance. It includes investment decisions, financing decisions, dividend decisions, liquidity decisions, capital budgeting, budgetary control etc.

Functions of Financial Management: -

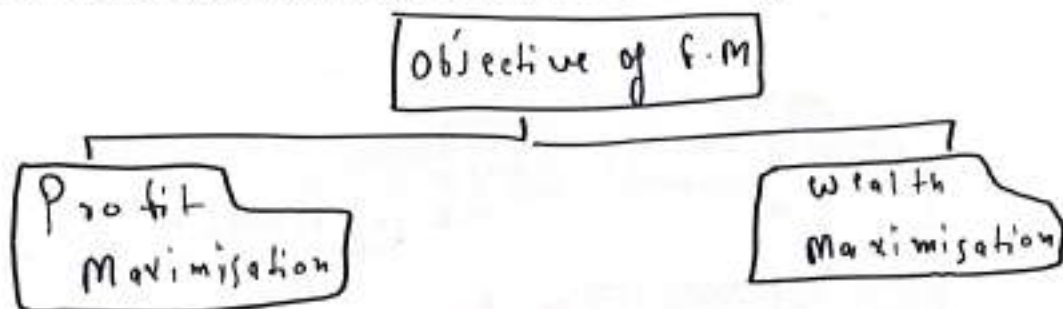
There are three basic functions of financial management. These are: (i) raising finance, (ii) investing it in assets, and (iii) distributing return earned from assets to shareholders. These three functions are respectively known as financing decision, investment decision and dividend policy decision. While performing these functions, various other functions have also to be performed such as taking working capital decisions and planning and controlling the finance. Certain routine functions are also performed for the effective execution of all these finance functions. Hence, the **functions of finance are:**

- i. Determining the Financial Needs
- ii. Financing Decision
- iii. Investment Decision

- iv. Working Capital Decision
- v. Dividend Policy Decision
- vi. Financial Control
- vii. Routine Functions.

Objective or Goals of Financial Management

It is the duty of the top management to lay down the objectives or goals which are to be achieved by the business. In order to make wise-financial decisions a clear undertaking of the objectives of the business is necessary. Objectives provide a framework within which various decisions relating to investment, financing and dividend are to be taken. In other words, objectives lay down a criterion by which the efficiency and profitability of a particular decision is evaluated. The choice of such a criterion lies between profit maximization and wealth maximization. Hence, there are two approaches in this regard:



1. Profit Maximization:

According to this approach, all activities which increase profits should be undertaken and which decrease profits should be avoided. Profit maximization implies that the financial decision making should be guided by only one test, which is, select those assets, projects and decisions which are profitable and reject those which are not. The following arguments are advanced in favour of this approach:

- i. Measurement of Performance
- ii. Efficient Allocation and Utilization of Resources
- iii. Maximization of Social Welfare
- iv. Source of Incentive
- v. Helpful in Facing Adverse Business Conditions
- vi. Helpful in the Growth of the Firm

However, the profit maximization approach has been criticized on several grounds:

- i. Ambiguous
- ii. Ignores the Time Value of Money
- iii. Ignores Risk Factor
- iv. Ignores Future Profits
- v. Ignores Social Obligations of Business
- vi. Neglects the Effect of Dividend Policy on Market Price of the Shares.

2. Wealth Maximization:

This approach is now universally accepted as an appropriate criterion for making financial decision as it removes all the limitations of profit maximization approach. It is also known as net present value (NPV) maximization approach. According to this approach the worth of an asset is measured in terms of benefits received from its use less the cost of its acquisition. Benefits are measured in terms of cash flow received from its use rather than accounting profit which was the basis of measurement of benefits in profit maximization approach. Measuring benefits in terms of cash flow avoids the ambiguity in respect of the meaning of the term profit. Another important feature of this approach is that it also incorporates the time value of money. While measuring the value of future cash flows an allowance is made for time and risk factors, by discounting or reducing the cash flows by a certain percentage. This percentage is known as discount rate.

Profit Maximization versus Wealth Maximization:

The wealth maximization approach is superior to the profit maximization approach. It has the following advantages in its favor:

- 1) It uses cash flows instead of accounting profits which avoids the ambiguity regarding the exact meaning of the term profit.
- 2) It gives due importance to the time value of money by reducing the future cash flows by an appropriate discount or interest rate. If higher risk and longer time period are involved, higher rate of discount or interest will be used to find out the present value of future cash benefits. The discount or interest rate will be lower for the projects which involve low risk.
- 3) It gives due importance to payment of regular dividends: In this approach financial decisions are taken in such a way that the shareholders receive highest combination of dividends and increase in the market price of the shares.
- 4) It gives due importance to risk factor and analyses risk and uncertainty so that the best course of action can be selected out of different alternatives.
- 5) It gives due importance to social responsibilities of the business.
- 6) It takes into consideration long-run survival and growth of the firm.

Organization of Finance Function

Organization of finance function means the division of functions relating to finance and to set up a sound and efficient organization for performing the finance functions. Since the financial decisions are very crucial for the survival as well as growth and development of the firm, the ultimate responsibility of carrying out the finance function lies with the top management. Hence, a department to organize and carry out the financial activities is created under the direct control of the board of directors. This department is headed by a financial manager. Major financial policy matters will be decided by the financial manager whereas the routine financial matters will be delegated to lower levels.

Functions of Financial Manager

- 1) Financial Planning
- 2) Procurement of Funds

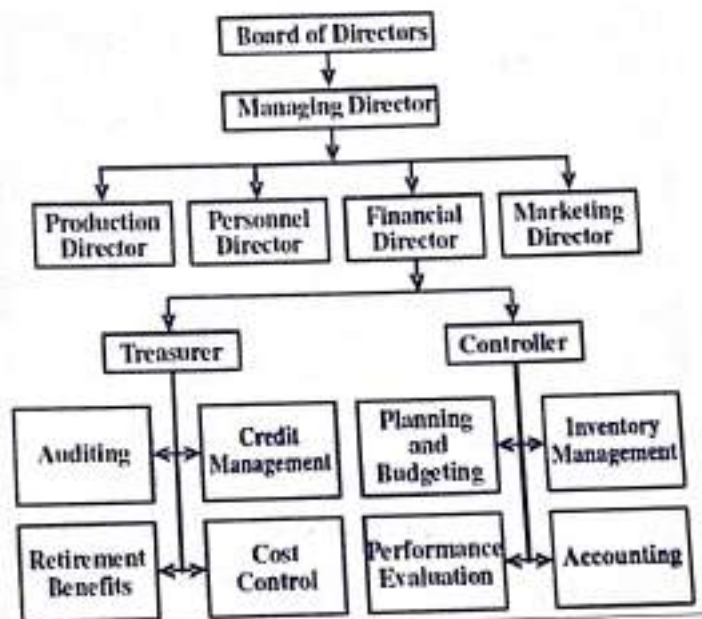
- 3) Coordination
- 4) Control
- 5) Business Forecasting
- 6) Other Functions

Functions of Treasure:

- 1) Cash Management
- 2) Banking Relations
- 3) Credit Management
- 4) Assets Management
- 5) Securities Management
- 6) Protecting Funds and Securities

Functions of Controller

- 1) Planning & Budgeting
- 2) Financial Accounting
- 3) Cost Accounting
- 4) Data Processing
- 5) Internal Auditing
- 6) Annual Reports
- 7) Information to Government



Importance of Financial Management

- 1) Helpful in Acquiring Sufficient Funds
- 2) Proper Utilization of Funds
- 3) Proper Cash Management
- 4) Proper Use of Profits
- 5) Maximization of Wealth
- 6) Useful for Shareholders
- 7) Useful for Investors
- 8) Useful for Banks, Financial Institutions etc.

SOME EXTRA POINTS

1. EVA: (Economic value added)

Developed by Stern Stewart & CO. of US. EVA IS DEFINED IN TERMS OF RETURNS EARNED BY THE COMPANY IN EXCESS OF THE MINIMUM EXPECTED RETURN OF THE SHAREHOLDERS.

- » NOPAT = EBIT - Taxes. *→ Any Surplus over & above cost of Capital*
- » Capital employed is also known as Capital Charge. *→ Corporate Surplus.*

EVA = NOPAT - Cost OF Capital employed

2. MVA: It is also used to measure the performance. MVA is determined by measuring the total amount of funds that have been invested in the CO (based on the cash flow) & Comparing it with the Current Market Value of the securities of the CO. The funds invested include borrowing & shareholders' funds. If Market Value of securities exceeds the funds invested, the value has been created.

3. The theory of F.M is based on the **6 basic axioms [Parameters]** as follow:

- a) The time value of money

- b) The Risk-Return trade off
- c) The Cash flows & Accounting Profits
- d) Subservient to Tax Laws: it means that tax decision is made.
- e) Efficient Capital Market
- f) Incremental Cash flow: In all financial decisions, the cash flow will be if taken incrementally i.e. what the cash flow will be if taken they will be if decision is not taken. *Mutual*

4. Equity Shares, Debentures, Market funds & Securities.

- These securities represent owner's or Lender's
- These securities may also called Primitive or F

5. Financial Engineering:

The process that seeks to adopt existing financial investment & to develop new ones so as to enable financial market Participants to cope more effectively with the changing condition is known as financial engineering.

doing Financial Engineering refers to the creation & designing of New Securities by bundling or by inbounding with tailor made features & Characteristics.

» Financial engineering must be distinguished from 'financial analysis' (is a part of financial engineering).

A financial Analyst investigates into the financial & Align information. This is the first but an important step in identifying the existence of a problem. This is from where financial engineering starts. In financial engineering, the financial manager works on finding out solution to the problems.

6. Financial Assets, represent a financial claim of the holder over the issuer of the financial assets. A financial asset is a liability of the issuer towards the holder. Besides the currency issued by the RBI or GOI, the other financial assets are usually classified into shares, mutual fund unit & debt instruments, deposits & Loans.

In **financial management**, the risk is defined as the **variability** of expected returns from an investment. For example, an investor makes a fixed deposit at an interest of 10% p.a. for a particular period with a scheduled bank. There is virtually no risk attached with this investment since there is no variability associated with the return. However, if the same amount is used to buy the equity shares of a company, then the return in the form of dividends from this investment may vary from one year to another. So, the investment in equity shares is risky as the returns are variable. The more certain the returns from asset/investment, less is the variability and therefore, less the risk. It may be noted that the terms risk and uncertainty are usually used interchangeably. However, the risk exists when the decision maker is able to estimate the probabilities associated with the different outcomes. On the other hand, the uncertainty exists when the decision maker has no historical data to develop the probabilities associated with the outcome.

Return associated with a decision is measured as the total gain or loss expected over a given period of time by the decision maker. It may be defined as the return on the original investment made in the particular asset/investment.

As pointed out earlier, a finance manager has to take various types decisions classified as investment decisions, financing decisions and dividend decisions. A finance manager takes these decisions in the light of objective of maximization of shareholders' wealth as reflected in the market price of the share. The finance manager should also know as to what are the factors which may affect the market price of share. The various decisions

Financial Deepening
 In ratio of money supply to GDP or some price index
 → Liquid Money

Financial Broadening
 Building an increasing number & variety of participants & instruments
 JRF AIR

will then be taken in the light of these factors, otherwise any attempt to achieve the objective of maximization of the market price of the share may be frustrated.

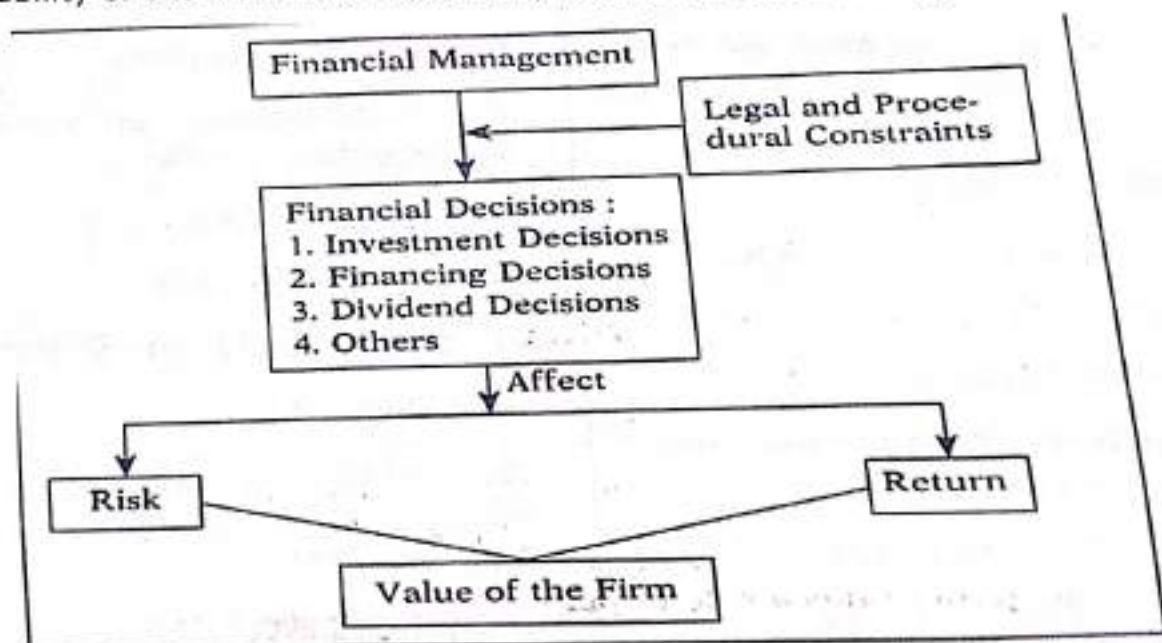
There are numerous factors which may influence the market price of a share. Some of these factors may be political conditions, economic conditions, investment scenario, company considerations, promoter groups, etc. A finance manager may face problems when trying to include all these factors in the decision-making process. He is required to optimize these factors while taking financial decisions.

Every financial decision has two aspects i.e. the risk and the return. There is a risk involved in every decision. The degree of risk, however, may differ from one decision to another. A riskless decision is difficult to be visualized. Further, every decision has a return also. It may be emphasized that the risk and return go together and there is always a conflict between the return from a decision and the risk it brings into the firm.

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, its risk also increases. In an attempt to increase the return, the finance manager will have to undertake a 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 financial decision, the finance manager has to optimize the risk and return. A particular combination of risk and return where both are optimized may be known as **Risk-Return Trade off**. Every financial decision involves such tradeoff between risk and return. At this level of risk-return, the market price of the share will be maximized.

For example, borrowings made by a firm to finance a profitable project without considering the liquidity position of the firm, may increase the financial risk of the firm. The borrowings for financing a profitable project has to be weighed against its effect on the ability of the firm to repay the lenders and providing a satisfactory return to the shareholders. No doubt, a finance manager must attempt to keep down the cost of financing, but he should also consider the risk associated with different financing partners. Thus, such decisions will ultimately rest on the analysis of the effect of risk-return on the market price of the share. Thus, investors and firms taking higher risk should be compensated with a higher expected return. This of course, raises the question of how risk should be measured and how high the return should be for a given level of risk. To answer these questions, a model is required that defines risk and specifies the portion of risk that will be rewarded and convert that risk measure into expected return. The Capital Asset Pricing Model (CAPM) argues that only that portion of the risk in investment that cannot be eliminated by diversification will be rewarded.

But what is the relationship between risk-return and market price of the share? The financial decisions affect the market price of a share not directly but by affecting the risk and profitability of the firm. This relationship has been depicted in figure:



Capitalisation

Total amount of securities issued by a company.

Cap. Structure

Kinds of securities or prop. amount (Debt, Eq. + Pref. Shares)
Broad sense - LTD + STD

Financial Structure

Entire Liab side of BS.

...s of financial decisions are taken within the limits set by s. These decisions then affect the risk-return composition position in fact, ultimately the value of the firm reflected . in other word, the financial decisions which are made ect both risk and return which jointly determine the value n shows that the financial management:

...s types of types of decisions, of maximization of shareholders' wealth, different types of information, turn perspective of all alternative, ement of long-term as well as short-term assets.

Multiple Choice questions

Management is :

- a) Management of Liquidity,
- b) Maximization of Profit.
- c) Maximization of Shareholders Wealth,
- d) Management of Fixed Assets.

2. In Financial Management, cash flow is same thing as :

- a) Cash Profit,
- b) Profit before Tax
- c) Operative Profit,
- d) None of the above.

3. What is ignored Principle of Profit Maximization?

- a) Time Value of Money,
- b) Risk,
- c) Wealth Creation
- d) All of the above.

4. Which of the following are two basic concepts of financial management?

- a) Cost s and Expenses,
- b) Risk and Return
- c) Debit and Credit
- d) Receipts and Payment.

5. In Financial Management, the term risk refers to :

- a) Changes of Incurring Losses.
- b) Variability of Future Outcome,
- c) Changes of no Return.

Financial

- d) None of the above.

6. Financial Management refers to :

- a) Management of Current Assets.
- b) Management of All Assets.
- c) Financial Decision -making.
- d) Management of Liabilities.

7. Which of the following is included in financial decision making?

- a) Investment Decision.
- b) Financing Decision.
- c) Dividend Decision.
- d) All of the above.

8. Which of the following is considered as complementary to Finance Management?

- a) Cost Accounting.
- b) Management Accounting.
- c) Financial Accounting.
- d) Corporate Accounting.

9. Maximization of Wealth of Shareholders is reflected

- a) Sales Maximization.
- b) No. of Shareholders.
- c) Market Price of Equity Shares.
- d) SENSEX.

10. Which is not a part of Investment Decision in Financial Management?

- a) Dividend Payout Decision.
- b) Capital Budgeting Decision.

- c) Working Capital Management.
- d) Credit Policy towards Customers.

11. Focal Point in Financial management is:

- a) Increasing Sales of the firm.
- ~~b) Creating Shareholders Value~~
- c) Increasing Profit.
- d) Increasing Market Share.

12. Which of the following variables defines and explains the concepts of finance?

- a) Inflation.
- b) Capital Structure.
- c) Risk-free Rate of interest.
- ~~d) Risk and Return.~~

13. In a Public Sector Company, the financial goal of the is to :

- a) Maximize the Market Price of Equity.
- b) Maximize the Dividends to Govt.
- ~~c) Maximize the PV of Equity Returns.~~
- d) None of the above.

14. Maximizing the wealth of the shareholders is reflected in

- ~~a) Maximizing MP of Equity shares.~~
- b) Maximizing Cash Balance. Govt.
- c) Maximizing Retained Earnings.
- d) Maximizing Issued Capital.

15. Which of the following is not a function of a finance manager?

- a) Procurement of Fund.
- b) Allocation of Fund.
- c) Maintaining balance between Risk and Return.
- ~~d) Manipulating the share price.~~

16. Market value of the firm is a result of :

- a) Investment Decision.
- b) Financing Decision.
- c) Working Capital Management.
- ~~d) Risk Return Trade off.~~

17. Which of the following represents the financing decision?

- ~~a) Designing Optimal Capital Structure.~~
- b) Declaring Dividend.
- c) Paying Interest on Loans.
- d) None of the above.

18. Dividend decision is related to :

- a) Right Issue of share.
- b) Reinvestment Requirement.
- c) Cash flow Statement.
- d) None of the above.

Answers : Chapter-1(F.M)

1-c	2-d	3-d	4-b	5-b
6-c	7-d	8-c	9-c	10-a
11-b	12-d	13-c	14-a	15-d
16-d	17-a	18-b	-	-

Holding Period Day Return
 $HPR = \text{Current Yield} + \text{Cap Gain Yield}$

CHAPTER 2

DOMESTIC SOURCES OF FINANCE AND INTERNATIONAL FINANCIAL MARKET : EURO ISSUE AND ADR, GDR

Broadly speaking, the long-term sources of finance can be classified into debt and equity. Although the distinction between debt and equity is often made in terms of bonds and shares, its roots lie in the nature of the cash flow claims of each type of financing. The debt and equity may be differentiated as follows:

- I. The first distinction is that a debt claim entitles the holder to a contracted set of cash flows (in the nature of interest and redemption), whereas an equity claim entitles a holder to only residual cash flows left over after meeting all other committed claims.
- II. Another point of difference is that debt has a prior claim both on annual cash (for interest and redemption) as well as on the assets of the firm (in case of liquidation).
- III. Thirdly, the tax laws have generally treated the interest expense, which accrues to the debt holders, very differently and advantageously than dividends or other cash flows accruing to the equity.
- IV. The debt has a fixed maturity date, when the repayment is to be made or the face value is to be converted into shares; whereas equity has an infinite life as long as the firm survives (except in case of Redeemable Preference Share).
- V. Finally, the equity investors, by virtue of their claim on the residual cash flows of the firm, are generally given the bulk of the control of the firm. Debt investors, on the other hand, have to play in most of the cases, only a passive role, through a representative directors of the company.

There are a number of instruments available in each of these two sources i.e., debt and equity. During recent years, some new instruments are being offered to the public and it may be difficult to categorize these either as debt or equity. There may be some characteristics of debt and some equity and therefore, may be called hybrid securities. In India, many companies have issued Zero Interest Fully Convertible Debentures, which have no fixed financial commitment but still having a priority claim over assets of the company in case the liquidation occurs before their conversion into shares.

The differences in these two basic sources of finance are summarized in table.

Characteristics	Debt	Equity
1. Claim on Profits and assets	Fixed claim	Residual claim
2. Tax treatment,	Tax deductible	Not tax deductible
3. Priority in repayment	High priority	Lower priority
4. Maturity	Fixed maturity	Infinite life
5. Voice in management	No management control	Management control

Equity Share Capital:

Equity share capital represents the basic or primary source of finance to any company. In terms of funds provided, the equity shares may provide lesser funds than some other source, however, the relevance and importance of equity share capital cannot be undermined in any case. The existence of equity share in the capital structure of a company is a fact of life for the firm's management, and since it is an absolute

prerequisite to the creation of a company and essential ingredient to its future growth, a clear understanding of the inherent characteristics of equity share are a direct consequence of their position in the company's control, income and assets. Some of the basic features of equity shares may be summarized as follows:

Rights of Shareholders: The rights of equity shareholders are established and determined by the relevant provisions given in the Companies Act, 1956 and other relevant legal enactments. Some of these may be examined in detail in order to see what effect these have on the income, risk and control aspects of the relationship between the company and the shareholders. These may be summarized as follows:

- a) Voting rights
- b) Right to Sell or Transfer Equity Shares
- c) Residual Claim on Assets

✓ **d) Pre-emptive Right:** The right of the shareholders to subscribe to issue of additional share before these are offered to public is known as pre-emptive right. It refers to the right of the shareholders to maintain their proportion of the ownership of the company by subscribing to new shares being issued. It gives the equity shareholders the privileges of maintaining their voting powers and the proportionate shares in the distribution of income and assets of the company, by granting to them the first option to purchase proportionate amount of new shares. The pre-emption right may also be denoted as right offering or privileged subscription.

- e) Right to Receive the Annual Report

Preference Share Capital:

As the name itself implies, preference share is a type of security through which a company obtains funds in exchange for certain types of preferential treatment to its holders which are not usually accorded to holders of the company's equity shares. Preference share occupies a position (relative to the residual ownership claims issued by companies) similar to that of a limited partner in a general preference in the distribution of assets, in the event of liquidation of the business, and in income, with respect to distribution of earnings.

Warrants: A warrant is an option to purchase a specified number of shares at a specified price during or at the expiry of a specified period. So, a warrant gives the holder the right to purchase from the company a fixed number of shares in future at a pre-determined price. The holder of the warrant may be allowed to transfer or sell his right in the secondary market or to keep the right as an investment. The holders of a warrant can choose whether or not to exercise the option. If it is exercised, then the investor becomes a shareholder in the normal way. If it is not, then the warrant lapses. The investor who chooses to exercise the warrants sends the required amount of cash and warrants to the issuing company at an appropriate time. In return, the company issues shares. Although, warrants are not a major source of funds, their characteristics may help the company to attain the desired capital structure.

Warrants are generally issued with other securities (a bond or a preference share) in a package. Warrants may be attached to a debt issue to work as a sweetener and to add to the marketability of the issue.

The warrants, which generally originate by being attached to a new issue of debt securities, may be permanently attached to issue or may be detachable. A non-detachable warrant cannot be sold separately from the bond but can only be detached when the bondholder exercises his option and purchases shares. Detachable warrants may be sold separately from the bond; consequently, the bondholder does not have to exercise his option in order to obtain value from the warrant.

Types of Debt Instruments: As already noted that the debt instruments may be tailor-made to suit the requirements of the borrowing company as well as the investor.

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Consequently, several types of debt instruments have appeared in the market and companies have added innovative features to these instruments to attract more and more debt investors. The types of debt instruments may be classified as follows:

1. **Secured and Unsecured Debentures:** Debentures being a long term source are generally issued as secured debentures, and having fixed or floating charge on the assets of the company. The security help reducing the risk of debt investors. On the other hand, the unsecured debentures are those which do not have any specific asset or a specific charge as security but are otherwise, secured by the general credit of the company. Some companies in India have issued unsecured debentures of maturity period of 17 months and 29 days.
2. **Convertible and Non-convertible Debentures:** A non-convertible debenture is the purest form of debt instrument and is redeemed by repayment as per the terms and conditions mentioned in the issue document. On the other hand, a convertible debenture is one whose full face value or a part of face value is converted into another type of securities (generally equity shares), compulsorily or at the option of the debenture holders. The possibility of realizing a long term capital profit or increase in market value after conversion, makes the convertible debentures as an attractive form of investment. Consequently, the greater market demand for convertible debentures allows the companies to offer a low coupon rate than the cost of capital of equivalent risk non-convertible debentures. But these is the other side of the coin also. Conversion of convertible debentures ultimately results in replacement of debt by the equity capital, which in fact has a high cost of capital. The conversion will also result in converting the lender of the company into owner. The financial manager has to look into different implications of convertible debenture issue.
3. **Zero-Interest Fully Convertible Debentures (ZFCD):** In this case, the debenture is compulsorily fully convertible into equity shares at the expiry of a given period (not exceeding 3 years) from the date of issue. For the intervening period, no interest is payable by the company to the debenture holder. The return to debenture holders is available in the form of difference between the issue price of the ZFCD and the market price of the converted shares. Though, the ZFCD are ultimately to be converted into equity share capital, yet, if the period of conversion is after 18 months from the date of issue, then as per the SEBI Guidelines, the issue of ZFCD must be credit rate by an approved credit rating agency. In case of ZFCD, the debenture holders are not given any option and are compulsorily converted into equity share capital. Mahindra and Mahindra Ltd. and Indian Rayon and Industries Ltd. has issued ZFCD.
4. **Secured Premium Notes (SPN):** During August 1992, TISCO Ltd. issued a special debt instrument called the SPN, having a face value of Rs.300. No interest was payable on this and it was to be redeemed in four equal installments of Rs.150 each (totaling Rs.600) at the end of 4th year to 7th year. Out of each repayment of Rs.150, Rs.75 was to be considered as repayment of the principal and Rs.75 was to be considered as capital gain. There was a warrant attached with the SPN, which entitled every SPN holder to get one equity share from the company at a price of Rs.100. The rate of return on the SPN was not stated explicitly, however, may be ascertained from the point of view of SPN holders as follows:

(i) If Warrant Option is not Exercised: In this case, the outflow of Rs.300 today will result in inflows of Rs.150 each at the end of 4th, 5th, 6th and 7th year. The rate of return is the value of 'r' in the following equation:

$$-300 = \frac{150}{(1+r)^4} + \frac{150}{(1+r)^5} + \frac{150}{(1+r)^6} + \frac{150}{(1+r)^7}$$

By trial and error method, value of 'r' in the above equation comes to 13.7% (approx.).

(ii) If Warrant Option is Exercised: In case, the SPN holder exercise his option at the end of 1st year from the date of allotment and the market price of the share at that time is Rs.175, then the SPN holder will be able to make a capital gain of Rs.75 (i.e., Rs.175 - 100). The rate of return, in this case, is the value of 'r' in the following equation:

$$-300 = \frac{75}{(1+r)^1} + \frac{150}{(1+r)^2} + \frac{150}{(1+r)^3} + \frac{150}{(1+r)^4} + \frac{150}{(1+r)^5}$$

By trial and error procedure, the value of 'r', in the above equation comes to 19.5% (approx). It may be noted that the full capital gain of Rs.75 has been considered to find out the rate of return of the investor. However, if this capital gain is subject to tax, then the rate of return to the SPN holder will be less than 19.5%.

From the point of view of TISCO Ltd., the issue of SPN was a profitable proposition as no cash outflow was involved for the first 3 years (neither in the form of interest nor in the form of repayment) and a substantial inflow was expected at the ends of 1st year in the form of subscription to equity shares on the warrant conversion.

- 5. Deep Discount Bonds (DDB):** A DDB is also a type of a zero interest bond. But is not convertible. It has got a face value but the issue price of the DDB is a discounted value. The DDB is redeemed at the expiry of a specified period at the face value. The return to the DDB holders is available in the form of difference between the issue price and the realizable maturity value. There is no coupon rate and no interest is payable during the life of the DDB. The Industrial Development Bank of India issued in 1992, DDB of the face of Rs.1,00,000 redeemable in 25 years. The issue price was however, Rs.2,700 and the investor were given option to get redemption at the end of 5th, 10th, 15th and 20th year at different values. If an investor holds the DDB for full 25 years, then the rate of return comes to about 15.5%. since then SIDBI, ICICI and IFCI have also issued DDB of different denominations and maturities.

Private Equity

Private Equity refers to contribution in equity (capital) of a company on private basis. In a broader sense, private equity refers to investment in a company in a way that the equity is not transferable or trade able in the market. The investee company is not a listed company and the shares are bought by the private equity firm on a private basis from the promoters of the unlisted company. The term private equity is also used to denote the manner in which the funds have been raised namely in private deals, as opposed to public market through IPO. Some private equity firms may invest in listed companies also and later on may convert them into private companies.

Private equity provides long-term equity funds to help unquoted companies grow. Suppose, a company is looking to expand, diversify, buy-out another company or to revitalize the company by infusing new funds, it may get funds for these purposes from the private equity firms.

Obtaining funds from private equity is different from raising debt. In case of debt, lenders have a legal right to receive interest and principal irrespective of the result of operations of the investee company. Private equity on the other hand, is an investment in the equity stake of a company, and as a shareholder, the return depends on the growth of the business of the company. Sometimes the private equity firms provide a combination of capital and executive expertise and thus helps the investee company in achieving its target. Private equity firm may also provide a funding package to the company.

Private Equity vs. Debt. Private equity is different from Debt. A lender (generally a bank) is rewarded by interest and capital repayment of the loan and it is usually secured on business assets. If the company defaults on its repayments, the lender can put the investee business into receivership, which may lead to the liquidation of any assets. Debt

which is secured in this way has a higher priority for repayment than unsecured creditors.

By contrast, private equity is not secured on any assets although part of the non-equity funding package provided by the private equity firm may seek some security. The private equity firm, therefore, often faces the risk of failure just like the other shareholders. The private equity firm is an equity business partner and is rewarded by the company's success, generally achieving its principal return through realizing a capital gain through an 'exit'. Private equity and debt can be differentiated as follows:

Private Equity	Debt
1. Medium to long-term	Short to long-term
2. Committed until 'exit'	Not likely to be committed if the safety of the loan is threatened. Loan can be payable on demand if the covenants are not met.
3. Provides a flexible capital base to meet future growth and development plans of a company.	A useful source of finance if the debt to equity ratio is conservatively balanced and the company has good cash flow.
4. Good for cash flow, as capital repayment and dividend are tailored to the company's needs and to what it can afford.	Requires regular good cash flow to service interest and capital repayments.
5. The returns of the private equity investor depend on the business growth and success. The more successful the company is, the better the returns all investors will receive.	Depends on the company continuing to service its interest costs and to maintain the value of the assets on which the debt is secured.
6. If the business fails, private equity investors will rank alongside other shareholders, after the banks and other lenders, and stand to lose their investment.	If the business fails, the lender generally has first call on the company's assets.

Exit Routes for Private Equity. Like a venture capital firm, private equity may not like to remain a shareholder forever in the investee company. There are several exit routes available to a private equity firm as follows:

- Selling the shares to another private equity firm or any other strategies partner.
- Selling the shares back to the management.
- Selling the shares in the open market through offer for sale.
- Merger of the company into some other listed or unlisted company.

Pro-Passu Debentures
qualify in all respects (rate, time etc)
holder is assured of getting funds repayment on pro-rata
basis in case of insufficient funds.

Foreign Capital:-

Foreign capital refers to capital fund provided by foreign institutions, foreign investors, foreign banks, etc. it includes all types of flow of capital funds from overseas capital markets to local industries. Foreign funds can be relied to supplement the domestic savings and to provide superior physical and managerial technology. However, foreign capital has its own merits and demerits. It involves not only financial and economic considerations, but in a wider sense, also affect the sovereignty, dependency, economic and political volatility of a country. The countries have been cautious in allowing the foreign capital to enter the industrial scene of that country. In India, the foreign capital had remained subdued till 1990. There were several regulations and constraints applied by the Government on the inflow of foreign capital in India. However, with the onset of process of liberalization and globalization, the Government started relaxing, with supervision and control, the inflow of foreign capital in India. Number of policy measures have been introduced to attract foreign investment and the foreign investors, individual as well as institutional.

The inflow of foreign capital is determined not only by the economic policies of a country, rather there are several other factors affecting the inflow of foreign investment. Some of these factors are relative interest rates, relative rates of inflation, Government policies, political conditions, country rating, currency convertibility, etc.

Forms of Foreign Capital. The sources from where foreign capital can be raised can be grouped into two: official and private. The official sources include loans, aids, grants, gifts, etc., by one Government or Government agency to another country. The official sources may also be in terms of loans at concessional rates with longer maturity and liberal repayment schedules.

Private foreign capital is available from the individual and institutional investors. This capital is available on pure commercial terms. Broadly, there are two forms in which the private capital may flow: Direct Foreign Investment (DFI) and Portfolio Investment. DFI is one where the foreign investor establishes and does business in a country. In case of portfolio investment, the foreign funds flow in terms of subscription to securities or direct lending. In India, the portfolio investment is made through Euro Issues, External Commercial Borrowings, Stock Market Transactions, etc.

Foreign Direct Investment (FDI). FDI represent investment made for setting up branches, units or subsidiaries in one country by the overseas bodies. FDI is beneficial to both, the home country and the host country. The home country gets funds transferred to the host country which is benefited by getting scarce materials, goods and technologies. There should be a perfect strategy to control and regulate the FDI because it affects the political and economic relations.

The Government policy toward investment by NRIs and Overseas Corporate Bodies (OCB) has been encouraging. In most of the sectors, including service sectors, the investment is freely allowed. However, for certain sectors, ceilings of investment have been laid down. The RBI has been empowered to sanctions projects under the automatic route for several items, in which 100% foreign investment is proposed by NRI/OCB. Investment in 100% EOU and units in Export Processing Zones also come under automatic route. Different tax exemptions have been allowed to these units.

In order to facilitate and encourage FDI in India, Foreign Investment Promotion Board (FIPB) was set up. The FIPB works as a single window agency for all matters relating to FDI. The FIPB undertakes investment promotion activities in India and abroad, facilitates investment by NRI/OCB in India, help in negotiation with foreign investors, and reviews policies relating to FDI in India.

Foreign Investment Promotion Board (FIPB) was constituted in 1996. This comprises professionals from commerce and industry. The Government has also set up Foreign Investment Implementation Authority (FIIA) to help investors in implementation

*A Bolished May 2017 replaced by Foreign Investment Facilitation Portal (FIIP)
Online Single Point Interface to facilitate FDI*

of the approved projects. The objective of FIIA is to understand the problem of the investors and to resolve difference in perception of the investors and the Government. The other organization set up by the Government include Secretariat for Industrial Assistance (SIA), Investment Promotion and Infrastructure Development Cell. All these agencies and the RBI have issued several guidelines from time to time for facilitating FDI in India.

Euro Issues

After the onset of the process of globalization of Indian Economy, the Government thought it imperative to allow the companies in India to raise funds from foreign market in foreign exchange. It may be noted that in case of foreign capital, the foreign exchange is involved, so it is controlled and regulated by the RBI and the Government. Euro issues are outside the ambit of SEBI. In November 1993, the Government announced a scheme for the issue of securities by Indian companies in capital markets abroad. This scheme is known as "Issue of Foreign Currency Convertible Bonds and Ordinary Shares (through Depository Mechanism) Scheme, 1993". The scheme has been reviewed and several amendments have been made from time to time.

Indian companies have been allowed to issue three types of securities:

- (a) Foreign Currency Convertible Bonds,
- (b) Foreign Currency Exchangeable Bonds, and
- (c) Equity shares through Depository Receipts.

The regulatory provisions of these securities are as follows:

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1. Foreign Currency Convertible Bonds (FCCBs):— The FCCB means bonds issued in accordance with the relevant scheme and subscribed by a non-resident in foreign currency and convertible into depository receipts or ordinary shares of the issuing company in any manner, either in whole or in part, on the basis of any equity related warrants attached to debt instruments. A company seeking to issue FCCBs should have a consistent track record of good performance for a period of 3 years. The FCCBs are unsecured, carry a fixed rate of interest and an option for conversion into a fixed number of equity shares of the issuer company. Interest and redemption price (if conversion option is not exercised) is payable in dollars. Interest rates are very low by Indian domestic standards FCCBs are denominated in any freely convertible foreign currency, in U.S. \$.

FCCBs have been popular with issuers. Local debt markets can be restrictive with comparatively short maturities and high interest rates. On the other hand, straight equity may cause a dilution in earnings, and certainly a in control, which many shareholders, especially major family shareholders, would find unacceptable. Thus, the low coupon security which defers shareholders dilution for several years in form of FCCB, can be alternative to an issuer. Foreign investor also prefer FCCBs because of the Dollar denominated servicing, the conversion option and the arbitrage opportunities presented by conversion of the FCCBs into equity at a discount on prevailing market price in India.

The major drawbacks of FCCBs are that the issuing company cannot plan its capital structure as it is not assured of conversion of FCCBs. Moreover, the projections for cash outflows at the time of maturity cannot be made. In addition, FCCBs would result in creation of external debt for the country, as there would be foreign exchange outflow from the country if the conversion option is not exercised by the investors. Some other regulatory provisions of FCCBs are:

1. Interest payment of bond, until the conversion option is exercised, shall be subject to TDS @ 10%.
2. Conversion of FCCBs into shares shall not give rise to capital gain in India.
3. Transfer of FCCBs shall not give rise to any capital gain in India.

In February 2008, the Government of India issued guidelines for the issue of Foreign Currency Exchangeable Bonds.

2. "Foreign Currency Exchangeable Bond" means a bond expressed in foreign currency, the principal and interest in respect of which is payable in foreign currency, issued by an Issuing Company and subscribed to by a person who is a resident outside India in foreign currency and exchangeable into equity share of another company, to be called the Offered Company, on the basis of any equity related warrants attached to debt instruments. "Issuing Company" means an Indian company which is eligible to issue Foreign Currency Exchangeable Bond. "Offered Company" means an Indian company whose equity share shall be offered in exchange of the Foreign Currency Exchangeable Bond.

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Guidelines for issue of Foreign Currency Exchangeable Bonds

1. The Issuing Company shall be part of promoter group of the Offered Company and shall hold the equity share/s being offered at the time of issuance of Foreign Currency Exchangeable Bond.
2. The Offered Company shall be a listed company which is engaged in a sector eligible to receive Foreign Direct Investment and eligible to issue or avail of Foreign Currency Exchangeable Bond or External Commercial Borrowings.
3. An Indian Company, which is not eligible to raise funds from the Indian securities market, including a company which has been restrained from accessing the securities market by the Securities and Exchange Board of India shall not be eligible to issue Foreign Currency Exchangeable Bond.
4. The subscriber to the Foreign Currency Exchangeable Bond shall comply with Foreign Direct Investment Policy and adhere to the sectoral caps at the time of issuance of Foreign Currency Exchangeable Bond.
5. Prior approval of Foreign Investment Promotion Board, wherever required under the Foreign Direct Investment policy, should be obtained. Entities prohibited to buy, sell or deal in securities by Securities and Exchange Board of India will not be eligible to subscribe to Foreign Currency Exchangeable Bond.
6. The proceeds of foreign Currency Exchangeable Bond may be invested by the issuing company in the promoter group companies. The promoter group company receiving such investments shall be required to use the proceeds in accordance with end uses prescribed under the External Commercial Borrowings policy.
7. The proceeds of Foreign Currency Exchangeable Bond may be invested by the issuing company overseas by way of direct investment including in joint ventures or Wholly Owned Subsidiaries.
8. Prior approval of the Reserve Bank of India shall be required for issuance of Foreign Currency Exchangeable Bond.
9. The Foreign Currency Exchangeable Bond may be denominated in any freely convertible foreign currency.

Pricing and Maturity

10. The rate of interest payable on Foreign Currency Exchangeable Bond and the issue expenses incurred in foreign currency shall be within the all in cost ceiling as specified by Reserve Bank of India under the External Commercial Borrowings policy.
11. At the time of issuance of Foreign Currency Exchangeable Bond the exchange price of the offered listed equity shares shall not be less than the higher of the following two:
 - i. The average of the weekly high and low of the closing prices of the shares of the offered company quoted on the stock exchange during the six months preceding the relevant date; and
 - ii. The average of the weekly high and low of the closing prices of the shares of the offered company quoted on a stock exchange during the two week preceding the relevant date.

12. The minimum maturity of the Foreign Currency Exchangeable Bond shall be five years for purposes of redemption. The exchange option can be exercised at any time before redemption. While exercising the exchange option, the holder of the Foreign Currency Exchangeable Bond shall take delivery of the offered shares. Cash (Net) settlement of Foreign Currency Exchangeable Bonds shall not be permissible.
13. The Issuing Company intending to offer shares of the offered company under Foreign Currency Exchangeable Bond shall comply with all the applicable provisions of the Securities and Exchange Board of India Act.
14. Exchange of Foreign Currency Exchangeable Bonds into shares shall not give rise to any capital gains liable to income-tax in India.

3. Depository Receipts (DRs):-A DR means any instrument in the form of a depository receipt or certificate created by the Overseas Depository Bank outside India and issued to the non-resident investors against the issue of ordinary shares. A Depository Receipt is a negotiable instrument evidencing a fixed number of equity shares of the issuing company generally denominated in US dollars. DR are commonly used by those companies which sell their securities in international market and expand their shareholdings abroad. These securities are listed and traded in International Stock Exchanges. These can be either **American Depository Receipt (ADR)** or **Global Depository Receipt (GDR)**. ADRs are issued in case the fund are raised through retail market in United States. In case of GDR issue, the invitation to participate in the issue cannot be extended to retail US investors.

While DRs denominated in any freely convertible foreign currency, generally in US Dollars, are issued by the depository in the international market, the underlying shares denominated in Indian Rupees are issued in the domestic market by the issuing company. These shares issued by the company are customized in the home market with the local bank called custodian.

An investor has an option to convert the DR into a fixed number of equity shares of issuer company after a cooling period of 45 days. He can do so by advising the depository. The depository, in turn, will instruct the custodian about cancellation of DR and release the corresponding shares in favour of the non-resident investor, for being sold directly on behalf of the non-resident or being transferred in the books of account of the issuing company in the name of the non resident. Until such conversion, the DRs, which are negotiable, are traded on a Overseas Stock Exchange, but they carry no voting rights. On conversion of the GDR into equity shares, the said share carry voting rights, yield rupee dividend and are tradeable on Indian Stock Exchange like any other equity shares. Some other regulatory provisions are:

- i. DR may be issued for one or more underlying shares.
- ii. Dividend on shares will be subject to TDS @10%.
- iii. Transfer or trading of DR outside India will not give rise to any capital gain in India.

Some of the provisions relating to Euro-issues are as follows:

1. Euro issues shall be considered as Direct Foreign Investment in the issuing company.
2. There is no limit on the number of Euro issues to be floated by a company in one year.
3. Investment of proceeds of Euro issues cannot be made in stock market and real estate. However, the funds can be used for pre-payment of scheduled payment of external commercial borrowings.
4. Within the framework, GDR raising companies will be allowed full flexibility in deploying the proceeds. Up to a maximum of 25% of total proceeds may be used

for general corporate restructuring, including working capital requirement of the company raising the GDR.

5. A company shall be required to specify the proposed end-uses of the issue proceeds at the time of making their application, and will be required to submit quarterly statement of utilization of funds for the approved end uses, duly certified by their auditors.
6. Currently, companies are permitted to access foreign capital market through Foreign Currency Convertible Bonds for (i) restructuring of external debt which helps to lengthen maturity and soften terms, and (ii) for end use of funds which conform to the norms prescribed by the Government for External Commercial Borrowings (ECBs) from time to time.
7. Companies will not be permitted to issue warrants along with their Euro-issue.
8. Companies may retain the proceeds abroad or may remit into India in anticipation of the use of funds for approved end uses.
9. Both the in-principle and final approvals will be valid for three months from the date of their respective issue.

Considering the funding requirements of unlisted companies, it has been decided to permit all unlisted companies to float Euro/ADR issue provided they fulfill the three-year track record eligibility requirement. These unlisted companies floating GDR/ADR/FCCB issues would, however, need to comply with the standard listing requirement of listing on the domestic stock exchange within 3 years of having started making profit.

Sponsored ADR/GDR: Sponsored ADR/GDR is the permitted route through which Indian shareholders can sell their holding in Indian Companies in the overseas market by a company sponsored process. Indian shareholders are not directly allowed to sell their shares in overseas market. However, this has now been made possible by way of sponsored ADR/GDR.

the guidelines for the sponsored ADR/GDR were issued by the RBI in July, 2002. Some of the basic provisions are:

- a) Sponsored ADR/GDR scheme is available in respect of shares listed in India.
- b) The process of disinvestment would be initiated by the Indian company by sponsoring ADR/GDR issue against the block of existing shares being offered by the shareholders under these guidelines.
- c) Option to divest will be given to all the shareholders such that no shareholder or class gets a special dispensation.
- d) If shares offered are more than pre-specified number, then shares would be accepted in proportion to the existing holdings.
- e) The shares offered may be kept in an escrow account created for the purpose, but such retention shall not exceed three months.
- f) The proceeds of ADR/GDR shall be repatriated to India within one month of the closure of issue.
- g) The proposal for sponsored ADR/GDR issue shall be approved by shareholders by a special resolution.
- h) Issue expense shall be subject to 4% in case of GDR, 7% in case of ADR and 2% in case of private placement of ADR/GDR.
- i) Resident shareholders participating in sponsored ADR/GDR will be subject to capital gains tax under the Income-tax Act, 1961.

In India, so far, ICICI Bank has completed one sponsored ADR issue and Infosys Ltd. has completed two sponsored ADR issues.

GDR → Reliance 1992
ADR → Infosys 1999
IDR → UK Standard Chartered 2010

Benefits of Euro-Issues to Issuing Company

- International capital market is very large and liquid, and can handle issues of larger size.
- Better corporate image of issuing company both in India and both in India and abroad among bankers, customers, etc.
- It will broaden the shareholders base and enhance investors quality.
- It normally offers better comparative share value.
- The cost of raising equity funds from international market is generally lower than the cost of domestic issues.
- It implies acceptance by sophisticated western investors which in turn would help to enhance the image of the company and its product internationally.

Benefits to the Euro-Issues to the Investors

- Euro issues are allowed to be issued only by the companies with proven track record.
- If it is listed and traded in international stock exchanges in the dematerialized form and hence is free from delivery and settlement problems.
- It is generally denominated in US Dollars and hence reduces the foreign exchange risk.
- Dividend and interest on investment in Euro issues instruments may carry concessional tax rates.
- Market for most of the script is more liquid and hence facilitates faster entry and exit.
- Investors in Euro-issues are not required to comply with a large number of complex formalities and regulations normally required for investment through domestic stock exchanges.

Issue of ADRs by an Indian company. An Indian company may think of floating an ADR issue primarily with an intention of getting its shares listed at NASDAQ or New York Stock Exchange. ADR issue should be attempted in two phases:

- Preparing for the ADR Issue.** Before a company goes for issue of ADRs, it has to adequately and systematically prepare for it. It has to prepare the business plan for which the funds are required. Next, it should get fair valuation of its equity shares. The current market price, projected earnings and intrinsic worth will help in this matter. The company has to prepare and redraft its financial statements for last at least 3 years as per US GAAP. It has to empanel and select merchant bankers in the US capital market. These would include Overseas Depository, Legal Advisors and Certified Public Accountants. The company then has to obtain necessary approval from the Government. Thereafter, it has to get itself registered with the Securities Exchange Commission of US and the NYSE or NASDAQ where the ADRs are planned to be listed. Then the company can proceed with the offer of ADRs to the investors for which Road shows, Presentations, Conference, etc., may be planned.
- Offering the ADRs.** The ADRs are issued through the depository mechanism. The subscription list will be kept open as per the SEC Regulations. If the company has opted for green shoe option, it has to prepare for this also. Once the subscriptions are received in the designated overseas banks, the company shall create shares and will hand over these shares to the custodian in India. The depository shall issue ADRs to the foreign investors against the underlying shares. The foreign investors can transact in the ADRs either by selling at the stock exchange, or can get the underlying shares handing over the ADRs to the depository. These underlying shares can then be sold at the recognized stock exchange in India.

Green Shoe Option

Provision in an IPO underwriting agreement that grants the underwriter the right to sell more shares than originally planned.

Price Stabilisation Mechanism
Price Support, in case price falls.

External Commercial Borrowings

External commercial borrowing (ECBs) are loans in India made by non-resident lenders in foreign currency to Indian borrowers. They are used widely in India to facilitate access to foreign money by Indian corporations and PSUs (public sector undertakings). ECBs include commercial bank loans, buyers' credit, suppliers' credit, securitised instruments such as floating rate notes and fixed rate bonds etc., credit from official export credit agencies and commercial borrowings from the private sector window of multilateral financial institutions such as International Finance Corporation (Washington), ADB, AFIC, CDC, etc. ECBs cannot be used for investment in stock market or speculation in real estate. The DEA (Department of Economic Affairs), Ministry of Finance, Government of India along with Reserve Bank of India, monitors and regulates ECB guidelines and policies.

External Commercial Borrowings (ECBs) to refer to raising of long-term finance by Indian companies from international market except by issue of FCCB or DR. ECBs include commercial bank loans, buyers credit, sellers credit, Floating Rate Notes, Fixed Rate Bonds, Borrowing from multinational financial institutions such as ADB, IFC, etc. Under the guidelines issued by the Government, ECB can be used as a source of finance for expansion of existing capacity as well as for fresh investments. The Government policy on ECB aims to put a ceiling ECB for better debt management. Following are main elements of the ECB policy of the Government:

- i. Minimum average maturity of 3 years for ECB up to \$20 million, and upto 5 years for ECB greater than \$20 million. However, for 100% EOU, maturity of 3 years only is allowed irrespective of amount of ECB.
- ii. ECB upto \$100 million can be approved by the RBI and no further approval required from the Government. The maturity period should be 3 years.
- iii. Exporters and other corporates who have foreign exchange earnings can raise ECB upto 3 times the amount of average annual earnings or \$200 million whichever is higher.
- iv. ECB upto \$200 million can be raised for financing equity investment in infrastructure projects (i.e., Power, Telecommunication, Railways, Roads, Bridges, Ports, Industrial Parks, etc.)
- v. Long-term ECB
 - a) ECB of maturity period of eight years or above shall be outside the ceiling of ECB. Approval of Government and the RBI would be required.
 - b) Funds raised under this window shall not be subject to end use restrictions.
 - c) Long-term debt instruments need not have 'put' or 'call' option, potentially reducing the stated maturities.
- vi. All financial intermediaries including development financial institutions should onlend their ECB within 12 months of draw down.
- vii. ECB raised is not permitted for investment in stock exchanges and real estate.
- viii. ECB raised for project related rupee expenditure must be brought into the country immediately and raised for import of capital goods should be utilized at the earliest opportunity.
- ix. All infrastructure and green field projects appraised by financial institutions can raise ECB upto 50% of total opportunity.
- x. Interest rate of ECB is tied with LIBOR (6 months).
- xi. In order to hedge against the foreign exchange rate risk, corporates are allowed to raise domestic resource through issue of Domestic Rupee Structured obligations, subject to certain conditions.
- xii. The choice of ECB currency and interest rate basis (fixed or floating) is left to the borrower. The choice of security is also with the borrower.
- xiii. All approvals for ECB are valid for a period of 6 months.
- xiv. Pre-payment of ECB is permitted if it is met out of inflow of foreign equity.
- xv. Refinancing of outstanding amounts under existing loans by raising fresh loan is permitted on case to case basis. Rolling over of ECB is not permitted.

- xvi. Swapping of ECB with another corporate which requires foreign currency is not permitted.
- xvii. Hedging of interest and exchange rate risk can be undertaken by interest rate swaps, currency swaps, forward rate agreements, etc.

The ECB Guidelines are periodically reviewed by the Government in the light of prudent management of debt, changing market conditions, sectoral priorities, etc. In July 2004, the RBI has issued revised and consolidated ECB guidelines. Under these guidelines, ECB can be accessed under two routes:

- a) **Automatic Route:** ECB for investment in real sector (industrial including infrastructure) will be under Automatic Route and will not require RBI/Government approval. Companies registered under the Companies Act, 1956 (except financial intermediaries such as banks, NBFC, etc.) are eligible for Automatic Route. ECB upto \$20 million (with minimum average maturity of 3 years) and upto \$500 million (with minimum average maturity of 5 years) can be raised under Automatic Route.
- b) **Approval Route:** The eligible borrowers under the approval route are financial institution, including IDFC, ILFS, PFC, IRCON, EXIM Bank, Other banks, and those not eligible under automatic route. Other guidelines remain same as given earlier.

SWAPS

A swap is a contract in which two parties agree to exchange their respective cash flows. These are private arrangements between parties to exchange cash flows according to some pre-arranged formula. The parties to the swap contract are known as counter-parties. In swap, one party agrees to exchange his set of pre-determined cash flows with the predetermined set of cash flows of the other party. For example, one party is currently receiving cash from one investment but prefers to have cash flows to have cash flows from other type of investment. The cash flows can be swapped (exchanged) with the help of a swap dealer.

Characteristics of Swaps: Swaps are special types of derivatives. The basic characteristics of swap and swap market are:

1. Swap arrangements are tailor-made to the needs of the counter-parties.
2. Swaps are not subject to regulate as the future and options are.
3. The swaps are bilateral agreements and the potential default risk is there. The swap dealer can provide a counter-guarantee.

As the swaps are private arrangement between the parties different types of swaps have emerged over the years. Swaps are, in fact, a part of financial engineering and attempt to cope up with the requirements of a party. Different types of swaps are:

(i) Currency Swaps. A currency swap is a transaction between two parties in which one promises to make a series of payments to another party at specific dates in exchange for a payment from the other party in different currencies. So, in currency from the other party in different currencies are swapped (exchanged).

Currency swaps can be used by firms that operate in one currency but need to borrow in another currency. For example, A Ltd. and B Ltd. want to borrow in \$ and ₹ respectively. But A Ltd. can borrow ₹ at a cheaper rate than B Ltd. while B Ltd. can borrow \$ at a cheaper rate. They can enter into a currency swap to share advantages of the cheaper borrowing capacity of the other company. The rational for currency swap lies in the fact that one borrower has a comparative advantage in borrowing in one currency, while the other borrower has an advantage in borrowing in another currency.

In currency swap, one party holds one currency and swaps it for another currency held by the other party. The swap arises when one party provides one currency in exchange for another currency. The purpose of the currency swap is to arrange the funds denominated in another currency. A currency swap can also be viewed as a series of forward contracts between the two parties. In case of swaps, payments normally consist of principal payment and an interest payment. The swap mechanism can be explained as follows:

Hull Technology of US (HT) wants to expand operation in Europe for which funds of Euro 10 million, are required. At present, the exchange rate is \$.9804 per Euro. It can issue bonds for \$98,04,000 at a fixed rate 6.1% p.a. The bonds are repayable semi-annually over two years. However, the expanded operation in Europe would create cash flows in Euro only. So, HT enters into a swap agreement with ABC Bank in Euro as follows:

- ✓ HT to issue bonds of \$98,04,000.
- ✓ HT to pay \$98,04,000 to ABC upfront.
- ✓ ABC to pay HT Euro 1,00,00,000 upfront.
- ✓ ABC to pay interest semi-annually for 2 years @ 6.1% p.a.
- ✓ HT to pay interest semi-annually for 2 years @ 4.5% p.a.
- ✓ ABC to pay \$98,04,000 after 2 years.
- ✓ HT to pay Euro \$1,00,00,000 to ABC after 2 years.

This swap transaction is over simplified. The different in rate of interest and foreign exchange has been ignored. These aspects are analysed elsewhere in the text. Still, it can be put by saying that swap transaction is like HT having borrowed Euro 10 million @ 4.5% and converting the proceeds to invest in \$ bonds of \$98,04,000 @ 6.1%. so, each party issues bonds in one currency and uses the proceeds to buy the bonds issued by the other party.

(ii) Interest Rates Swaps. Interest rate swap is an agreement between two parties in which each party makes a series of interest payments to the other at pre-determined dates at different rates. At least one of the interest rates is variable i.e., a floating rate, in the sense that the rate at which interest payments will be made at a later date is not known. The most common type of interest rate swap is known as 'Plain Vanilla' swap in which one rate is fixed and the other rate is floating.

In plain vanilla swap, one party has an initial position in fixed rate debt and the other has initial position in fluctuating rate debt. The latter is exposed to changing interest rates. By swapping the interest obligations, the counterparties eliminate their initial exposure and create obligations of which they want.

Suppose, X Ltd. and Y Ltd., both want to borrow \$20 million. The fixed rate of interest charged by banks is 7% and 8.5% from X and Y respectively. However, in case of floating rate system, they can obtain the loan at LIBOR + 1.0% and LIBOR + 4%. X Ltd. has an absolute advantage over Y Ltd. in case of fixed rate as well as floating rate system. But Y Ltd. has a comparative advantage over X Ltd. in case of fixed rate system, as the former has to pay only 1-1/2% extra as compared to 3% extra in floating rate system. Both X Ltd. and Y Ltd. can be benefited by arranging a swap through a broker, and share this comparative advantage. A swap transaction will be arranged between the end user parties by the swap dealer. It is important to note two points here:

- a. In interest rate swaps, there is no exchange of principal amount either on maturity or initially, and
- b. On each interest payment date, only the interest payments or the net amount will be exchanged.

The question is why the two parties would enter into an interest rate swap. The reason predominantly is the comparative advantage. Some of companies have a comparative advantage in fixed rate market while others have comparative advantage in floating rate market. It makes sense for a company to go to the market where it has a comparative advantage. A swap has to effect of transforming a fixed rate loan into a floating rate loan

and vice-a-versa. Apart from plain vanilla swap, discussed above, other swap arrangements have also been devised to suit different parties. These are **forward swap, callable swap, puttable swap, zero coupon to floating, etc.**

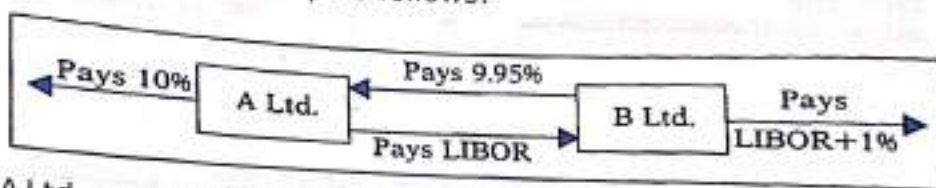
In international financial market, LIBOR (London Inter-Bank Offered Rate) is the benchmark, or a reference rate in case of floating rate loans. LIBOR is the rate of interest offered by banks on deposits from other banks in Euro market. In India, there is Mumbai Inter-Bank Offered Rate (MIBOR), which can be used as a reference rate. The working of interest rate swap has been explained with the help of Example:

A Ltd. and B Ltd., both want to borrow Rs.10 crore for 5 years and following rates are offered:

	A Ltd.	B Ltd.
Fixed Rate	10%	11.20%
Floating Rate	LIBOR + .3%	LIBOR + 1%

B Ltd. wants to borrow at fixed rate while A Ltd. wants to borrow at floating rate. How can they enter into a swap? From the point of view of swap market, the difference in fixed rates is greater than the difference in floating rates, i.e., 1.20% and .7% respectively. B Ltd, has a comparative advantage in fixed rate borrowing. This comparative advantage allows a swap to be negotiated.

A Ltd. should borrow at 10% fixed rate and B Ltd. borrows at LIBOR + 1% i.e., at floating rate and enter into a swap as follows:

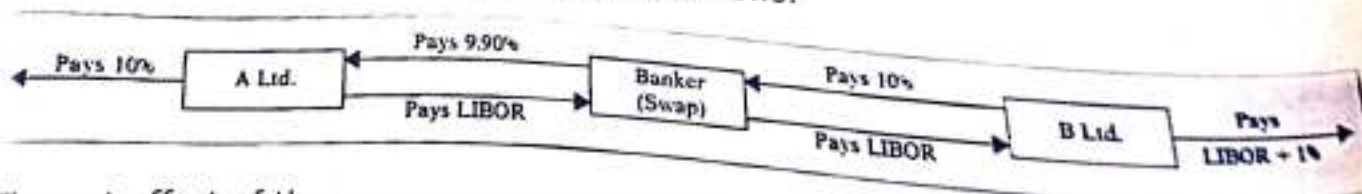


In this case, A Ltd. pays LIBOR to B Ltd. and 10% to lenders. It receives 9.95% from B Ltd. The net burden of A Ltd. is LIBOR + .05%. ON the other hand, B Ltd. pays 9.95% to A Ltd. and LIBOR + 1% to lenders. The net burden of B Ltd. in 9.95% + 1% = 10.95%. So, A Ltd. is able to borrow at the lesser floating rate of LIBOR + .05% whereas B Ltd. is able to borrow at lesser fixed rate of 10.95%.

However, this position is very simple and two parties may not get in touch with each other directly. They deal through a dealer/banker, and the potential gain of .5% (i.e., 1.20% - .70%) has to be split in three parts between A, B and the banker. One possible swap arrangement may be:

- A Ltd:** It pays 10% on borrowing.
It receives 9.9% from the banker.
It pays LIBOR to the banker.
- B Ltd:** It pays LIBOR + 1% on borrowing.
It receives LIBOR from the banker.
It pays 10% to the banker.

The swap arrangement can be presented as follows:



The net effect of the swap arrangement is: B Ltd. pays 11% which is .20% less than the fixed rate it goes directly for that borrowing. A Ltd. pays LIBOR + .10% in the process.

So, the potential gain of .50% has been shared by A, B, and the banker to the extent of .2%, .2% and 1% respectively. The banker will enter into two swap agreements with A Ltd. and B Ltd. separately. In case, any party defaults, the banker has to fulfill its obligation.

Swap Facilitators: A swap facilitator is a mediator who assists in formation and completion of a swap arrangement between the interested parties. A swap facilitator is generally a bank. However, a swap bank may work as a swap broker or a swap dealer. As a swap broker, the swap bank acts strictly as an agent and does not take any financial position in the swap transaction. On the other hand, a swap dealer may transact on its own account to complete the swap. So, a swap dealer assumes a risk position in the swap transaction, but it need not be a speculator. A swap dealer works as a financial intermediary and earns profit by helping to complete a swap transaction. On the other hand, a swap broker helps in finding a suitable swap counterparty and brings the parties to negotiate and complete the transaction. For these services, the swap broker receives a fee from each of the parties. A swap broker facilitates a swap transaction by bringing potential counterparties together, and does not take any risk position. But a swap dealer acts as a counterparty in a swap transaction and thus assumes a risk position. It may be noted that a swap bank may act as a swap broker in some transactions and as a swap dealer in other transactions. It is also possible that a swap dealer may act as a market maker. It means that it is prepared to enter into a swap transaction without having an offsetting position with the other counterparty. However, a market maker must quantify his risk to take a suitable hedge strategy.

Conclusion. Thus, swap deals can be useful in a variety of applications. A company issuing fixed rate bonds can convert the interest and principal liability or both by a swap deal into fluctuating liability. A company which has invested in fixed income bonds can swap its receipts into floating receipts. These cases would give the benefit to the company. Interest rate risk and foreign exchange rate risk can be countered by appropriate swap strategies. A swap dealer can offset his position by entering into counter swap deals. However, it may be noted that swap obligations generally do not appear in the financial statements. In case the swaps are expected to have a material impact on the finances of a firm, these may be shown as the footnotes to the financial statements.

7 Packing Credit / Pre Shipment finance (letter of credit)
7 Foreign Currency Convertible Bond (FCCB)
→ Low Interest → Low Cost
→ Redeemable or convertible

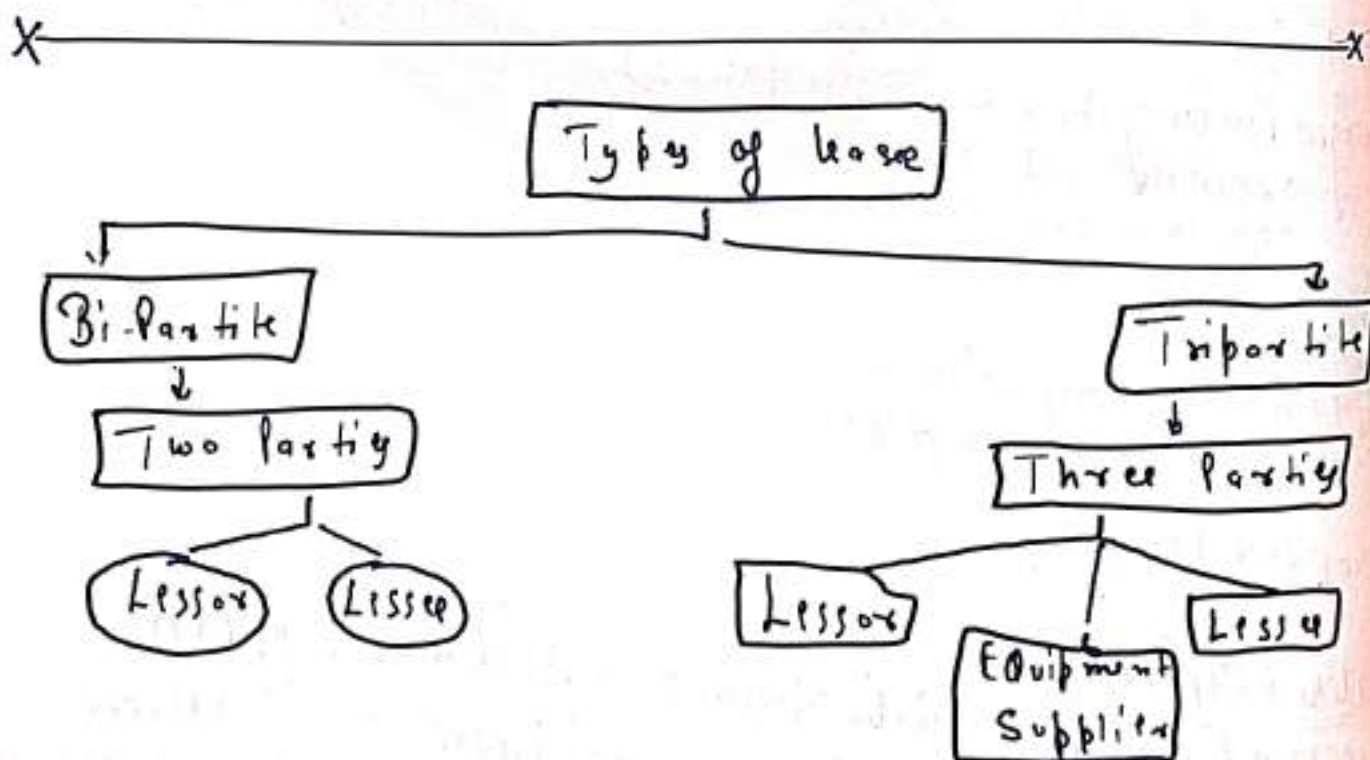
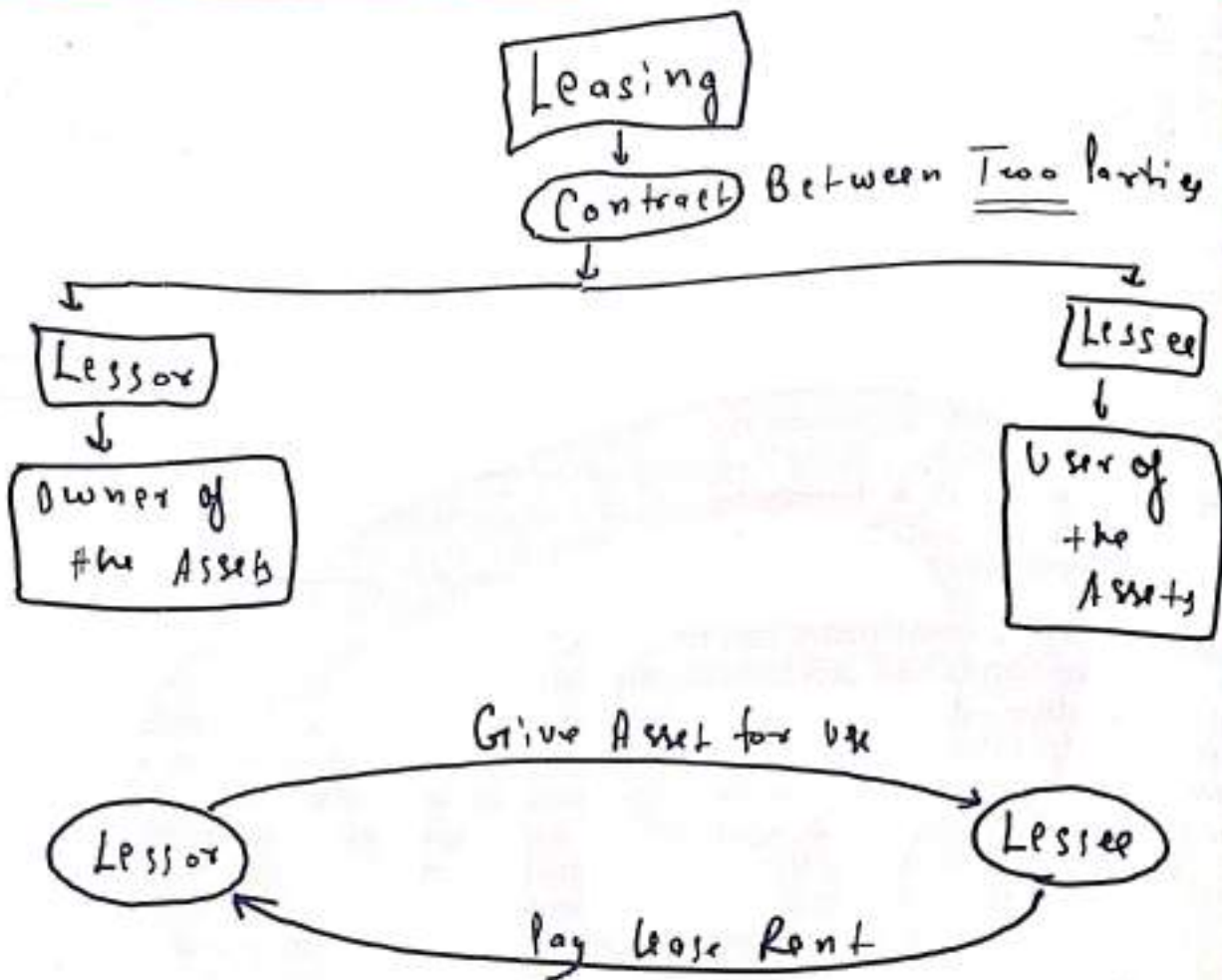
7 Plain Vanilla Bond
Pay Principal along with interest
No option, issued at discount

7 Drop Lock Bond

Watered Capital
Excess of total capitalisation over real value of LTA
Co. pays higher price or when adequate consideration
in the form of asset is not received for issue of securities.

CHAPTER 3

LEASE FINANCING



Financial Lease Any condition

1. Transfer of ownership to lessee by the end of lease term.
2. Lessee has option to purchase at very reduced rate or lessee is certain to opt for purchase at inception.
3. Where lease period covers substantial period of economic life of asset.

Decision

From Lessor
Point of
View

Point of View :-

Lease vs Buy

↓
Decide करनी है कि Asset कि Lease
Beneficial है या Buy करनी

↓
है कि Cash outflow है
lessee कि option Select करनी

Point of View :-

Decide करनी है कि Asset कि
Lease पर क्या Beneficial

है या नहीं।

⇒ Lessor Basically Capital Budgeting Technique

↓
Decide करनी है whether Asset कि है या
Beneficial है या नहीं।

⇒ अगर Lessor कि Positive NPV है तो

तो कि Asset कि Buy करनी है कि पर
करनी।

Financial Lease

4. At the inception, PV of minimum lease payments amounts to substantial fair value of leased asset.
5. Leased asset of specialised nature that only lessee can use it without major modification.

DEFINITION AND MAIN FEATURES

A lease is a contract whereby the owner of an asset (the lessor) grants to another person (the lessee) exclusive right to use the asset for an agreed period of time, in return for the payment of a rent (called lease rental). Capital assets like land, buildings, equipments, machinery, vehicles are the usual assets which are generally acquired on lease basis. The lessor remains the owner of the asset, but the possession and economic use of the asset is vested in the lessee.

As there is no separate statute in India to govern the contracts of leasing, which is akin to a contract of bailment, the provisions of the Indian Contract Act apply to it. According to Section 146 of the Indian Contract Act, 1872 bailment is "the delivery of goods by one person to another person for some purpose, upon a contract that they shall, when the purpose is accomplished, be returned or otherwise disposed of according to the directions of the person delivering them." The person delivering the goods is called the bailor and the person to whom they are delivered is called the bailee. Since an equipment lease transaction falls in the category of a bailment contract, the obligations of the lessor and the lessee are similar to those of the bailor and the bailee (unless expressly specified otherwise in the lease agreement) as given in the Indian Contract Act. Briefly, these may be stated as follows:

- 1) The lessor has the duty to deliver the asset to the lessee, to legally authorise the lessee to use the asset and to leave the asset in peaceful possession of the lessee during the lease period.
- 2) The lessor has the obligation to pay the lease rentals as specified in the lease agreement, to protect the lessor's title, to take reasonable care of the asset, and to return the leased asset at the expiry of the lease period.

A lease is a contractual arrangement whereby one party (i.e., the owner of an asset) grants the other party the right to use the asset in return for a periodic payment. A lease is essentially the renting of an asset for some specified period. The owner of the assets is called the **lessor** while the other party that uses the assets is known as the **lessee**. A lessee can be an individual, a firm or a company interested in the use of the assets without owning it, while the lessor may be the seller, supplier, a finance company the manufacturer who can finance the purchase of the assets. Under the lease contract, the ownership of the assets remains with the lessor whereas the use of the assets is available to the lessee. In return, the lessee has to pay a fixed periodic amount to the lessor. This periodic payment is known as the lease rental. Generally, the lease rental is fixed and the amount and timing of its payment are a matter of agreement between the lessor and the lessee.

TYPES OF LEASES

The terms and conditions on which an asset is leased and the rights and obligations of the lessor and the lessee are clearly incorporated in the Lease Agreement. On the basis of variations in all these, leases are classified into the following categories:

1) Operating Lease

In case of operating lease, the lessor not only leases the asset of which he remains the owner throughout, but also undertakes to provide services attached to such assets, e.g., maintenance, repairs, technical advice, etc. Such lease is also called service lease. Computers, office equipments, automobiles and trucks are the typical capital assets which are leased under operating lease arrangement. The main features of an operating lease are as follows:

- i) The lease contract is generally for a period which is considerably shorter than the useful life of the leased asset. For example, a machine may be acquired on lease for a period of 5 years, while its useful life may be 10 years.

- ii) The lessor does not, therefore, recover the full cost of the asset from one lessee only. The leased asset is returned back to the lessor at the end of the lease period and is, thereafter, leased again to another lessee for another lease period. After its useful life is over, it is sold off and its scrap value is realised by the lessor.
- iii) Operating lease generally contains a cancellation clause also, wherein the lessee retains the right to cancel the lease any time before the lease period is over. Such clause is beneficial to the lessee as he may terminate the lease, if the asset becomes obsolete or his need for the asset is over.
- iv) The lease agreement contains a maintenance clause whereby the lessor is required to maintain the leased assets. Thus, necessary repairs, fuel, support staff may be provided by the lessor, as agreed upon.
- v) The lease rental includes: (a) a part of the amortisation of the cost of the equipment, (b) cost of the maintenance services provided, and (c) profit of the lessor.

2) Financial Lease

In case of a financial lease, the lessor remains the owner of the leased asset during the lease period, but does not undertake its necessary maintenance. The rental received by the lessor, fully amortises the cost of the equipment and earns a profit for him. These leases are non-cancellable. Ultimately, the ownership of the leased asset may be transferred to the lessee at an agreed price. The lessor thus acts as a financier only and earns a return on his investment in the leased asset by way of rentals. Financial leases are for the major part of the useful life of the asset.

3) Sale and Lease Back

This is another type of lease arrangement wherein the lessee who already owns the assets, sells the same to the lessor, and thereafter takes the same asset from him on lease basis. This is called 'Sale and Lease Back arrangement'. Under this arrangement, the lessee immediately recovers the value of his already owned assets from the lessor. Thereafter, the lessee makes payment of the lease rentals periodically as usual. Such a lease arrangement enhances the liquid resources of the lessee immediately, which can be utilised otherwise to meet his working capital requirements or to purchase another asset on cash payment basis. This type of lease is an alternative to a mortgage of the assets.

4) Leveraged Lease

In case of an ordinary lease, the lessor purchases the asset with an appropriate mix of debt and equity. But the creditor (i.e., supplier of the debt funds) does not have recourse to the lessee. In other words, in case the lessor defaults in making repayment of the debt, the creditor cannot claim the same from the lessee. He will have recourse to the lessor only.

Leveraged lease is just opposite to the above. In such case, the creditor remains entitled to have recourse to the lessee, i.e., he can recover his claims from the lessee also. The lease rental is assigned to the creditor. The lessee is required to pay the lease rental directly to the creditor of the lessor. Generally this transaction is undertaken through a trustee, who receives the lease rental and appropriates it as debt service component to the creditor and the balance amount to the lessor.

4) Domestic Lease and International Lease

This classification is based on the domicile of the parties to a lease contract. If all the parties, viz, equipment supplier, lessor and the lessee are residing in the same country, the lease is called domestic lease. If they are residing in different countries, it is called international lease. If the lessor and the lessee are domiciled in the same country and equipment is imported from another country, it is called import lease. If the lessor and lessee are domiciled in different countries, the lease is called cross-border lease. In such cases, the equipment supplier may be the resident of any country. In case of international lease, there are two additional risks, i.e., country risk and currency risk.

Lease Versus Buy: The Basic Decision

Leasing is a source of financing provided by the lessor to the lessee. The lessee receives the services of the asset for a specific period of time in exchange for the payment of fixed lease rental. The only other way, the lessee could obtain the services of the given asset would be to purchase it outright, and the outright purchase of the asset would require sufficient funds. The lessee might have these sufficient funds to purchase the assets outright without borrowing, but the fund would not be free as there is always an opportunity cost of the funds. Every time, therefore, a firm has to acquire an asset, it may have to decide between two mutually exclusive situations: First, should the asset be purchased and become the owner of the asset and second, should the asset be acquired on a lease basis.

Even, if the firm has liquid resources with which it can purchase the asset, the use of these resources may be viewed as a form of borrowing because the opportunity cost of the funds is at least equal to the prevailing interest rate on borrowing. A firm contemplating the acquisition of an asset, the ownership of which is only incidental to obtaining the services of the assets, has also to decide whether it should lease the asset or borrow the funds and buy the assets. This is known as *lease-buy decision* and is essentially a financing decision. In case of lease financing, the lease rentals are payable which are analogous to payment of interest on borrowing which may be needed for raising the funds for buying the asset. A lease buy decision therefore, is financing decision and involves a choice between debt financing and lease financing.

Another point worth noting about a lease-buy decision is that the firm should compare leasing to borrowing the amount of purchase price and then buying the asset (rather than using equity to buy the asset). This is because leasing creates such obligations for the firm, which are very similar to those created by borrowing. Buying the assets entirely, or even substantially, with equity capital would expose the firm to far less risk than leasing and the asset inasmuch as lease payments represent a contractual commitments, whereas the equity do not. In case of lease, there is contractual payment in the form of the lease rental and it may be taken as similar to the payment of interest and repayment of principal amount of the borrowing. Therefore, the lease decision may rightly be evaluated as an alternative to financing the asset purchase by 100% debt financing. In general, leasing should be compared to borrowing all the funds required for the asset and buying it. Thus, the lease-buy decision involves evaluating the relative advantages and disadvantages of leasing and of debt financing particularly in the form of effect on lessee's cash flows.

In the lease-buy decision, the choice depends upon the present value of the two series of after tax cash flows to the lessee; and to evaluate the lease-buy decision, the financial manager has to consider only the relevant cash flows i.e., he has to consider only those cash flows that differ under the two alternatives. For example, the maintenance cost of the asset may be paid by the lessee, irrespective of the fact whether the asset is purchased or is acquired on lease. This cost can be ignored by the financial manager as it is irrelevant as the maintenance cost is payable in both the options.

What is needed is an after tax present value comparisons of the two options. As in the capital budgeting decisions, all costs (of leasing as well as buying option) should be measured on an after tax basis and the lease obligations or the additional borrowing is assumed to be small relative to the total capital structure, thereby causing the firm's capital structure and the risk to remain basically unchanged. The evaluation procedure may be explained as follows:

Evaluation of Lease-buy Decision

The decision may be taken on the basis of evaluation of both the options, for which the following steps may be required.

I. Identification of Relevant Cash Flows: first of all, the cash flows emanating from the lease option as well as the buying option are to be identified. In case of lease the firm receives benefits from using the assets but has no claim on its residual salvage value which is reserved for the lessor in most of the cases. The lessee firm has to make lease payments and also to meet all or some of the maintenance expenses. The lease payments and all such expense payment associated with the leased assets are tax deductible for the lessee. The lessee cannot claim depreciation as he is not the owner.

In case of buying the assets on the other hand, the firm assumes all the risk and benefit associated with the ownership including the salvage value, if any. It may also incur the costs of maintaining the asset. The firm also has to pay the interest on the funds borrowed to finance the asset, together with the repayment as per schedule. It may be noted that in case of buying the assets, depreciation, maintenance expense, interest all are deductible. The cash flows of the buying option are to be ascertained.

The after tax cash flows emanating from the lease option are relatively easier to be identified. The lease option required only cash outflows in the form of the lease rental payment which is to be considered on an after tax basis. The after tax cash flow of lease rental may be taken as equal to the difference between the lease rental and the tax benefit. However, the cash flows associated with borrowing are more difficult to obtain due to the need to identify both the interest and the depreciation associated with the asset. The calculation of cash outflow associated with the asset. The calculation of cash outflow associated with borrowings has two steps. First is to determine the annual interest components and the depreciation; and the second is to determine the cash outflow which is equal to interest payment less tax shield on account of interest and depreciation plus principal repayment. The cash flows associated with the buying option may be enumerated as follows:

- ❖ Interest payment on the debt, which are tax deductible.
- ❖ Principal repayment of the debt, which is not tax deductible.
- ❖ Tax savings accruing from the depreciation of the asset.
- ❖ Any other operating expenses arising as a consequence of buying the assets.
- ❖ Any salvage value at the end of assets life.

Annual Cash flows in two options are as follows:

Leasing : Annual cash outflows = Annual lease rent $(1-t)$

Buying: Annual cash outflows = Repayment of Principal + Interest - Tax shield of interest and Depreciation

II. Analysis of Incremental Cash flows: After identification, the cash flows are to be analyzed for each year for tax shield etc., under both the options. For this purpose, the present value of the stream of after tax cash outflows associated with each option must be calculated. This is because the cash flows occur at different point of time. However, there is a difference of opinion about the rate of discount being used to find out the present values. These are:

(i) This discount rate used to evaluate the cash flows should be the after tax cost of debt. It may be noted that the lease payment and interest payment create similar commitment for the firm. Consequently, they should be treated similarly, in terms of risk, for purposes of estimating discount rates. Because the discount rate for debt is the after tax cost of borrowing for the firm, the discount rate for the lease payment should also be after tax cost of debt.

(ii) However, it is also argued that the after tax weighted average cost of capital i.e., k_0 and not the after tax cost of debt i.e., k_D should be used to discount the net cash flows under the buying option because funding for the purchase option in fact comes from mingled funds raised from different sources and cannot be associated with any one particular type of security. The same overall weighted average cost of capital should be used to discount the cash flows of the leasing option.

Lease Financing – Lessor's View Point: So far the lease decision has been evaluated from the point of view of the lessee in terms of the lease-buy decision. However, the lessor also has to evaluate the lease decision from the point of view of his return. The lessor is financing the asset out of the funds procured from different sources, and obviously there is a cost of all these funds to the lessor. So, the lessor will like to provide lease financing only if the return from the lease is at least equal to the overall cost of capital of the lessor.

The lease decision for a lessor is in fact a capital budgeting decision, where the lessor invests the funds in expectation of the returns in the form of lease rentals. The lessor will accept the proposal for the lease financing only if the NPV of the decision is positive at the required rate of return i.e., overall cost of capital, k_0 . In terms of the IRR methodology, the lease financing may be accepted only when the IRR of the lease financing is more than the cut-off rate. As a capital budgeting decision, therefore, the lease decision may be evaluated as follows:

Cash Outflows: In case of lease situation, the lessor has to 'buy' the asset. Therefore, the initial cash outflow is the amount paid by the lessor at the time of purchasing the assets. If there is any other incidental expense or outflow then it should also be included in the initial outflows.

Cash Inflows: In case of lease financing, the cash inflows are in terms of periodic lease rentals. In order to find out the after tax cash inflows, these periodic lease rentals are to be adjusted for (i) tax liability on account of income from lease rentals, and (ii) tax shield on account of depreciation on the asset. The annual net cash flows may be ascertained as follows:

$$\text{Net Cash flows} = (\text{LR} - \text{Dep.}) \times (1 - t) + \text{Dep.}$$

Where, LR = Periodic lease rental, and

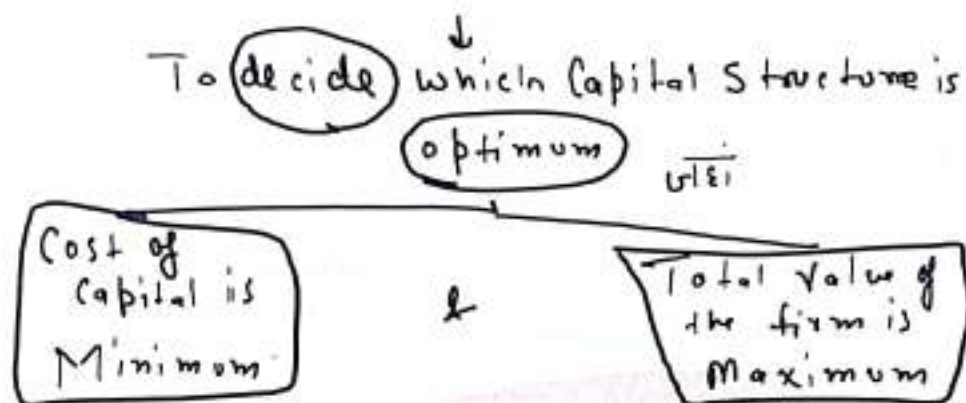
t = tax rate

These cash inflows are then discounted at the required rate of return to find out the present value of inflows. This present value of inflows may be compared with the initial cash outflows to find out the NPV of the lease decision. If the present value of the inflow is more than the present value of outflow, the lessor may accept the lease financing. In case, the lessor is using the IRR technique, the IRR of the cash inflow and outflow may be computed. If this IRR is higher than the cut-off rate, the lessor may accept the lease financing.

Indifference Point / EPS / Equivalency
 Range of Earnings
 EBIT at which EPS is same for
 diff. debt equity mix
 Rate of return = Cost of Debt
 B&P

CHAPTER 4

CAPITAL STRUCTURE



- The value of the firm depends on two basic factors i.e. the earnings of & the cost of capital
- In order to understand the relationship between leverage, cost of capital & value of firm, the following assumption are made:
 - (i) Only two source of funds i.e. equity & debt.
 - (ii) Total Assets of a firm are given & there would be no change in the investment decision of firm
 - (iii) Entire Profit will be distributed, No Retained Earning.
 - (iv) The operating profit of the firm are given & are not expected to grow.
 - (v) There is No corporate or personal taxes.
 - (vi) The business Risk Complexion of the firm is given & is constant & is not affected by the financing Mix.

(1) Net Income Approach: Capital Structure Matters [DAVID Durand]

This theory states that there is a relationship between Capital structure & the value of firm.

Assumption: (i) $K_d < K_e$ & both are constant & inc. in financial leverage doesn't affect the risk perception of the investor.

(ii) That the total Capital requirement of the firm are given & remain constant.

• NI approach suggest that higher the degree of leverage, better it is as the value of firm would be higher.

Conclusion: Easy to understand, simple & be realistic. But it ignore perhaps, the most important aspect of leverage that the market price depends upon the risk which varies in direct relation to the changing

proportion of debt in the capital structure. Value of firm = $VE + VD$

It is interesting to note that the NI approach can also be graphically presented asunder (with the help of the above

Value of firm max,
where WACC is minimum

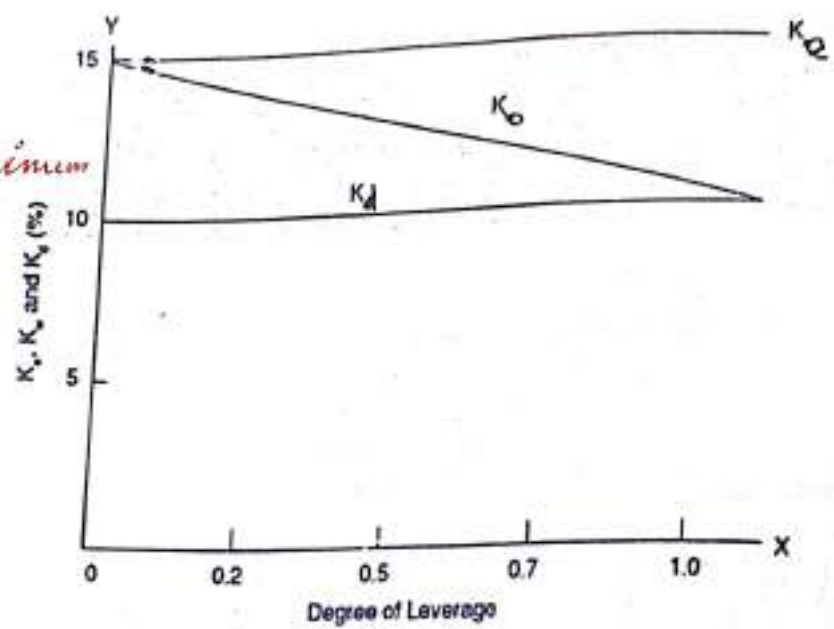


Fig. 5.1. Behaviour of K_c , K_w and K_d as per Net Income approach.

The degree of leverage is plotted along with the X-axis whereas K_c , K_w and K_d on the Y-axis. It reveals that when the cheaper debt capital in the capital structure is proportionally increased, the weighted average cost of capital K_w , decreases. Thus, it is needless to say that the optimal capital structure is the minimum cost of capital, if financial leverage is one, in other words, the maximum application of debt capital.

⇒ Jitna utarai leverage use karai utari cost
 utari value of firm utari hai
 ⇒ utarai firm of debt ki utarai se utarai
 use karai utarai

(2) Net operating Income Approach: Capital Structure doesn't matter

It is also known as independent hypothesis. According to this approach, the Market Value of the firm depends upon the Net operating profit or EBIT & the overall Cost of Capital, WACC. The financing mix or the Capital structure is irrelevant & doesn't affect the value of the firm.

Assumption:

- (i) The Investor see the firm as a whole & thus Capitalizes the total earnings of the firm to find out the value of the firm as a whole.
- (ii) K_c Constant & business risk unchanged, K_d also constant, No tax
- (iii) The use of more & more debt in the Capital structure increased the risk of the shareholders & thus result in the increase the risk of the shareholders & thus result in the inc. in the cost of capital i.e. K_e . The increase in K_e is such as to completely off-set the benefits of employing cheaper debt.

The NOI Approach can be illustrated with the help of the following diagram:

Under this approach, the most significant assumption is that the K_u is constant irrespective of the degree of leverage. The segregation of debt and equity is not important here and the market capitalizes the value of the firm as a whole. Thus, an increase in the use of apparently cheaper debt funds is offset exactly by the corresponding increase in the equity-capitalization rate.

EBIT
 - Int on Debt
 EBT
 - Tax
 EAT

 $S = \frac{EAT}{\text{No. of Eq. Shares}}$

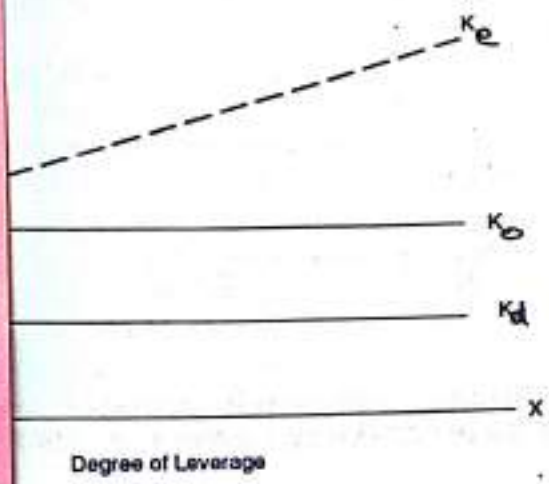


Fig. 5.2. Behaviour of K_e , K_w and K_d under Net operating Income approach.

So, the weighted average Cost of Capital K_w and K_d remain unchanged for all degrees of leverage. Needless to mention here that as the firm increases its degree of leverage it becomes more risky proposition and investors are to make some sacrifice by having a low P/E ratio.

[Vale of whole firm] $V = \frac{EBIT}{K_w}$	
E	= V.D
Value of eq.	Value of debt $\frac{c}{r}$
$K_e = \frac{EBIT - Int}{V - D}$	

Thus the financing mix is irrelevant & doesn't affect the value of firm. The value remain same for all type of D/E mix.

The NoI approach considers K_o to be constant & therefore, there is no optimum capital structure is as good as any other & every Capital Structure is an optimal one.

So one capital structure is as good as any other. The same is also suggested by the risk-return trade off principal that investors do not take on additional risk unless compensated with additional return. This means that using more debt by a company will not be ignored by the investors who will require a higher return on equity share capital to be compensated for the increased uncertainty stemming from the addition of the debt security in the capital structure.

3. Traditional Approach:

The NI/NOI approach hold extreme views on the relationship between the leverage, cost capital & the value of the firm. In practical situations, both these approach seen to be unrealistic. The traditional approach takes a compromising view between the two. **It takes a midway between NI/NOI.**

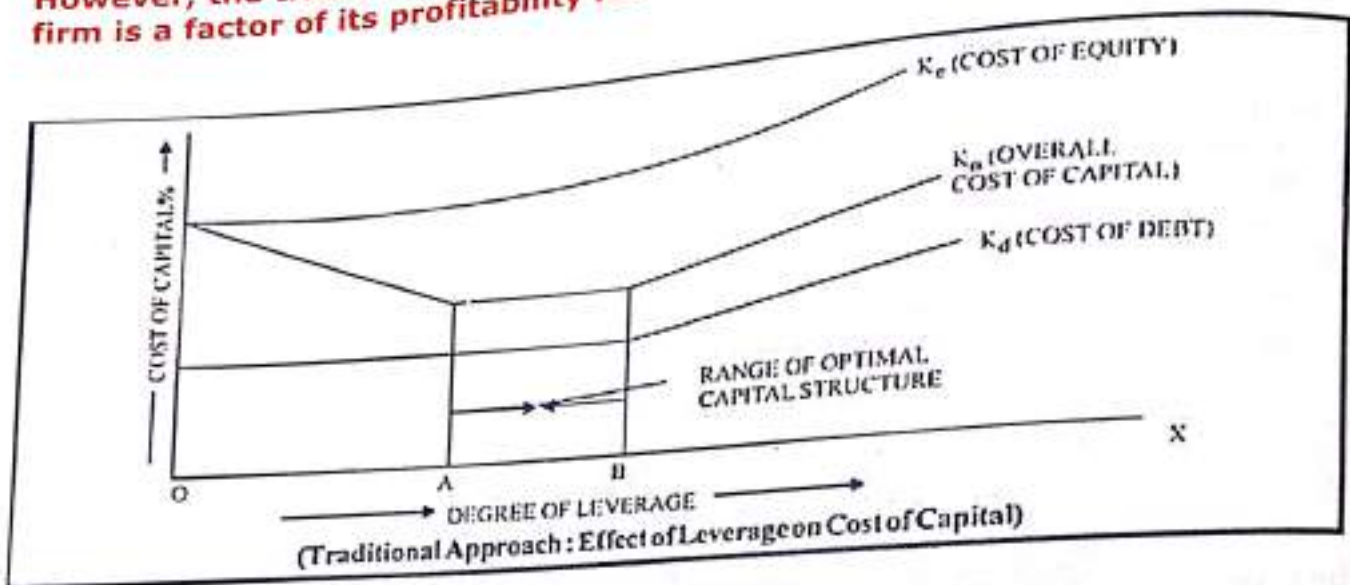
As per this approach, a firm should make a judicious use of both the debt & the equity to achieve a capital structure which may be called the optimal capital structure. At this capital structure the overall cost of capital (WACC) of firm will be minimum & the value

The traditional view says that the value of the firm increases with the use of debt up to a certain limit only. Beyond this limit, the inc. in the value of the firm will decline.

• $K_d < K_e$, the increase in leverage beyond a limit increases the risk of the equity investor also & as a result the K_e also start increasing. However, the benefits of use of debt may be so large that even after offsetting the effect of inc. in K_e , the K_o may still go down or become constant for some degree of leverage. &

If firm inc. the leveraged future, then the risk of the debt investor may also increase & consequently the K_d also start increasing. The already increasing K_e & now increasing K_d makes the K_o to increase. Therefore, the use of leverage beyond a point will have the effect of increase in the overall cost of capital of the firm & thus results in the decrease in value of the firm.

However, the traditional approach is criticized on the point that the value of the firm is a factor of its profitability rather than its financial mix.



4. Modigliani - Miller Model: MM Model which was presented in 1958 on the relationship between the leverage, cost of capital & the value of the firm. They have maintained that under a given set of assumptions, the capital structure & its composition has no effect on the value of the firm. MM Model shows that the financial leverage doesn't matter & the cost of capital & value of firm are independent of the capital structure. There is nothing which may be called the optimal capital structure, they have, in fact restated the NOI approach & have added to it the behavioural justification for their model.

- Assumption:**
- (i) The Capital Market are perfect & Complete information is available to all the investor free of cost. the implication of this assumption is that investor can borrow & lend funds at the same rate & can move quickly from one security to another without incurring any transaction cost.
 - (ii) The securities are infinitely divisible.
 - (iii) Investor are rational & well informed about the risk-return of all the securities.

- (iv) There is no corporate income tax [However, this assumption was related Later.]
- (v) The Personal Leverage & the corporate leverage are perfect substitute.

On the Basis of these assumptions, the MM model derived that:

(a) The total value of the firm is equal to the capitalized value of the operating earning of the firm. The

Capitalization is to be made at a rate appropriate to the risk class of the firm.

(b) The total value of the firm is independent of the financing mix i.e. the financial leverage.

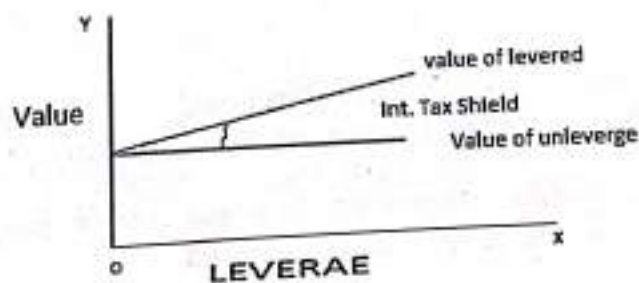
MM Proposition: states that it is completely irrelevant how a firm arranges its Capital funds.

Critical Evaluation of MM Model:

- (1) Non-substitutability of Personal & Corporate Leverage:
 - (a) Different Borrowing Rates for the Corporate & the individuals.
 - (b) Leverage Capacity.
- (2) The Assumption of No transaction costs of the MM model is also imaginary.
- (3) In real life, the assumption that all the Investor have complete information, is also illusory.
- (4) The MM is based on the assumption that there is non corporate tax. This is also unrealistic.

Other Points:

- Use of Leverage reduces the portion of EBIT going out as taxes. Due to tax benefit on Interest. Interest is Tax-deduction in case of the Levered firm. & the difference between the cost flow from levered firm & unlevered firm is known as **Interest Tax Shield**.



- The value of Levered & unlevered firm will differ only with respect to this int. tax shield which will be available to the investor of the levered firm perpetually (on the assumption of permanent levered capital structure). So the present value of the perpetuity of this int. tax shield is added to the value of the unlevered firm to find out the value of the levered firm.

$$V_{\text{unlevered}} = \frac{\text{EBIT}(1-\text{tax})}{K_u}$$

$$V_L = V_U + \text{P.V of Int. Tax shield}$$

- > Under NOI Approach, Capital Mix is irrelevant & doesn't affect the value of firm, on the other hand, the value depends upon the EBIT. & value may be found by Capitalizing the EBIT at the Capitalization rate. Therefore, any capital mixing as good as any other.
- > MM provide a behavioral justification for the NOI approach through the arbitrage process. However, in later analysis, they have agreed that the value of the levered firm may be more than unlevered firm due to tax advantage of Int. Payment.
- > The traditional approach takes a middle way & argues that Leverage may increase the value of the firm but to a certain degree only & therefore a judicious use of D/E mix can help maximizing the value of the firm.

Capital Structure/ Leverage/COC

Mix approach

- **Pecking order theory:** Proposed by Donaldson in 1961 suggest that the firm do not have any target Capital Structure. No Capital Structure is termed as optimal. As per pecking order theory, the internally, generate funds have the lower cost, while the new equity to the higher cost. & middle is debt.

Developed by Myer & Majluf (1984)

1 st Pref.	2 nd Pref.	Last resort
Retained earning	Debt.	New equity share

The use of internal funds also ensure that there is a regular source of funds which might be inline with a firm's expansion programme. & in order to built a reservoir of retained earnings, the firm may even skip or pay lesser dividends to equity shareholders.

- **Debt Service Coverage Ratio:**

DSCR = PAT + Debt to Interest + Non cash expenses

Revenue nature payment :- Pref. Div. + Int. + Repayment obligation - : Capital nature Payment

In DSCR, the cash Profit generated by the operations are compared with the total cash required the service of the Debt & Pref. Sh. Cap. Pref. Div. may be taken as inclusive of profit of the firm covers the cash obligations for revenue nature payments as well as capital nature payments. The higher the DSCR, the better it is & the firm will face no financial difficulty in meeting its obligation.

Financial Distress

> The increase in Debt thus increase the Probability of Financial Distress. It is a situation when a firm finds it difficult to honour its commitment to the creditors/debt invested. or it is a situation when the firm faces difficulty in paying Int. & Principal repayments to the Debt investors. Financial Distress arises when the fixed financial obligations of the firm affect the firm Normal operations.

Agency Cost

The debt investor generally impose conditions in the loan agreements. These conditions may be

- (i) Representative Director on the BOD
- (iii) Maintaining a minimum current ratio
- (iv) Intensive internal control

(ii) Debenture trustees,

(v) Regular follow up & Reporting etc.

All these entail Considerable Costs as well as may impair the operating efficiency of the firm. There is always a cost, though non-monetary of Letting some outsiders in. this agency cost is a function of Leverage.

> For Lower degree of Leverage, this cost may be nil or negligible, but as the Level of fin. Leve. Increase, the debt investors may emphasize extensive monitoring & have considerable costs.

> The agency cost can appear in two ways as real costs:

(i) Demanding a higher rate of interest.

(ii) The indirect cost of Lost flexibility, because the firm is not able to take certain projects. This cost will also inc. the conditions become more restrictive.

Conclusion: In designing the Capital structure for any firm, the first major policy decision facing the firm is that of determining the appropriate level of debt.

No such standard form of capital structure can be prescribed, which takes care of all types of firm & situations. The financing mix for a particular firm must be tailored made to suit the requirements, situations & the position of the firm. The operating efficiency of firm, the capital Mkt. condition, the expectations of different types of investors, the Liquidity positions of the firm & the legal & regulatory framework & the constrains should all be factored in the evaluation of proposed Capital Structure.

Beta is a measure of risk. β is a measure of responsiveness of a security returns in relation to the market return. Asset & Equity: A firm represents a collections of assets. Assets in a levered firm are financed partly by debt & partly by equity. The asset beta may be defined as the weighted Av. Of debt beta & equity beta

$$\beta_A = \beta_E \frac{E}{E+D} + \beta_D \frac{D}{E+D}$$

β_A = Beta of Assets

β_E = Beta of Equity

β_D = Beta of debt

E, D = Market value of Equity & Debt.

Un-Levering & Re-Levering Beta:

$D \rightarrow B$
 $E \rightarrow B$ } Here Beta
Unlevering

Here Beta is used to
calculate beta of Equity
 \rightarrow Relevering.

Portfolio Beta is defined as the weighted avg. of the betas of assets comprised in the portfolio. Calculation of firm beta from the value of Eq. beta & Debt beta is known as the Process of Un-Levering of Beta.

However, if the financing pattern of the firm changes, the risk of the equity investor & the equity beta would also change. New equity beta of the firm can be found by re-levering the beta. Re-levering the beta is a process of calculation of equity beta of the firm on the basis of given asset beta & the given financing pattern.

> Maximum amt of Debt a firm can comfortably service is known as Debt Capacity.
> Cash flow required during a period to meet the interest & repayment commitments is known as Debt service coverage.

> अगर खाली debt की बात करे तो debt capacity & Int & Principle.

Multiple Choice Questions

1. Which of the following is true for Net Income Approach?

a) Higher Equity is better.

b) Higher Debt is better.

c) Debt Ratio is irrelevant.

d) None of the above.

2. In case of Net Income Approach, the Cost of equity is :

- ~~a) Constant.~~
- b) Increasing.
- c) Decreasing.
- d) None of the above.

3. In case of Net Income Approach, when the debt proportion is increased, the cost of debt :

- a) Increases.
- b) Decreases.
- ~~c) Constant.~~
- d) None of the above.

4. Which of the following is true for Net Income Approach ?

- ~~a) $V_F = V_E + V_D$~~
- b) $V_E = V_F + V_D$.
- c) $V_D = V_F + V_E$
- d) $V_F = V_E - V_D$

5. In Net Operating Income Approach, which one of the following is constant?

- a) Cost of Equity.
- b) Cost of Debt.
- ~~c) WACC & K_d~~
- d) K_e and K_d

6. NOI Approach advocates that the degree of debt financing is :

- a) Relevant.
- b) May be relevant
- ~~c) Irrelevant~~
- d) May be irrelevant.

7. Judicious use of leverage is suggested by :

- a) Net Income Approach
- b) Net Operating Income Approach
- ~~c) Traditional Approach~~
- d) All of the above.

8. Which one is true for Net Operating Income Approach?

- a) $V_D = V_F - V_E$
- b) $V_E = V_F + V_D$
- ~~c) $V_E = V_F - V_D$~~
- d) $V_D = V_F + V_E$

9. In the traditional Approach, which one of the following remains constant?

- a) Cost of Equity

- b) Cost of Debt.
- c) WACC
- ~~d) None of the above.~~

10. In MM Model, irrelevance of capital structure is based on :

- a) Cost of Debt and Equity.
- ~~b) Arbitrage Process.~~
- c) Decreasing K_0
- d) All of the above.

11. That there is no corporate tax, is assumed by:

- a) Net Income Approach
- b) Net Operating Income Approach
- c) Traditional Approach
- ~~d) All of these.~~

12. That personal leverage replace corporate leverage' can is assumed by :

- a) Traditional Approach
- b) MM Model
- c) Net Income Approach
- d) Net Operating Income Approach.

13. Which of the following argues that the value of levered firm is higher than that of the unlevered firm?

- a) Net Income Approach
- b) Net Operating Income Approach
- c) MM Model with taxes
- ~~d) Both (a) and (c)~~

14. In Traditional Approach, which one is correct?

- a) K_e rises constantly
- b) K_d decreases constantly
- c) K_0 decreases constantly
- ~~d) None of the above.~~

15. Which of the following assumes constant K_d and K_e .

- ~~a) Net Income Approach~~
- b) Net Operating Income Approach
- c) Traditional Approach

d) MM Model.

16. Which of the following is true?

- a) Under Traditional Approach, overall cost of capital remains same,
- b) Under NI Approach, overall cost of capital remains same
- c) Under NOI approach, overall cost of capital remains same
- d) None of the above.

17. The Traditional Approach to value of the firm assumes that:

- a) There is no optimal capital structure
- b) Value can be increased by judicious use of leverage
- c) Cost of Capital and Capital structure are independent
- d) Risk of the firm is independent of capital structure.

18. A firm has EBIT of Rs.50,000. Market value of debt is Rs.80,000 and overall capitalization rate is 20% value of firm under NOI Approach is :

- a) Rs.2,50,000
- b) Rs.1,70,000
- c) Rs.30,000
- d) Rs.1,30,000

19. Which of the following is incorrect for NOI?

- a) K_0 is constant
- b) K_d is constant
- c) K_e is constant
- d) K_d & K_0 are constant

20. Which of the following is incorrect for value of the firm?

- a) In the initial proposition, MM Model argues that value is independent of the financing mix.
- b) Total value of levered and unlevered firms become otherwise arbitrage will take place
- c) Total value incorporates borrowings by firm but excludes personal borrowing.
- d) Total value does not change because underlying risk does not change with financing mix.

21. Which of the following appearing in the balance sheet, generates tax advantage and hence

affects the capital structure decision?

- a) Reserves and Surplus
- b) Long-term debt
- c) Preference Share Capital
- d) Equity Share Capital.

22. In order to design an optimal capital structure, a company should strive for:

- a) Maximum Debt,
- b) Minimum Debt,
- c) Minimum WACC
- d) Minimum cost of equity

23. Capital structure of a firm influences the:

- a) Risk of the firm
- b) Return of the Equity Shareholder
- c) Risk but not return
- d) Both (a) and (b)

24. Which of the following is not considered while designing the capital structure?

- a) Size of the company
- b) Tax rate
- c) Location of the plant
- d) Dilution of control

25. Which of the following is not relevant for optimal capital structure?

- a) Flexibility
- b) Solvency
- c) Liquidity
- d) Control.

26. Financial Structure refers to

- a) All financial resources
- b) Short-term funds
- c) Long-term funds
- d) None of these.

27. An optimal capital structure is one when the MP of the equity share is :

- a) Zero
- b) Maximum
- c) Minimum
- d) Moderate.

28. Agency cost arises due to:

- a) Increase in Cost of Production
- b) Hiring more employees
- c) Increase in Debt
- d) Sales decline

29. Which of the following is not affected by capital structure?

- a) Total tax liability
- b) Return on Equity
- c) Operating Profit
- d) Earnings Per Share

30. While increasing debt proportion in the capital structure which one of the following should be considered?

- a) Cash flow position
- b) Operating profits,
- c) Financial risk
- d) All of the above.

31. Which of the following may be ignored while designing a capital structure?

- a) Profitability
- b) Flexibility

Answers

1-b	2-a	3-c	4-a	5-c	6-c	7-c	8-c	9-d	10-b
11-d	12-b	13-d	14-d	15-a	16-c	17-b	18-a	19-c	20-d
21-b	22-c	23-d	24-c	25-b	26-a	27-b	28-c	29-c	30-d
31-d	32-b	32-c	33-c	34-D					

- c) Control Philosophy
- d) Political Stability

32. Maximum amount of Debt, a firm can comfortably raise is known as;

- a) Debt-service Coverage,
- b) Debt capacity
- c) Interest charge
- d) Debt Value

33. Cash flow required during a period to meet the interest and repayment commitments is known as:

- a) Debt capacity
- b) Interest Coverage
- c) Debt-service Coverage
- d) Market Value of Debt.

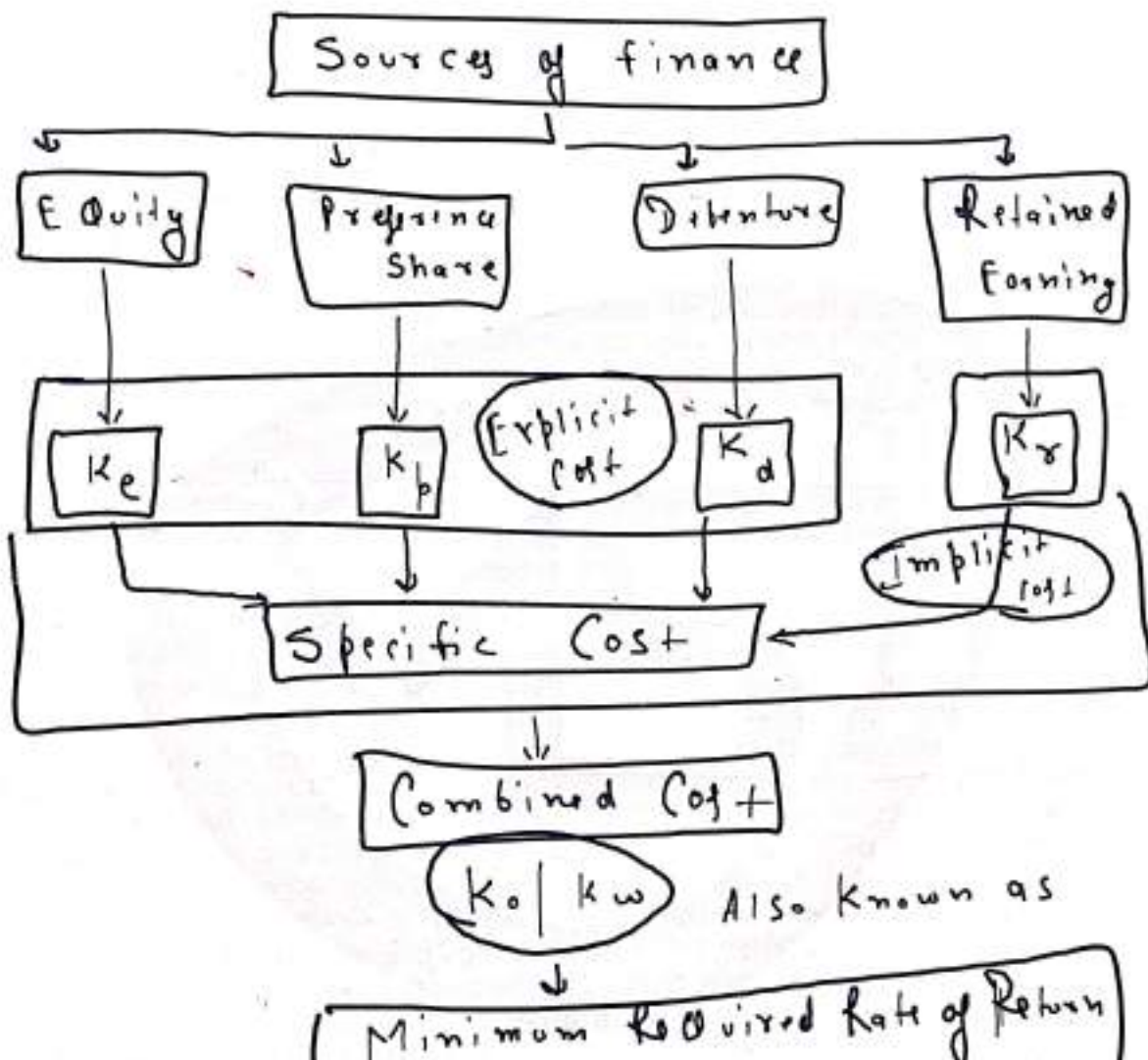
34. In pecking Order Theory, the first priority is given

- a) Fresh Equity
- b) Fresh Loan
- c) Mix of Debt & Equity
- d) Retained Earnings.

*Capital by earing
Relationship between eq. (eq. + reserves) & long term debt
with gear - Debt proportion is high*

CHAPTER 5

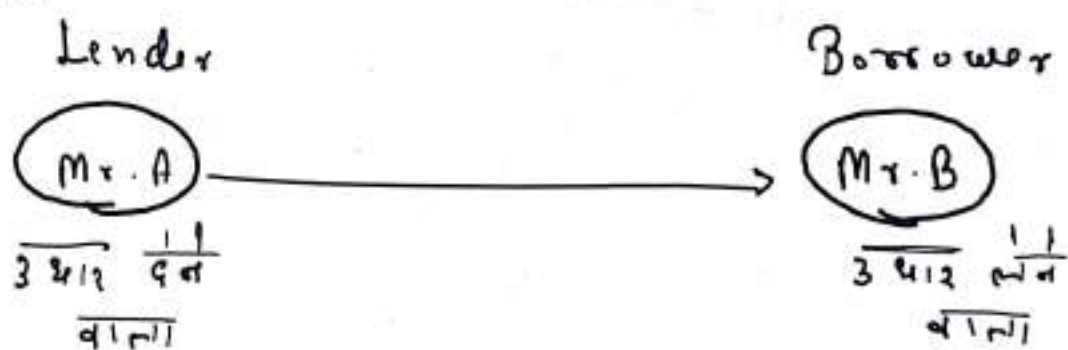
COST OF CAPITAL



In operational terms, 'cost' of capital refers to the discount rate that is used in determining the present value of the estimated, future cash proceeds and eventually deciding whether the project is worth undertaking or not. In this sense, it is defined as the minimum rate of return that a firm must earn on its investment for the market value of the firm to remain unchanged.

The cost of capital is visualized as being composed of several elements. These elements are the cost of each component of capital. The term component means the different sources from which funds are raised by a firm. Obviously, each source of funds or each component of capital has its cost. For example, equity capital has a cost, so also preference share capital and so on. The cost of each source or component is called specific cost of capital. When these specific costs are combined to arrive at overall cost of capital, it is referred to as the weighted cost of capital. The terms, cost of capital, weighted cost of capital, composite cost of capital and combined cost of capital are used interchangeably in this book. In other words, the term, cost of capital, as the acceptance criterion for investment proposals, is used in the sense of the combined cost of all sources of financing. This is mainly because our focus is on the valuation of the firm as a whole. In other words, it is the internal rate of return that the firm pays to procure financing. On the basis of the above formula, we can easily find out that the explicit cost of an interest-free loan is zero per cent because the discount rate that equates the present value of a future sum with an equivalent sum received today is zero. The explicit cost of capital on a loan being interest is that discount rate which equates the present value of the future cash outflows with the net amount of funds initially provided by the loan. The explicit cost of capital of a gift is minus 100 per cent.

The retained earnings are undistributed profits of the company belonging to the shareholders. Given the ultimate objective of the firm to maximize the wealth of shareholders, the cost of retained earnings would be equivalent to the opportunity cost of earning by investing elsewhere by the shareholders themselves or by the company itself. Opportunity costs are technically referred to as implicit cost of capital. The implicit cost of capital of funds raised and invested by the firm may, therefore, be defined as 'the rate of return associated with the best investment opportunity for the firm and its shareholders that would be foregone, if the projects presently under consideration by the firm were accepted. The cost of retained earnings is an opportunity cost or implicit capital cost, in the sense that it is the rate of return at which the shareholders could have invested these funds had they been distributed to them. However, other forms of financing also has implicit cost once they are invested. The explicit cost arises when funds are raised, whereas the implicit costs arise when funds are used. Viewed in this perspective, implicit costs are ubiquitous. They arise whenever funds are used no matter what the source.



⇒ Mr. A \checkmark मान - 2000 factory का Consider
₹ 1000 जल का Mr. B का पटना ₹ 2000 ₹ 1000

Factors affecting the cost of capital of a firm:-

1. Risk Free Int. Rate: The Risk Free Int. Rate is consisting of two components:

(a) Real Interest Rate: It is pay able to the lender for supplying the funds or in other words surrenders the funds for a particular Period.

(b) Purchasing Power Risk Premium: In general, to compensate for the Loss in purchasing power over the period of Lending or supply of funds. So, over & above the real interest rate, the purchasing power Risk Premium is added to find out the risk-real interest rate. [Higher the expected Rate of inflation, greater would be the purchasing power Risk Premium & consequently higher would be the Risk free Int. Rate.

2. Business Risk: The Business Risk is related to the response of the firm is EBIT to changing sales revenue. Another factor affecting the cost of capital is the risk associated with the firm's promise to pay interest and dividends to its investors. The business risk is related to the response of the firm's Earnings before Interest and Taxes (EBIT) to change in sales revenue. Every project has its effect on the business risk of the firm. If a firm accepts a proposal which is more risky than average present risk, the investors will probably raise the cost of funds so as to be compensated for the increased risk. This premium is added for the business risk compensation is also known as Business Risk Premium.

3. Financial Risk: the financial risk is another type of risk which can affect the cost of capital of the firm.

The particular composition and mixing of different sources of finance, known as the financial plan or the capital structure, can affect the return available to the investors. The financial risk is often defined as the likelihood that the firm would not be able to meet its fixed financial charges. It is related to the response of the firm's earning per share to a variation in EBIT. The financial risk is affected by the capital structure or the financial plan of the firm. Higher the proportion of fixed cost securities in the overall capital structure, greater would be the financial risk. The investor in such a case requires to be compensated for this increased risk. They add financial premium over and above the business risk premium. It may be noted that the financial risk, like business risk, is also particular and related to the firm and is not affected by the external factors.

4. Other Consideration: The investors may also like to add a premium with reference to other factors. One such factor may be the liquidity or marketability of the investment. Higher the liquidity available with an investment, lower would be the premium demanded by the investor. If the investment is not easily marketable, then the investors may add a premium for this also and consequently demand a higher rate of return.

In view of the above, the cost of capital may be defined as

$$k = I_{RF} + b + f$$

Where k = Cost of capital of different sources.

I_{RF} = Risk free Interest rate

b = Business risk premium

f = Financial risk premium

The Profit earned by the firm but not distributed among the equity shareholders are ploughed back & reinvested within the firm & not distributed to equity shareholder. Thus some return is forgone by the investors when the profits are ploughed back. The implicit cost of the retained earnings is the return which could have been earned by investor.

Measurement of Cost of Capital: It refers to the Process of determining the Cost of funds to the firm. The measurement of Cost of Capital is based on following two assumptions:

- Business Risk of the firm is unaffected by the proposals being evaluated at the Cost of Capital. The New proposal accepted by the firm is assumed to possess the same level of Risk as of those already held.
- The financial risk of the firm remains unchanged, whether a proposal is accepted or not.

The short term sources of funds are kept outside the calculation of Cost of Capital as these short term sources e.g. bank credit, trade credit, bill etc. are generally considered to be temporary in nature & are subject to repayment in the short run.

Therefore, the cost of capital of a firm is calculated as the combined cost of Long term sources of funds.

The Combined Cost of Capital known as the overall cost of capital of firm, while the specific cost are known as the specific cost of capital of a particular source. The long term sources of funds can be broadly categorized into (i) Long term Debt & Loans (ii) Pref. sh. Capital (iii) EQ.sh. Capital (iv) Retained earnings.

MEASUREMENT OF SPECIFIC COSTS:-

It includes:

- (i) Cost of Debt
- (ii) Cost of Preference share Capital
- (iii) Cost of Equity Share Capital
- (iv) Cost of Retain Earnings

A. Cost of Debt:

Irredeemable Debt

$$K_d = \frac{\text{Int} \times 100}{N \cdot P}$$

or

$$K_d = \frac{\text{Int} (1 - \text{tax}) \times 100}{N \cdot P}$$

Redeemable Debt

$$K_d = \frac{\text{Int} + \frac{M \cdot V - N \cdot P}{n}}{\frac{M \cdot V + N \cdot P}{2}}$$

or

$$K_d = \frac{\text{Int} (1 - \text{tax}) + \frac{M \cdot V - N \cdot P}{n}}{2}$$

A company may raise the debt in a number of ways. It may borrow funds from the financial institutions or public either in the form of public deposit or debentures for a specified period of time at a specified period of interest. A debenture bond may be issue at par, at discount or at a premium.

- It may be noted that the concept of perpetual debt is theoretical in nature, otherwise debt, being a type of loan is an always repayable.
- It may be noted that the tax benefit of Int. deductibility is available only if the firm is a profit making only.
- For a loss making firm or for a No tax paying firm the tax adjustment is not required & in such a case $K_d = K_i$, the tax deductibility reduce the cost of debt. If the tax rate reduce, the benefit of tax deductibility also reduces & consequently, the net cost of debt increases.

Debt may be either be irredeemable or redeemable after a certain period

(a) Cost of irredeemable debt, before tax:

$$K_{db} = \frac{I}{NP} \times 100$$

K_{db} = Before-tax cost of debt

I = Annual interest payment

NP = Net Proceeds of bonds and debentures

(b) Cost of irredeemable debt, after tax:

$$K_{da} = \frac{I}{NP} \times 100(1 - t)$$

I = Annual interest payment

NP = Net Proceeds of bonds and debentures

T = Tax rate

K_{da} = Tax-adjusted cost

Example: A company has 10 per cent perpetual debt of Rs 1,00,000. The tax rate is 35 per cent. Determine the cost of capital (before tax as well as after tax) assuming the debt is issued at (i) par, (ii) 10 per cent discount, and (iii) 10 per cent premium.

(i) Debt issued at par

$$\text{Before-tax cost, } k_i = \text{Rs } \frac{10,000}{1,00,000} = 10 \text{ per cent}$$

$$\text{After-tax cost, } k_d = k_i (1 - t) = 10\% (1 - 0.35) = 6.65 \text{ per cent}$$

(ii) Issued at discount

$$\text{Before-tax cost, } k_i = \text{Rs } \frac{10,000}{90,000} = 11.11 \text{ per cent}$$

$$\text{After-tax cost, } k_d = 11.11\% (1 - 0.35) = 7.22 \text{ per cent}$$

(iii) Issued at premium

$$\text{Before-tax cost, } k_i = \text{Rs } \frac{10,000}{1,10,000} = 9.09 \text{ per cent}$$

$$\text{After-tax cost, } k_d = 9.09\% (1 - 0.35) = 5.91 \text{ per cent}$$

Cost of Redeemable Debt:- In the case of calculation of cost of redeemable debt, tax has to be taken, in addition to interest payments, of the repayment of the principal.

$$K_d = \frac{I(1-t) + \frac{(MV - NP)}{N}}{\frac{M.V + NP}{2}}$$

MV = Maturity value of debentures

NP = Net proceeds of debentures

I = Annual Interest

N = Number of years in which debts to be redeemed.

Space for Practice Question
in Class:-

B. Cost of Preference Shares

Irredeemable

$$K_p = \frac{\text{Div}}{N \cdot P} \times 100$$

or

$$K_p = \frac{\text{Div} (1 + \text{COT})}{N \cdot P} \times 100$$

Redeemable

$$K_p = \frac{\text{Div} + \frac{M \cdot V - N \cdot P}{n}}{\frac{M \cdot V + N \cdot P}{2}}$$

$$K_p = \frac{\text{Div} (1 + \text{COT}) + \frac{M \cdot V - N \cdot P}{n}}{\frac{M \cdot V + N \cdot P}{2}}$$

Net Proceeds - Flotation cost
Returns (Int/Div) always on TV

A company issues 11 per cent irredeemable preference shares of the face value of Rs 100 each. Flotation costs are estimated at 5 per cent of the expected sale price. (a) What is the k_p , if preference shares are issued at (i) par value, (ii) 10 per cent premium, and (iii) 5 per cent discount? (b) Also, compute k_p in these situations assuming 13.125 per cent dividend tax.

Solution

(a) (i) Issued at par

$$k_p = \frac{\text{Rs } 11}{\text{Rs } 100 (1 - 0.05)} = 11.6 \text{ per cent}$$

(ii) Issued at premium

$$k_p = \frac{\text{Rs } 11}{\text{Rs } 110 (1 - 0.05)} = 10.5 \text{ per cent}$$

(iii) Issued at discount

$$k_p = \frac{\text{Rs } 11}{\text{Rs } 95 (1 - 0.05)} = 12.2 \text{ per cent}$$

(b) (i) Issued at par

$$k_p = \frac{\text{Rs } 11 (1.13125) = \text{Rs } 12.44}{\text{Rs } 95} = 13.1 \text{ per cent}$$

(ii) Issued at premium

$$k_p = \frac{\text{Rs } 12.44}{\text{Rs } 104.5} = 11.9 \text{ per cent}$$

(iii) Issued at discount

$$k_p = \frac{\text{Rs } 12.44}{\text{Rs } 90.25} = 13.8 \text{ per cent}$$

Cost of Redeemable Pref. Shares

for Practice Question in Class



Taxation effect on capital gain income:

$$K_d = \frac{\text{Int.}(1-\text{tax}) + \frac{\text{m.v.netofCapitalGaintax} - \text{IssuePrice}}{n}}{\frac{\text{maturityvalueNetofcapitalGaintax} + \text{IssuePrice}}{2}}$$

C. Cost of Equity Capital

The cost of equity capital is by far, conceptually speaking, the most difficult and controversial cost to measure. It has been shown in the preceding discussions that the coupon rate of interest which forms the basis of calculation of cost of debt can be estimated with a high degree of accuracy since the return on although not a contractual obligation, can also be estimated fairly, accurately as they are fixed in terms of the stipulations governing the issue of such shares. In contrast the return to the equity-holders solely depends upon the discretion of the company any management. Apart from the absence of any definite commitment to receive dividend, the equity shareholders rank at the bottom as claimants on the assets of the company at the time of its liquidation. It may, therefore, prima facie, appear that equity capital does not carry any cost. But this is not true. Equity capital, like other sources of funds, does certainly involve a cost to the firm. It may be recalled that the objective of financial management is to maximize shareholders' wealth and the maximization of market price of shares is the operational substitute for wealth maximization. When equity-holders invest their funds they also expect returns in the form of dividends. The market value of shares is a function of the return that the shareholders expect and get. If the company does not meet the requirements of its shareholders and pay dividends, it will have an adverse effect on the market price of shares. A policy of not paying dividends by a firm would be in conflict, in other words, with its basic objective) namely, net present value maximization. The equity shares, thus, implicitly involve a return in terms of the dividend expected by the investors and, therefore, carry a cost. In fact, the cost of equity capital is relatively the highest among all the sources of funds. The investors purchase the shares, as already mentioned, in the expectation of a certain rate of return. The quantum of the rate of return, depends, inter alia, on the business risk and financial risk of a company. The equity shares involve the highest degree of financial risk since they are entitled to receive dividend and return of principal after all other obligations of the firm are met. As compensation to the higher risk exposure, holders of such securities expect a higher return and, therefore, higher cost is associated with them.

Conceptually, the cost of equity capital, k_e may be defined as the minimum rate of return that a firm must earn on the equity-financed portion of an investment project in order to leave unchanged the market price of the shares.

Dividend Approach One approach to calculate the cost of equity capital is based on the dividend valuation model. According to this approach, the cost of equity capital is calculated on the basis of a required rate of return in terms of the future dividends to be paid on the shares. The cost of equity capital k_e , is accordingly, defined as the discount rate that equates the present value of all expected future dividends per share with the net proceeds of the sale (or the current market price) of a share.

The process of determining k_e is similar to that used in calculating the explicit before-tax cost of debt (k_d) and cost of preference capital (k_p). The two elements of the calculation of k_e on the basis of the dividend approach are (i) net proceeds from the sale of a share/current market price of a share, and (ii) dividends and capital gains expected on the share. In arriving at the first, that is, the sale proceeds/current price, adjustments for flotation cost and discount/premium are necessary. In the case of dividends, the investors expect a rate of dividend which will not be constant over the years but will grow. The growth in expected dividends in future may be either at a uniform normal rate perpetually or it may vary so that for a few years it may be at level higher than in subsequent years after which it will increase at a normal rate. While calculating the cost of equity capital, therefore, the dividend approach takes into account expected dividends

The cost of equity capital can be computed by the following methods:

(i) Dividend Yield Method: It is also known as Dividend/Price method. This method is based on the assumption that when an investor in the equity shares of a company he expects to get a payment at least equal to the rate of return prevailing in the market. Hence, in order to ascertain cost of equity capital according to this method dividend received is divided by the market value of the share. The equation is:

$$K_e = \frac{D_1}{P_0} \times 100$$

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

Where, K_e = Cost of Equity Capital

D_1 = Expected Dividend Per Share

P_0 = Current Market Price Per Share.

(ii) Dividend Yield plus Growth in Dividend Method: Dividend Yield method discussed above not take care of future growth in the rate of dividend whereas in actual practice shareholders expect growing rate of dividend. Hence, when the dividends of a firm are expected to grow a constant rate this method is used to compute the cost of equity capital:

$$K_e = \frac{D_1}{P_0} \times 100 + G$$

Where, K_e = Cost of Equity Capital

D_1 = Expected Dividend Per Share

P_0 = Current Market Price Per Share

G = Rate of growth in Dividend

(iii) Earning Yield Method:

As per this method, the cost of equity capital is calculated by establishing a relationship between earning per share and the current market price of the share. The equation is:

$$K_e = \frac{EPS}{P_0} \times 100$$

Where, K_e = Cost of Equity Capital

EPS = Earnings Per Share

P_0 = Market Price Per Share

Earning yield method is based upon the following assumptions:

- (i) Earning per share is expected to remain constant in future.
- (ii) The market price of the company's share depends only upon earning per share.
- (iii) The company can earn on the new projects at the same rate at which it earns on the existing projects.

This method is suitable when the above mentioned assumptions are fulfilled.

(iv) Earning yield plus Growth in Earning Method:

Earning yield method does not take care of future growth in the rate of earnings of the company whereas the earnings of a company are usually expected to grow in the future. If the EPS of a company is expected to grow at a constant rate of growth, the cost of equity capital can be computed as follows:

$$K_e = \frac{\text{EPS}}{P_0} \times 100 + G$$

Where, K_e = Cost of Equity Capital

EPS = Earnings Per Share

P_0 = Market Price Per Share

G = Rate of growth in EPS

(v) Realized Yield Method:

One of the major problems in the measurement of cost of equity capital is that the expectations of the shareholders regarding the rate of return on their investment in the company's shares cannot be estimated accurately. It is not possible to estimate future dividends and earnings correctly because both of these depend upon so many uncertain factors. The realized yield method overcomes this problem by assuming that the shareholders would expect the same rate of return in the future as they have realized in the past.

Hence, as per this method actual average rate of return realized by the shareholders in the past is applied to compute the cost of equity capital. To compute the realized yield in the past both dividends received by the shareholders in the past as well as appreciation in the value of equity shares are considered. This method of computing cost of equity capital is based upon the following assumptions:

- (i) No significant changes are expected in the risk complexion of the firm.
- (ii) Shareholders would feel satisfied if they earn same rate of return in future, which they have earned in the past.
- (iii) Shareholders expect to earn the same rate of return as the realized yield even if they invest elsewhere.
- (iv) No significant changes are expected in the market price of company's share.

Computation of Cost of Newly Issued Equity Shares:

When a company issues new equity shares, it is not possible to realize the full market value on the newly issued shares. This is because on new issues the company has to incur flotation costs such as underwriting commission, brokerage, printing etc. As such, in order to ascertain the cost of capital of new issues flotation costs are deducted from the expected market price.

In such a case P_0 (Market Price) will be changed with NP (Net Proceeds).

As such

$$K_e = \frac{D_1}{NP} \times 100$$

or

$$K_e = \frac{D_1}{NP} \times 100 + G$$

$$\text{Or } K_e = \frac{\text{EPS}}{NP} \times 100$$

or

$$K_e = \frac{\text{EPS}}{NP} \times 100 + G$$

(vi) Capital Asset Pricing Model Approach

Another technique that can be used to estimate the cost of equity is the capital asset pricing model (CAPM) approach. We first discuss the CAPM. As an approach to measure the cost of equity capital, it is described subsequently.

The CAPM explains the behavior of security prices and provides a mechanism whereby investors could assess the impact of proposed security investment on their overall portfolio risk and return. In other words, it formally describes the risk-return trade-off for securities. It is based on certain assumptions. The basic assumptions of CAPM are related to (a) the efficiency of the security markets and (b) investor preferences.

The efficient market assumption implies that (i) all investors have common (homogeneous) expectations regarding the expected returns, variances and correlation of returns among all securities; (ii) all investors have the same information about securities; (iii) there are no restrictions on investments; (iv) there are no taxes; (v) there are no transaction costs; and (vi) no single investor can affect market price significantly.

The implication of investors' preferences assumption is that all investors prefer the security that provides the highest return for a given level of risk or the lowest amount of risk for a given level of return, that is, the investors are risk averse.

The risk to which security investment is exposed falls into two groups: (i) diversifiable/unsystematic, and (ii) non-diversifiable/systematic. The first represents that portion of the total risk of an investment that can be eliminated/minimized through diversification. The events/factors that cause such risks vary from firm to firm. The sources of such risks include management capabilities and decisions, strikes, unique government regulations availability or otherwise of raw materials, competition, level of operating and financial leverage of the firm, and so on.

The systematic/non-diversifiable risk is attributable, to factors that affect all firms. Illustrative sources of such risks are interest rate changes, inflation or purchasing power change, changes in investor expectations about the overall performance of the economy and political changes, and so on. As unsystematic risk can be eliminated by an investor through diversification, the systematic risk is the only relevant risk. Therefore, an investor (firm) should be concerned, according to CAPM, solely with the non-diversifiable (systematic) risk.

Systematic risk can be measured in relation to the risk of a diversified portfolio which is commonly referred to as the market portfolio or the market. According to CAPM, the non-diversifiable risk of an

Investment/security/asset is assessed in terms of the beta coefficient. Beta is a measure of the volatility of a security's return relative to the returns of broad-based market portfolio. Alternatively, it is an index of the degree of responsiveness or co movement of return on an investment with the market return. The beta for the market portfolio as measured by the broad-based market index equals one. Beta coefficient of 1 would imply that the risk of the specified security is equal to the market; the interpretation of zero coefficients is that there is no market-related risk to the investment. A negative coefficient would indicate a relationship in the opposite direction. The 'going' required rate of return in the market for a given amount of systematic risk is called the Security Market Line (SML).

With reference to the cost of capital perspective, the CAPM describes the relationship between the required rate of return, or the cost of equity capital, and the non-diversifiable or relevant risk, of the firm as reflected in its index of non-diversifiable risk, that is, beta. Symbolically,

$$K_e = R_f + b(R_m - R_f)$$

Where K_e = cost of equity capital

R_f = the rate of return required on a risk-free asset/security/investment R_m = the required rate of return on the market portfolio of assets that can be viewed as the average rate of return on all assets. B = the beta coefficient.

P. Cost of Retained Earnings

Retained earnings, as a source of finance for investment proposals, differ from other sources like debt, preference shares and equities. The use of debt is associated with a contractual obligation to pay a fixed rate of interest to the suppliers of funds and, often, repayment of principal at some predetermined date.

An almost similar kind of stipulation applies to the use of preference shares also. In the case of ordinary shares, although there is no provision for any predetermined payment to the shareholders, yet a certain expected rate of dividend provides a starting point for the computation of cost of equity capital. That retained earnings do not involve any formal arrangement to become a source of funds is obvious. In other words, there is no obligation, formal or implied, on a firm to pay a return on retained earnings. Apparently, retained earnings may appear to carry no costs since they represent funds which have not been raised from outside. The contention that retained earnings are free of cost, however, is not correct. On the contrary, they do involve cost like any other source.

It is true that a firm is not obliged to pay a return (dividend or interest) on retained earnings. But retention of earnings does have implications for the shareholders of the firm. If earnings were not retained, they would have been paid out to the ordinary shareholders as dividends. In other words, retention of earnings implies withholding of dividends from holders of ordinary shares. When earnings are, thus, retained, shareholders are forced to forego dividends. The dividends foregone by the equity holders are, in fact, an opportunity cost. Thus, retained earnings involve opportunity cost. In other words, the firm is implicitly required to earn on the retained earnings at least equal to the rate that would have been earned by the shareholders if they were distributed to them. This is the cost of retained earnings. Therefore, the cost of retained earnings may be defined as opportunity cost in terms of dividends foregone by/withheld from the equity shareholders.

Thus

$$K_r = K_e (1 - \text{Percentage Brokerage or Flotation Cost})$$

Where, K_r = Cost of Retained Earnings

K_e = Cost of Equity Capital

Type of weight used in calculation of weighted Avg. cost of capital:

• **Historical or Existing weights:** This system is based on the Actual proportion at the time when the WACC is being calculated or the weighting system is the proportion in which the funds have already been raised by the firm. It is based on two assumption:

- (i) that the firm would raise the additional resources required for financing in same proportion in which they appear at present.
- (ii) that the present capital structure is optimal & therefore the firm wants to continue with the same pattern in future also.

• **Marginal Weights:** It refers to proportion in which the firm wants or intends to raise fund from different sources. WACC calculated on the basis of marginal weights is also known as weighted marginal cost of capital (WMCC).

• **Target weight:** refer to the proportion in which the firms plans to raise the funds from various sources in the long run. The target weight system reflects the desired long term financial plans or capital structure of a firm.

If a firm already has an optimal capital structure, then its historical weights will be equal to the target weights.

• **Book value weights:** if proportion of different sources is ascertained on the basis of the face value. It is easily calculated of taking the relevant information from the capital structure as given in the B/S of the firm. However, the Book value weight system doesn't truly reflect the economic values. The book value weights ignore the market values.

- **Market value weight:** the firm has to find out the current market price of the security in each category.
- **Marginal Cost Capital:** In Practice, the investment proposals may require funds to be raised from new internal External sources & thus increasing the total funds also. When this happen, the COC of additional funds in called the Marginal cost of capital. If the additional financing uses more than one sources, say a combination of debt & pref. share capital, then the WACC of new financing called the weighted marginal cost of capital [WMCC].

Summary

- ❖ Capital, like any other factor of production, has a cost. A company's cost of capital is the weighted average cost of the various sources of finance used by it.
- ❖ WACC is a central concept in financial management.
- ❖ In general, if a firm uses n different sources of capital its WACC is: $\sum p_i r_i$
- ❖ WACC is the right discount rate for a project that is an carbon copy of the firm's existing business.

However, in practice WACC is used as a benchmark hurdle rate that is adjusted for variations in risk and financing patterns.

- ❖ Since debt and preference stock entail more or less fixed payments, estimating the cost of debt and preference is relatively easy.
- ❖ Since interest on debt is a tax-deductible expense, the pre-tax cost of debt has to be adjusted for the tax factor to arrive at the post-tax cost of debt.
- ❖ The cost of preference is simply equal to its yield.
- ❖ A popular approach to estimating the cost of equity is the security market line (SML) relationship.

According to the SML, the required return on a company's equity is: $r_E = R_f + B_i [E(R_M) - R_f]$

- ❖ According to the dividend growth model approach, the cost of equity is equal to:

Dividend yield + Expected growth rate in dividends

- ❖ For calculating the WACC, market value proportions are generally recommended.
- ❖ WACC tends to rise as the firm seeks more and more capital.
- ❖ A schedule or graph showing the relationship between additional financing and WACC is called the weighted marginal cost of capital schedule.
- ❖ To determine the optimal capital budget, you have to compare the expected return on proposed capital expenditure projects with the marginal cost of capital schedule.
- ❖ There are two ways of handling floatation costs. One approach is to adjust the WACC to reflect the floatation cost. A better approach is to leave the WACC unchanged but to consider floatation costs as part of the project cost.
- ❖ The cost of capital is affected by several factors, some beyond the control of the firm and other depending on the investment and financing policies of the.
- ❖ Despite the importance of cost of capital in financial management, we find that several misconceptions characterize its application in practice.

Multiple Choice Questions

1. Cost of Capital refers to:

- Flotation Cost.
- Dividend.
- Required Rate of Return
- None of the above.

2. Which of the following sources of funds has an implicit cost of capital?

- Equity Share Capital.
- Preference Share Capital.
- Debentures.
- Retained earnings.

3. Which of the following has the highest cost of capital?

- ~~a) Equity shares.~~ b) Loans
- c) Bonds
- d) Preference Shares.

4. Cost of Capital for Government securities is also known as:

- ~~a) Risk-free Rate of Interest.~~
- b) Maximum Rate of Return.
- c) Rate of Interest on Fixed Deposits.
- d) None of the above.

5. Cost of capital for Bonds and Debentures is calculated on :

- a) Before-Tax basis.
- ~~b) After-Tax basis~~
- c) Risk-free Rate of Interest basis
- d) None of the above.

6. Weighted Average Cost of Capital is generally denoted by:

- a) K_a
- b) K_i
- ~~c) K_w~~
- d) K_c

7. Which of the following cost of capital require tax adjustment?

- a) Cost of Equity Shares.
- b) Cost of Preference Shares.
- ~~c) Cost of Debentures.~~
- d) Cost of Retained Earnings.

8. Which is the most expensive source of funds?

- a) New Equity Shares.
- b) New Preference Shares.
- c) New Debts.
- d) Retained Earnings.

9. Marginal Cost of capital is the cost of:

- ~~a) Additional Sales.~~
- ~~b) Additional Funds~~
- c) Additional Interests.
- d) None of the above.

10. In case the firm is all-equity financed. WACC would be equal to:

- a) Cost of Debt.

~~b) Cost of Equity.~~

- c) Neither (a) nor (b)
- d) Both (a) and (b)

11. In case of partially debt-financed firm, k_0 is less than

- a) K_d
- ~~b) K_e~~
- c) Both (a) and (b)
- d) None of the above.

12. In order to calculate weighted Average Cost Capital weights may be based on:

- a) Market Value.
- b) Target Value.
- c) Book Values.
- ~~d) All of the above.~~

13. Firm's Cost of Capital is the average cost of:

- ~~a) All sources.~~
- b) All borrowings.
- c) All share capital.
- d) All Bonds & Debentures.

14. An implicit cost of increasing proportion of debts is:

- a) Tax shield would not be available on new debt.
- b) P.E. Ratio would increase.
- ~~c) Equity shareholders would demand higher return~~
- d) Rate of Return of the company would decrease.

15. Cost of Redemable Preference Share Capital is:

- a) Rate of Dividend.
- b) After Tax Rate of Dividend.
- ~~c) Discount Rate that equates PV of inflows and out flows retaining to capital.~~
- d) None of the above.

16. Which of the following is true?

- a) Retained earnings are cost free.
- b) External Equity is cheaper than Internal Equity.

~~e)~~ Retained Earnings are cheaper than External Equity.

d) Retained Earnings are costlier than External Equity.

17. Cost of capital may be defined as:

a) Weighted Average cost of all debts.

b) Rate of Return expected by equity Shareholders.

c) Average IRR of the Projects of the firm.

~~d)~~ Minimum Rate of Return that the firm should earn.

18. Minimum Rate of Return that a firm must earn in order to satisfy its investors, is also known as:

a) Average Return on Investment.

~~b)~~ Weighted Average Cost of Capital.

c) Net Profit Ratio.

d) Average Cost of borrowing.

19. Cost of capital for Equity Share Capital does not imply that:

a) Market Price is equal to Book Value of share.

b) Shareholders are ready to subscribe to right issue.

c) Market price is more than issue price.

~~d)~~ All of the three above.

20. In order to calculate the proportion of equity financing used by the company, the following should be used:

a) Authorized Share Capital.

~~b)~~ Equity Share Capital plus Reserves and Surplus.

c) Equity Share Capital plus Preference Share Capital.

d) Equity Share Capital plus Long-term Debt.

Answers

1-c	2-d	3-a	4-a	5-b	6-c	7-c	8-a	9-b	10-b
11-b	12-d	13-a	14-c	15-c	16-c	17-d	18-b	19-d	20-b
21-b	22-c	23-c	24-c	25-d					

21. The term capital structure denotes:

a) Total of Liability side of balance Sheet.

~~b)~~ Equity Funds, Preference Capital and Long term Debt.

c) Total shareholders' Equity.

d) Types of Capital Issued by a Company.

22. Debt Financing is a cheaper source of finance because of:

a) Time Value of Money.

b) Rate of Interest.

~~c)~~ Tax-deductibility of Interest.

d) Dividends not payable to lenders.

23. In order to find out cost of equity capital under CAPM which of the following is not required?

a) Beta Factor.

b) Market Rate of Return

~~c)~~ Market Price of Equity Shares.

d) Risk-free Rate of Interest.

24. Tax-rate is relevant and important for calculation of specific cost of capital of:

a) Equity Share Capital.

b) Preference Share Capital.

~~c)~~ Debentures.

d) (a) and (b) above.

25. Advantage of Debt financing is:

a) Interest is tax-deductible.

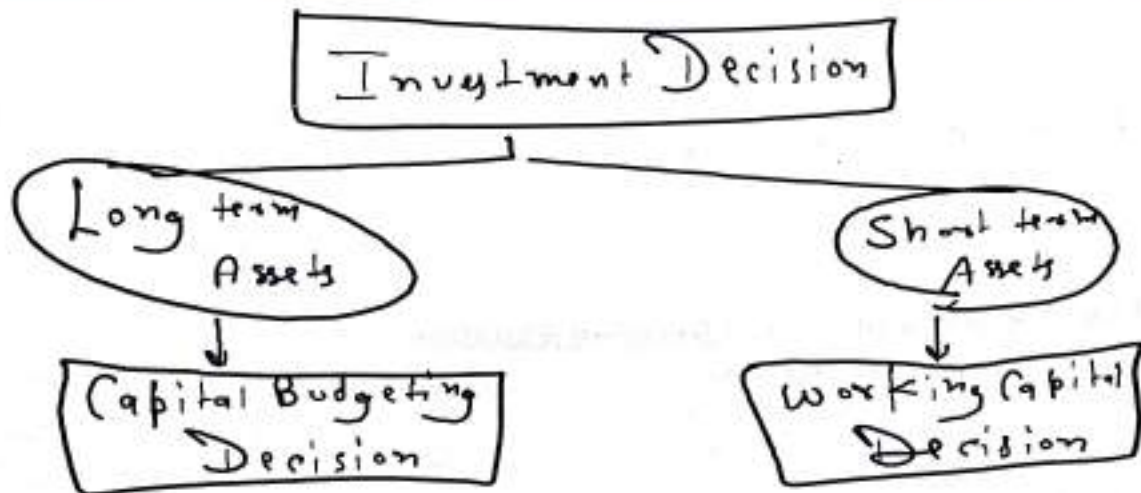
b) It reduces WACC.

c) Does not dilute owners control.

~~d)~~ All of the above.

CHAPTER 6

CAPITAL BUDGETING



Capital budgeting is the process a business undertakes to evaluate potential major projects or investments. Construction of a new plant or a big investment in an outside venture are examples of projects that would require capital budgeting before they are approved or rejected.

As part of capital budgeting, a company might assess a prospective project's lifetime cash inflows and outflows to determine whether the potential returns that would be generated meet a sufficient target benchmark. The process is also known as investment appraisal.

The Relevance & significance of Capital Budgeting may be stated as follows:

- (i) Long term effects
- (ii) Substantial's Commitments (Large Commitments of funds)
- (iii) Irreversible decisions
- (iv) Affect the capacity & strength to complete.

Type of Capital Budgeting Decisions:

(i) From the point of view of Firm's Existence:

(a) New UNIT: such as selection of plant to be installed, Capacity utilization at initial stage to set up or not simultaneously the ancillary unit etc.

(b) Existing Unit:

(i) Replacement & Modernization Decision:

If the existing plant is to be replace because the economic life of the Plant is over, then the decision may be known as Replacement Decision.

However, if an existing plant is to be replaced because it has become technologically out-dated (though the economic life may not be over) the decision may be known as modernization decision. In general these two decision are known as cost reduction decisions.

(ii) Expansion

(iii) Diversification

(iv) Contingent Decision

(ii) From the point of view of Decision Situation:

(i) Mutual exclusive Decision: Two or more alternative proposals are said to be mutually exclusive when acceptance of one alternative results in automatic rejection of all other proposal. [कई proposals में से एकको select करना] more than one alternative & competitive proposals.

(ii) Accept-reject Decision: when a proposal is independently accepted or rejected without regard to any other alternative proposals.

- > Every firm has only limited funds available & these funds are to be invested in such a way so as to bring maximum contribution to the wealth of the firm.
- > The situation when the firm is not able to finance all the profitable investment opportunity is known as Capital Rationing.

Assumption of capital budgeting

Procedure

(1) Certainty with respect to cost & benefit

(1) Estimation of cost & benefit of a proposal

(2) Profit Motive

(2) Estimation of the required rate of return.

(3) No Capital Rationing: (No securities of

(3) Using the Capital budgeting decision criterion.

capital funds)

Two Alternative are suggested for measuring the cost & benefits of a proposals:

(1) A/cing Profit: The A/cing profit, which otherwise is a good estimate of judging the efficiency of any firm, may not be a good measure to estimate the value/benefit created by a proposal. The A/cing Profit as a measure of benefits of a proposal is discarded on the following grounds:

- (1) The A/cing Profit is, to a large extent, affected by the discretionary A/cing Policies.
- (2) The A/cing Profit is affected by so many non-cash items & on accurate basis.
- (3) The A/cing Profit measure the profit of any particular year in terms of money. However cost benefit of a proposal may occur over a period of number of year.

(2) Cash flows: The Cash flows associated with a proposal may be classified into:

- (i) Original or Initial Cash outflow
- (ii) Subsequent cash inflow/outflow
- (iii) Terminal cash flow

(1) Original or Initial Cash outflow:

Cash spent to acquire the Assets + Installation Cost + Salvage value of existing assets as well as the tax effect of Profit or Loss on sale, both are considered.

(2) Subsequent cash inflow/outflow: $PAT + \text{Non Cash expense} - \text{Capital exp} \pm \Delta w.c$

(3) Terminal Cash Inflows: Sale price of Asset \square TAX effect of sales of Asset + w.c. released

➤ **Incremental Approach to Cash flow:** only those cash flow are considered, that differ/occur as a result of undertaking/accepting the particular proposal.

Following points are considered:

(1) Stand alone Principle: implies that each project is a 'mini firm' within the Larger firm. Each 'mini firm' has its costs, revenue & cash flows. Thus a project is evaluated purely on its own merits, in isolation from other activities of the firm.

(2) Allocated overhead costs: (Irrelevant). However, if the overhead cost is expected to increase after the new project is implemented, then only this incremental overhead cost will be considered as costs & the cash out flow for the proposals. *Sunk cost*

(3) Product Cannibalization: This refers to the Phenomenon where by a new Product introduced by a firm competes with & reduces sales of some other existing product of the same firm. नए product को लाने से existing product की sale में होने वाली कमी \square it can be argued that this is a negative incremental effect of the new product & the cost cash flows or profit from the existing products should be treated as cash in analyzing whether or not to introduce the product.

➤ The decision whether or not to include the cost of lost sales created by product cannibalization will depend on the potential for a competitor to introduce a close substitute to the new product being considered. **Two extreme possibilities exist:**

(1) If the business in which the firm operates is extremely competitive & there are no barriers to entry then NOT included i.e. it has no place in an incremental cash flow analysis.

(2) If a competitor cannot introduce a substitute, because of legal restriction such as patents, the cash flow lost as a consequence of product cannibalization should be included in the capital budgeting analysis, at least for the period of the patent protection.

Taxation & Cash flows:

➤ The Cash flows that are related to capital budgeting decision are the after tax cash flows only.

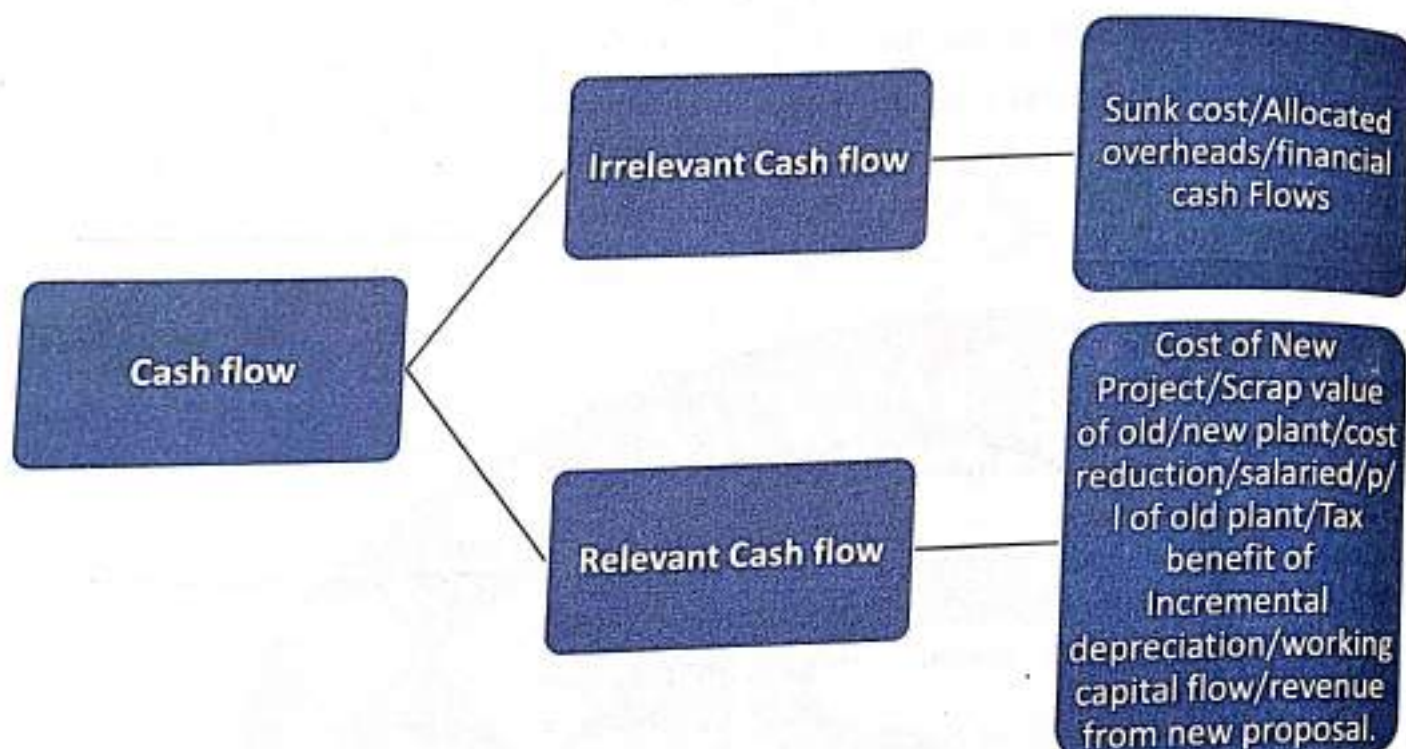
Financial Cash flows:

In Capital Budgeting, these financial cash flows i.e. cash in flow in the form of raising the funds & cash out flows in the form of interest & dividend payments, are ignored.

➤ The cost of financing in the form of interest & dividend, is truly reflected in the weighted avg. cost of capital, which is used to evaluate the proposals. If the cost of debt or equity is deducted from the cash inflows, then this cost of raising funds will be counted twice, first in the cash inflows & 2nd in the WACC. This is also known as Interest Exclusion Principle.

➤ The Int. pay able to the lender & the dividend pay able to the sh. Holder are cash flows to the supplier of funds & not cash flow from the project.

➤ **Intया div. को add करना है दोबारा और tax effect on int. को less करना है।**



Capital Budgeting: Techniques of Evaluation



(1) Payback Period: is defined as the no. of years required for the proposals cumulative cash inflows to be equal to its cash out flows. The payback period therefor, can be looked upon as the length of time required for a proposal to 'break even' on its net investment.

Computation of the payback period:

(a) When Annual Cash flows are equal:

Payback Period = $\frac{\text{Cash out flow}}{\text{annual cash inflow}}$

(b) When Annual Cash inflow are unequal:

Yr.	Annual C.F	Cumulative C.F.
1	8000	8000
2	6000	14000
3	4000	18000
4	2000	20000

Eg: cash outflow would be Rs. 20000 then Ans. Is 4yr.

> A measurement Problem may occur when the cumulative cash inflow do not exactly equal to proposal is cash outflow. Like cash out flow is Rs. 18500, then Payback would be

$$3\text{Yr} + \frac{500}{2000} = 3.25\text{Yr or } 3 \text{ year } 3 \text{ month}$$

Here 500 is difference and 2000 is 4th yr. Cash flow

Decision Rule: The Payback Period calculated for a proposal is to be compared with some predetermined target period. If the Payback Period is more than the target period, rejected. Otherwise it may be accepted.

[Further, if the different proposals are to be ranked in order of priority, then the Proposal with the shortest

Payback Period will be first in the Priority List.]

Advantage:

(1) Simple & easy

(2) It gives Indication of Liquidity.

(3) It deals with risk also, the Project with a shorter Payback Period will be Less risky of compared to project with a longer Payback Period, as the cash inflow which arise further in future will be Less Certain & hence more risky.

Disadvantages:

(1) It ignores what happens after the initial investment is recouped. [After Cash flowको ignore कर रहा है]

(2) It ignores the time value of money.

(3) It ignores the Salvage value.

(4) यह सिर्फ Capital Recovery का Method है नकी Profitability जानने का। सिर्फ Capital recovery करना ही enough नहीं होता, क्योंकि economic point of view से profit main indicator होता है।

Suitability: in a politically unstable country, the firm may have a primary consideration of recovering the initial cost at the earliest opportunity & thus the Payback Period may be a suitable technique & also suitable where the firm has Limited funds available. In such a case, the firm may wish to undertake those project which ensure early Liquidity/recovery to undertake some other projects.

Computation The pay back method (PB) is the traditional method of capital budgeting. It is the simplest and, perhaps, the most widely employed, quantitative method for appraising capital expenditure decisions. This method answers the question: How many years will it take for the cash benefits to pay the original cost of an investment, normally disregarding salvage value? Cash benefits here represent CFAT ignoring interest payment. Thus, the pay back method (PB) measures the number of years required for the

CFAT to pay back the original outlay required in an investment proposal.

There are two ways of calculating the PB period. The first method can be applied when the cash flow stream is in the nature of annuity for each year of the project's life, that is, CFAT are uniform. In such a situation, the initial cost of the investment is divided by the constant annual cash flow:

$$PB = \frac{\text{Investment}}{\text{Constant Annual cash flow}}$$

For example, an investment of Ps 40,000 in a machine is expected to produce CFAT of Rs 8,000 or 10 years,

$$PB = \frac{Rs\ 40,000}{Rs\ 8,000} = 5\ \text{years}$$

The second method is used when a project's cash flows are not uniform (mixed stream) but vary from year to year. In such a situation, PB is calculated the process of cumulating cash flows till the time when cumulative cash flows become equal to the original investment outlay. Table presents the calculations of pay hack period for shown in Example.

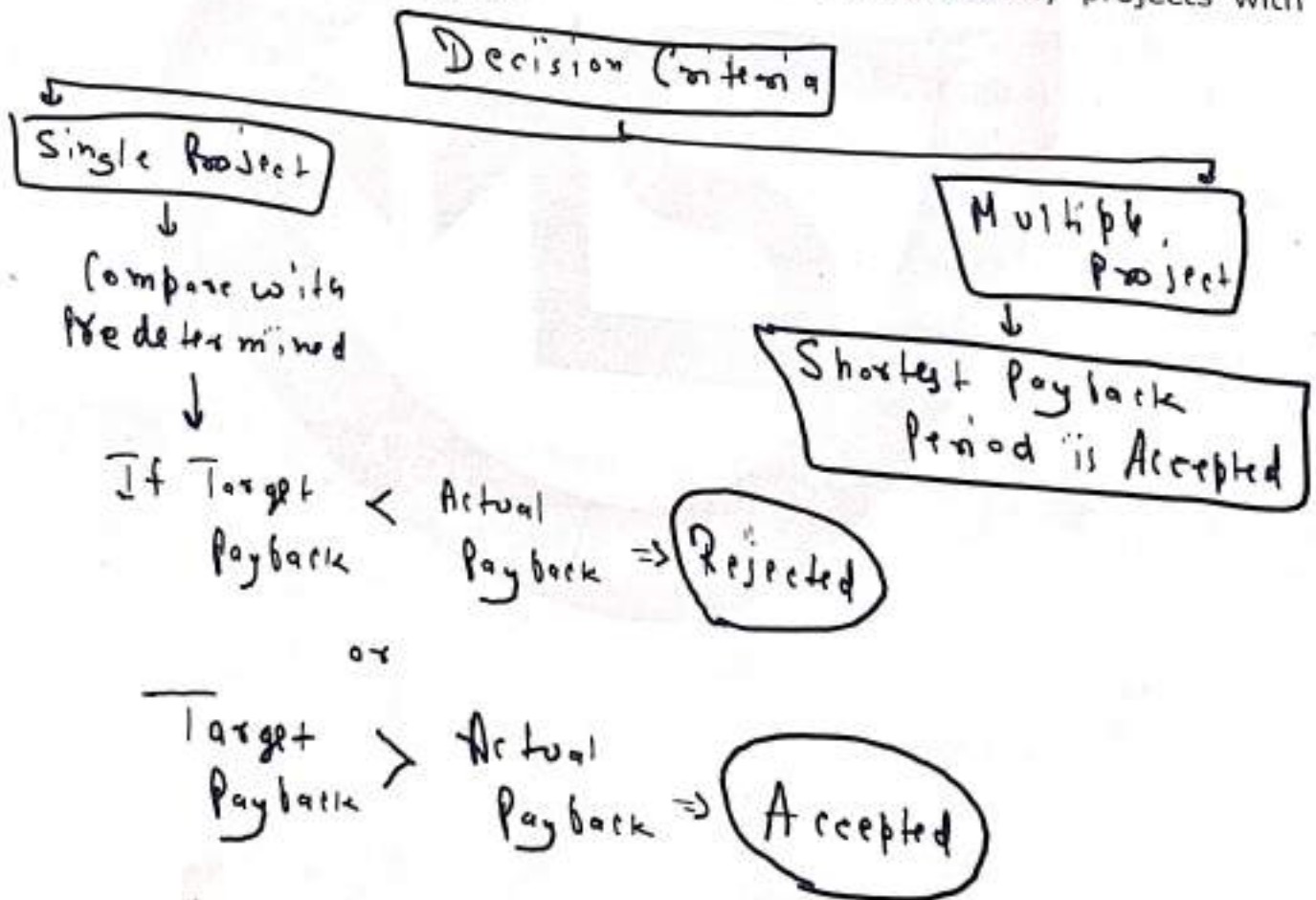
Year	Annual CFAT		Cumulative CFAT	
	A	B	A	B
1	Rs 14,000			
2	16,000	Rs 22,000	Rs 14,000	Rs 22,000
3	18,000	20,000	30,000	42,000
4	20,000	18,000	48,000	60,000
5	25,000	16,000	68,000	76,000
		17,000	93,000	93,000

CFAT in the fifth year includes Rs.3,000 salvage value also.

The initial investment of Rs 56,125 on machine A will be recovered between years 3 and 4. The pay back period would be a fraction more than 3 years. The sum of Rs 48,000 is recovered by the end of the third year. The balance Rs 8,125 is needed to be recovered in the fourth year. In the fourth year CFAT is Rs

20,000. The pay back fraction is, therefore, 0.406 (Rs 8,125/Rs 20,000). The pay back period for machine A is 3.406 years. Similarly, for machine B the pay back period would be 2 years and a fraction of a year As Rs 42,000 is recovered by the end of the second year, the balance of Rs 14,125 needs to be recovered in the third year. In the third year CFAT is Rs 18,000. The pay back fraction is 0.785 (Rs 14,125/Rs 18,000). Thus, the PB period for machine B is 2.785 years.

Accept-Reject Criterion The pay back period can be used as a decision criterion to accept or reject investment proposals. One application of this technique is to compare the actual pay back with a predetermined pay back, that is, the pay back set up by the management in terms of the maximum period during which the initial investment must be recovered. If the actual pay back period is less than the predetermined pay back, the project would be accepted; if not, it would be rejected. Alternatively, the pay back can be used as a ranking method. When mutually exclusive projects are under consideration, they may be ranked according to the length of the pay back period. Thus, the project having the shortest pay back may be assigned rank one, followed in that order so that the project with the longest pay back would be ranked last. Obviously projects with shorter pay back period will be selected.



2. Accounting Rate of Return / Average Rate of Return: (ARR)

Annual return of the project are expressed as a % of the net investment.

$ARR = \frac{\text{Avg. Annual Profit (after tax)}}{\text{Avg. Invt. in the Project}} \times 100$	If equal profits	$ARR = \frac{\text{Avg. Annual Profit (after tax)}}{\text{Avg. Invt. in the Project}} \times 100$	If unequal Profit
$ARR = \frac{\text{Avg. Annual Profit (after tax)}}{\text{Avg. Invt. in the Project}} \times 100$		$ARR = \frac{\text{Avg. Annual Profit (after tax)}}{\text{Avg. Invt. in the Project}} \times 100$	

➤ Average Investment: The avg. invt. Of a proposal is affected by the method of depreciation, salvage value & the additional working capital requirement.

Two approach are available to calculate the Avg. Invt.:

(1) Initial cash outlay as average Investment: The original cost of Investment & the installation expenses, if any is taken as the amt. invested in the project.

(2) Average annual book value after Depreciation as average investment: If a method of Depreciation other than SLM is used:

(i) Find op. book value & cl. Book value of the project for all the years of its economic Life.

(ii) Find Avg. book value by taking the simple arithmetic mean of the $\frac{\text{op} + \text{cl}}{2}$

(iii) Find avg. of all yearly avg:

Like Yr	Step 1		Step 2	Step 3
	Op b.v	Clb.v	Avgb.v	Avg. Invt. = $\frac{350000}{5} = 70000$
1	120000	100000	110000	
2	100000	80000	90000	
3	80000	60000	70000	
4	60000	40000	50000	
5	40000	20000	30000	
			<u>350000</u>	

➤ If SLM of Depreciation is used/Shortcut method:

$$\text{Avg Inv} = \frac{1}{2} [\text{Initial Cost} + \text{Installation Expenses} - \text{Salvage value}] + \text{Salvage value}$$

➤ If additional w.c. is required:

$$\text{Avg Inv} = \frac{1}{2} [\text{Initial Cost} + \text{Installation Expenses} - \text{Salvage value}] + \text{Salvage value} + \text{Additional working Capital}$$

Decision Rule: If ARR is more than Pre-specified Rate of Return. Accepted

If ARR is Less than Pre-specified Rate of Return. Rejected.

➤ ARR can also be used to rank various mutually exclusive Proposals, the Project with the highest ARR will have the top priority while the Project with the Lowest ARR will be assigned Lowest priority.

Criticism of ARR: (1) It ignores the time value of Money.

(2) based on a/cing profit rather than cash flow.

(3) ignore the life of proposal

(4) Ignore the Salvage value

(5) Also fails to recognize the size of the investment required for the project.

Particularly, in case of mutually exclusive proposals, the two project having significantly different initial costs, may have same ARR.

Accept-reject Rule With the help of the ARR, the financial decision maker can decide whether to accept or reject investment proposal. As an accept-reject criterion, the actual ARR would be Compared with a predetermined or a minimum required rate of return or cut-off rate. A project would qualify to be accepted if the actual ARR is higher than the minimum desired ARR. Otherwise, it is liable to be rejected.

Alternatively, the ranking method can be used to select or reject proposals. Thus, the alternative proposals under consideration may be arranged in the descending order of magnitude, starting with the proposal with the highest ARR and ending with the proposal having the lowest ARR. Obviously, projects having higher ARR would be preferred to Projects with lower ARR.

Evaluation of ARR In evaluating the ARR, as a criterion to select/reject investment projects merits and drawbacks need to be considered. The most favourable attribute of the ARR method its easy calculation. What is required is only the figure of accounting profits after taxes when should be easily obtainable. Moreover, it is simple to understand and use. In contrast to this, the discounted flow techniques involve tedious calculations and are difficult to understand. Finally, the total benefits associated with the project are taken into account while calculating the ARR. Some methods, pay back for instance, do not use the entire stream of incomes.

However, this method of evaluating investment proposals suffers from serious deficiencies principal shortcoming of the ARR approach aries from the use of accounting income instead of cash flows. The cash flow approach is markedly superior to accounting earnings for project evaluation. The earnings calculations ignore the reinvestment potential of a project's benefits while the cash flow takes into account this potential and, hence, the total benefits of the project.

The second principal shortcoming of ARR is that it does not take into account the time value of money. The timing of cash inflows and outflows is a major decision-variable in financial decision making. Accordingly, benefits in the earlier years and later years cannot be valued at par. To the extent the ARR method treats these benefits at par and fails to take account of the differences in the time value of money, it suffers from a

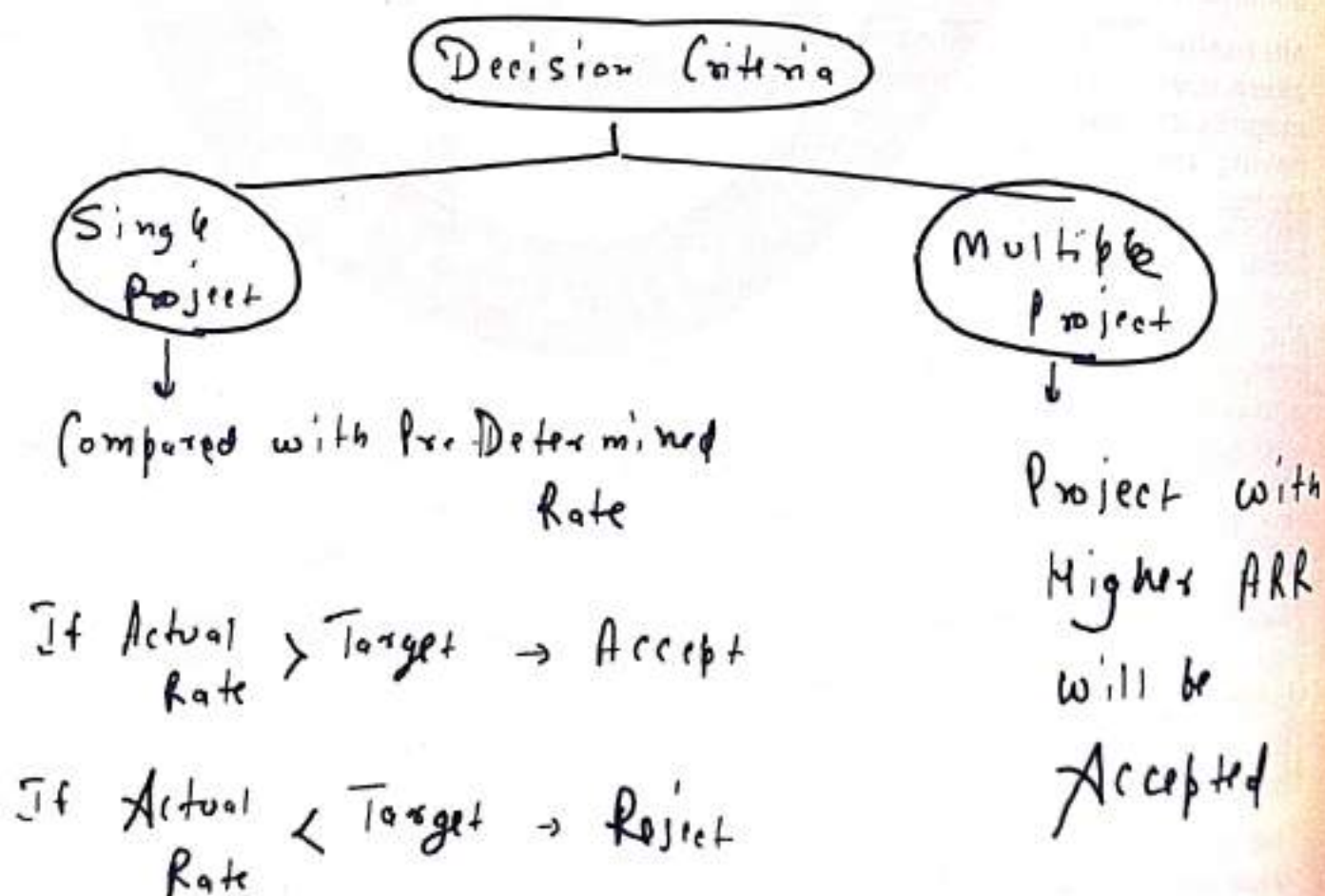
serious deficiency. Thus, in Example the ARR case of both machines, A and B is the same, although machine B should be preferred since its returns in the early years of its life are greater. Clearly, the ARR method of evaluating investment proposals fails to consider this.

Thirdly, the ARR criterion of measuring the worth of investment does not differentiate between the size of the investment required for each project. Competing investment proposals may have the same ARR, but may require different average investments, as shown in Table. The ARR method, in such a situation, will leave the firm in an indeterminate position.

Machines	Average Earnings	Annual	Annual Investment	ARR (per cent)
1	2	3	4	
A	Rs 6,000		Rs 30,000	20
B	2,000		10,000	20
C	4,000		20,000	20

Finally, this method does not take into consideration any benefits which can accrue to the firm from the sale or abandonment of equipment which is replaced by the new investment. The 'new' investment, from the point of view of correct financial decision making, should be measured in terms of incremental cash outflows due to new investments, that is, new investment minus sale proceeds of the existing equipment \pm tax adjustment. But the ARR method does not make any adjustment in this regard to determine the level of average investments. Investments in fixed assets are determined at their acquisition cost.

For these reason, the ARR leaves much to be desired as a method for project selection.



Discounted Cash flow (DCF)/Time-Adjusted (TA) Techniques:-

The distinguishing characteristics of the DCF capital budgeting techniques is that they take into consideration the time value of money while evaluating the costs and benefits of a project. In one arm or another, all these methods require cash flows to be discounted at a certain rate, that is, the cost of capital. The cost of capital (K) is the minimum discount rate earned on a project that leaves the market value unchanged.

The second commendable feature of these techniques is that they take into account all benefits and cost occurring during the entire life of the project.

In the discussions that follow, we have attempted to discuss the DCF evaluation methods. First, we have explained the general procedure behind DCF. This is followed by a discussion of the first DCF technique, namely, net present value (NPV). We have then covered the internal rate of return (IRR) method. The two variations of the NPV method, that is, terminal value and profitability index (PI) or-benefit cost ratio are also discussed. An attempt has also been made to compare the NPV method with IRR and the PI.

3. Net Present Value Method:

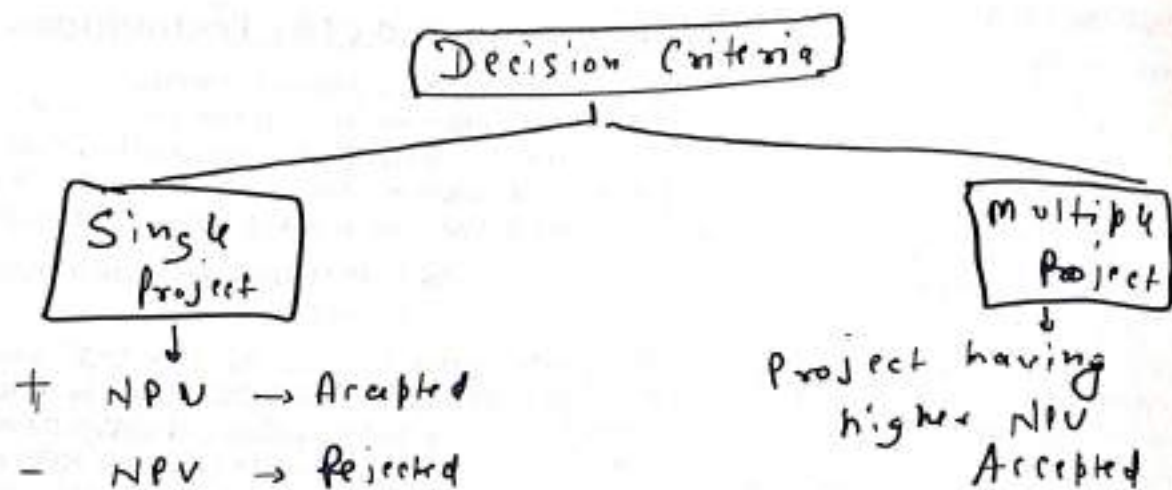
1. The Rate of Discount which also known as minimum required rate of return is used to discount.
2. There is an inverse relation between the rate of return & the NPV value.
3. Rate of Return \propto NPV & vice versa.
4. The discount rate K applied for discounting the future cash flow is in fact, the minimum required rate of return which incorporates both the pure return as well as the premium required to set off the risk.

Criticism: The NPV techniques doesn't provide a measure of project's own rate of return, rather it evaluates a project against an external variable i.e. the Minimum required rate of Return.

$$\text{Value of firm} = \text{Total NPV of existing projects} + \text{Total NPV of the proposals}$$

- There are two variants of the NPV technique, known as the Profitability Index [PI] & the terminal value technique.
- **General Procedure** The present value or the discounted cash flow procedure recognizes that cash flow streams at different time periods differ in value and can be compared only when they are expressed in terms of a common denominator, that is, present values. It, thus, takes into account the time value of money. In this method, all cash flows are expressed in terms of their present values. The procedure to determine present value is comprehensively covered in Chapter.
- The present value of the cash flows in Example are illustrated shown in Table.
- **Calculations of Present Value of CFAT**

Year	Machine A			Machine B		
	CFAT	PV factor (0.10)	Present value	CFAT	PV factor (0.10)	Present value
	2	3	4	5	6	7
1	Rs 14,000	0.909	12,726	22,000	0.909	19,998
2	16,000	0,826	13,216	20,000	0,826	16,520
3	18,000	0,751	13,518	18,000	0,751	13,518
4	20,000	0,683	14,660	16,000	0,683	10,928
5	25,000*	0,621	15,525	17,000*	0,621	10,557
			69,645			71,521



4. Profitability Index [PI]: also known as Benefit-cost Ratio or Present value index.

$$P.I = \frac{\text{Total P.V of cash inflows}}{\text{Total P.V of cash outflows}}$$

PI is defined as the benefit (in Present Value terms) per rupee invested in the Proposal.

Profitability Index (PI) or Benefit-Cost Ratio (B/C Ratio) Yet another time-adjusted capital budgeting technique is profitability index (PI) or benefit-cost ratio (B/C). It is similar to the NPV approach. The profitability index approach measures the present value of returns per rupee invested, while the NPV is based on the difference between the present value of future cash inflows and the present value of cash outlays. A major shortcoming of the NPV method is that, being an absolute measure, it is not a reliable method to evaluate projects requiring different initial investments. The PI method provides a solution to this kind of problem. It is, in other words, a relative measure. It may be defined as the ratio which is obtained dividing the present value of future cash inflows by the present value of cash outlays. Symbolically,

$$PI = \frac{\text{Present value cash inflows}}{\text{Present value cash outflows}}$$

This method is also known as the B/C ratio because the numerator measures benefits and the denominator costs. A more appropriate description would be present value index.

Accept-Reject Rule Using the B/C ratio or the PI, a project will qualify for acceptance if its PI exceeds one.

When PI equal 1 the firm is indifferent to the project.

When PI is greater than, equal to or less than 1, the net present value is greater than, equal to or less than zero respectively. In other words, the NPV will be positive when the PI is greater than 1; will be negative when the PI is less than one. Thus, the NPV PI approaches give the same results regarding the investment proposals.

Decision Criteria

If $P.I > 1$ Accepted

If $P.I < 1$ Rejected

If $P.I = 1$ Indifferent

Modified IRR

5. Terminal Value [TV]: In the T.V techniques the future cash flow are first compounded at the expected Rate of Interest for the Period from their occurrence till the end of the economic life of the Project. The Compounded values are then discounted at an appropriate Rate to find out the Present Value.

6. Discounted Payback Period:

The P.V inflows is then compared with the Present value of the outflow, in order to identify the period taken to recover the initial cost or the P.V of out flow. However, it still doesn't take into account those cash inflow which occur subsequent to the payback period & sometimes these Cash inflow may be substantial. It is a variant of the original payback period method.

Decision \Rightarrow Same as Payback Period Approach.

7. IRR (Internal Rate of Return):

Multiple IRR in case of Reverse cashflow

The IRR of a proposal is defined as the discount rate which produces a zero NPV i.e. the IRR is the discount rate which will equates the P.V of cash inflow with the P.V of cash out flow. %

$$IRR = \text{Lowest Discount Rate} + \frac{NPV_{\text{at lower dis. rate}}}{NPV_{\text{at lower dis. rate}} + NPV_{\text{at higher dis. rate}}} \times \text{Diff. in Rate (H-L)}$$

Decision Rule: In this method, the firm has to determined in the first instance, its own required rate of return. This rate, K is also as the cut of rate or the hurdle rate. A particular proposal may be accepted if its IRR r is more than the minimum rate i.e. k , otherwise rejected.

In case of ranking mutually, exclusive proposals, the proposals with the highest IRR is given the top priority while the project with the lowest IRR is given the lowest priority.

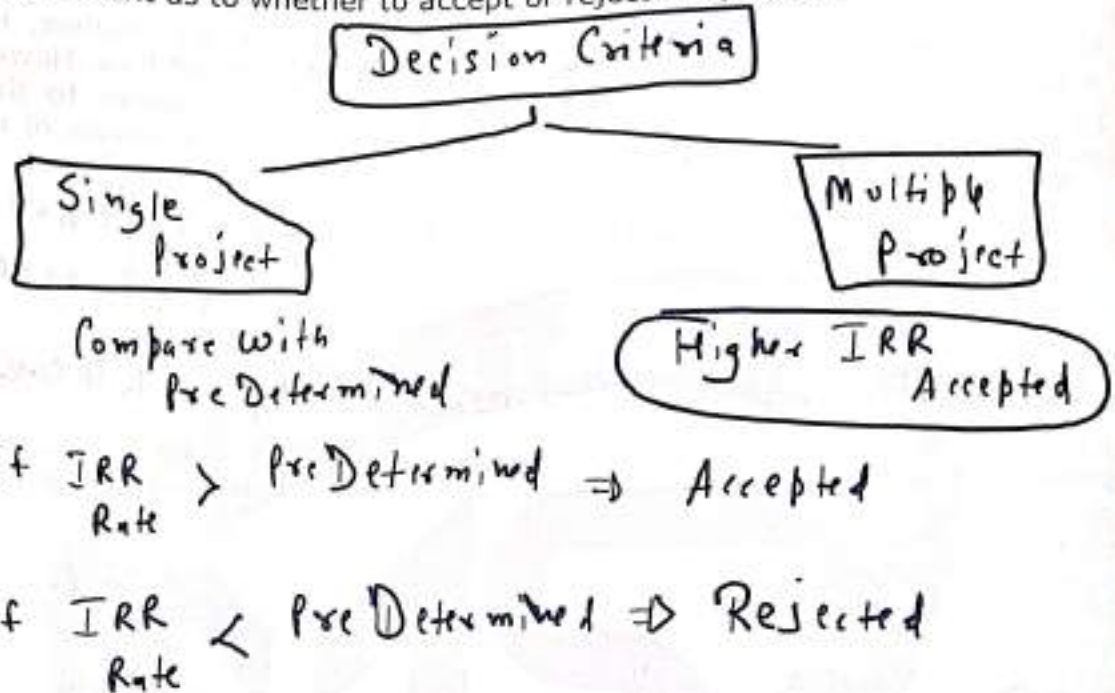
> It may be noted that IRR (r) of the proposal is Internal to the project, while the minimum required rate (k), is external to the project.

Internal Rate of Return (IRR) Method The second discounted cash flow (DCF) or time-adjusted method for appraising capital investment decisions is the internal rate of return (IRR) method. This technique is also known as yield on investment, marginal efficiency of capital, marginal productivity of capital, rate of return, time-adjusted rate of return and so on. like the present value method, the IRR method also considers the time value of money by discounting the cash streams. The basis of the discount factor, however, is different in both cases. In the case of the net present value method, the discount rate is the required rate of return and being a predetermined rate, usually the cost of capital, its determinants are external to the proposal under consideration. The IRR, on the other hand, is based on facts which are internal to the proposal. In other words, while arriving at the required rate of return for finding out present values the cash flows-inflows as well as outflows-are not considered. But the IRR depends entirely on the initial outlay and the cash proceeds of the project which is being evaluated for acceptance or rejection. It is, therefore appropriately referred to as internal rate or return.

- All cash flows are reinvested
- Percentage but magnitude is also imp.

The internal rate of return is usually the rate of return that a project earns. It is defined as the discount rate (r) which equates the aggregate present value of the net cash inflows (CFAT) with the aggregate present value of cash outflows of a project. In other words it's that rate which gives the project NPV of zero.

Accept-Reject Decision The use of the IRR, as a criterion to accept capital investment decisions involves a comparison of the actual IRR with the required rate of return also known as the cut-off rate or hurdle rate. The project would qualify to be accepted if the IRR (r) exceeds the cut-off rate (k). If the IRR and the required rate of return are equal, the firm is indifferent as to whether to accept or reject the project.



NPV versus IRR: The IRR approach solves for a rate unique to each project, while the NPV approach solves for the trade-off cash inflows and outflows using a general required rate of return. On the basis of the above discussion of NPV and IRR, a comparison between the two may be attempted as follows:

(a) Superiority of IRR over NPV: IRR may be considered superior to the NPV for the following reasons:

- (i) IRR gives percentage return while the NPV gives absolute return.
- (ii) For IRR, the availability of required rate of return is not a pre-requisite while for NPV it is must.

(b) Superiority of NPV over IRR: The NPV is said to have superiority over IRR for

- (i) NPV shows expected increase in the wealth of the shareholders.
- (ii) NPV gives clear cut accept reject decision rule, while the IRR may give multiple results also.
- (iii) The NPV of different projects are additive while the IRR cannot be added.
- (iv) NPV gives better ranking as compared to the IRR.

Capital Budgeting - Some Issues

Capital Budgeting under Capital Rationing:

- Divisible Project: which can either be taken in full or can be taken in parts.
- Indivisible Project: these proposals have a feature that either the proposal, as a whole be taken in its totality or not taken at all.

Single Period Capital Rationing

(1) Aggregation of Projects or Feasible Set Approach: the NPV of various proposals are put in different possible combinations & then that combination is selected which has the maximum total NPV. The following two points:-

- (i) That total outlay of the combination is within the limits of capital rationing. &
- (ii) The total NPV of the combination is the highest among all the combinations.

(2) Analysis based on IRR: If firm want to select the Projects on the basis of their profitability. Two points:

- (i) find out the IRR of individual proposals & arrange them in descending order of their IRRs

(ii) Then proceed to select all proposals from the highest IRR down, until the funds are exhausted or the IRR of the proposals is less than the cut-off rate.

Capital Budgeting Under Inflation:

• Differential Inflation: is one where cost & revenue change at differing rates of inflation or where the various items of cost & revenue move at different rate. [Rate बदलतारहताहै] This is a normal Situation.

• Synchronized Inflation: in this the rate of inflation over years or over items may be assumed to be same.

$$(1 + \text{Normal Discount Rate}) = (1 + \text{Inflation Rate}) (1 + \text{Real Rate of Discount})$$

Thus the Nominal Discount Rate contains two elements i.e.,

- (1) The Real Discount Rate which in fact helps maintaining the shareholders wealth &
- (2) The inflation rate which in fact is the compensation for giving up the purchasing power today for a purchasing power in future.

Money Cash flow: Nominal Cash flow: These are the Actual amt expected to arise in future. These cash flow includes the effect of inflation. The money cash flows will occur in terms of the purchasing power of that period in which they occur.

Real Cash Flow: they are expressed in terms of Constant Price. These cash flow exclude the effect of inflation.

$$\text{Real cash flow} = \frac{\text{Money Cash flow}}{1 + \text{Inflation rate}}$$

- Discounting the money cash flow at nominal discount rate &
- Discounting the real cash flow at real discount rate
- In case of Inflation, the money cash flows should be converted to real cash flows. These real cash flows are discounted at real discount rate.

Capital budgeting with unequal lives of proposals:

Equivalent Annuity Method:

$$P. \text{ Vof Perpetuits} = \frac{\text{Annuity Amt}}{\text{Rate of Discount}} \text{ or NPV}$$

$$\& \text{ Annuity Amt} = \frac{\text{NPV of proposal}}{\text{P.V.A.F.}(r,n)} \text{ EAV should be used in cost of repetitive projects.}$$

Capital Budgeting & Deferrable Decisions:

If the proposal is not deferrable to future, then it can be implemented now or never, depending upon its acceptability.

Deferrable decisions are those which can be taken up after year or even thereafter if not accepted now.

- ✓ In case of Replacement decision, the basic problem is to determine the optimum replacement timing for the asset.
- ✓ In case the decision is deferrable or postpone able, the firm has to find out the best time, to implement the decision.
- ✓ Feasibility set approach to capital rationing can be applied in- accept reject situation.
- ✓ In case of divisible project, PI approach can be used to attain maximum NPV.
- ✓ In case of indivisible projects, feasibility set approach may not give the optimum result.
- ✓ If the project has positive NPV, its EAV is Less than NPV.

Capital budgeting decisions pertain to fixed/long-term assets which by definition refer to assets which are in ration, and yield a return, over a period of time, usually, exceeding one year. They, therefore, involve a current, outlay or series of outlays of cash resources in return for an anticipated flow of future benefits. In other words, the system of capital budgeting is employed to evaluate expenditure decisions which involve current outlays but are likely to produce benefits over a period of time longer than one year. These benefits may be either in the form of increased revenues or reduced costs. Capital expenditure management, therefore, includes addition, disposition, modification and replacement of fixed assets.

Risk Analysis in Capital Budgeting:-

The cash flows from an investment are estimated when the proposal is evaluated, however, the returns are not known until the cash flows actually occur. The uncertainty of return from the moment, the funds are invested until management and investor know how much the projects has earned, is a primary determinant of a proposal's risk. The owner of a firm are ordinarily concerned with the riskiness of their capital, and management must therefore, take risk into account in evaluation of capital budgeting proposals.

In case, the cash flows associated with a proposal are known with certainty then the techniques such as NPV, IRR or any other may be used to evaluate the desirability of the proposal. However, when the cash flows are not known with certainty, a measure of risk of the proposal should also be brought into the evaluation system. Such resultant capital

budgeting decision criterion will then evaluate the proposals by considering both the risk and return associated with the proposal.

Conventional Techniques	Statistical Techniques
<ol style="list-style-type: none"> 1. Payback Period 2. Risk Adjusted Discount rate 3. Certainty Equivalents 4. Scenario Analysis 5. Sensitivity Analysis 	<ol style="list-style-type: none"> 1. Probability Distribution Approach 2. Simulation Analysis 3. Decision Tree Approach

Conventional Techniques of Risk Analysis:-

These techniques are also known as traditional or non mathematical techniques to evaluate risk. These approaches are simple and based on theoretical assumptions. Some of the conventional techniques are as follows:

1. Payback Period: *Shorter period*

As already discussed, the Payback Period method considers the time period over which the original investment in the project will be recovered by the firm out of the cash inflows of the project. The payback period is then compared with the target payback period. If the proposal's period, it may be accepted, otherwise rejected. In order to incorporate risk of the proposal, the target payback period may be shortened. As a result some project which would have been on the verge of being selected, otherwise, will now be rejected. The shortening of the target payback period is based on the assumption that payback period is based on the assumption that larger the recovery period, more risky the proposal would be.

The Payback Period as an approach to handle risk is simple and straight forward. But it fails to measure the risk which may be of different degree in different alternative proposals. Moreover, it reduces only that risk which arises due to time period and thus allows for other risks to prevail. The payback period also ignores the time value of money as well as the cash flows arising after the payback period.

Once the risk has been identified and measured for a proposal, it can be considered in capital budgeting analysis in one of the two ways:

1. To adjust the discount rate to reflect the risk, and
2. To adjust the cash flows to incorporate the risk and then to use a riskless discount rate.

Both these approaches have been discussed as follows:

2. Risk Adjusted Discount Rate (RADR):

An other way of adjusting for risk is to modify the rate of return to include a risk premium wherever needed. In a sense, the reasoning behind this is quite simple i.e., the greater the risk, the higher should be the desired return from a proposals. The RADR is based on the premise that riskiness of a proposal may be taken care of, by adjusting the discount rate. The cash flows from a more risky proposal should be discounted at a relatively higher discount rate as compared to other proposals whose cash flows are less

Any investor is basically risk averse and try to avoid risk. However, he may be ready to take risk provided he is rewarded for undertaking risk by higher returns. So, more risky the investment is, the greater would be the expected return. The expected return is expressed in terms of discount rate which is also termed as the minimum required rate of return generated by a proposal if it is to be accepted. Therefore, there is a positive correlation between risk of a proposal and the discount rate.

A firm at any point of time has a risk level emanating from the existing investment. The firm also has a discount rate to reflect that level of risk. In case, there is no risk of the existing investment, then the present discount rate may be known as the risk free discount rate. If the risk level of the new proposal is higher than the risk level of the existing investment, then the discount rate to be applied to find out the present value of the cash flows of the proposal should also be higher than the present discount rate. Similarly, two different proposals having varying degree of risk should be evaluated at different discount rates. The difference between the discount rate applied to a riskless proposal and a risky proposal is known as the risk premium. The RADR may be expressed in terms of Equation.

$$K_a = k + a$$

Where, k_a = Risk Adjusted Discount Rate

k = Risk free Discount Rate, and

a = Risk Adjustment Premium

It may be noted that the risk free discount rate is described as the rate of return on the Government securities. Since all the business proposals have higher degree of risk as compared to zero degree of risk of Government securities, the RADR is always greater than the risk free rate. Moreover, as the risk of proposal increases the risk adjustment premium i.e., a , also increases.

3. CERTAINTY Equivalents (CE):

An alternative approach to incorporate the risk is to adjust the cash flows of a proposal to reflect the riskiness. The CE approach attempts at adjusting the future cash flows instead of adjusting the discount rates. The expected future cash flows which are taken as risky and uncertain are converted into certainty cash flows. Intuitively, more risky cash flows. The extent of adjustment will vary and it can be either subjective or based on a risk return model. So, in CE approach, the equivalent risk-less cash flows are substituted for the expected cash flows. Thus, it allows a finance manager to substitute a cash flow that he feels is equivalent to the expected but risky cash flows. Implied in the process is that the finance manager is indifferent between the risky expected cash flows and the substituted certain cash flows. These substituted cash flows are then discounted at risk free discount rate to find out the NPV of the proposal. The procedure for the CE approach can be explained as follows:

1. Estimation of the future cash flows from the proposal. These cash flows do have some degree of risk involved.
2. The calculation of the CE factors for different years. These CE factors reflect the proportion of the future cash flow a finance manager would be ready to accept now in exchange for the future cash flow. The CE factors represent the level of present money at which the firm would be indifferent between accepting the present money or the future cash flow. For example, cash inflow of Rs.10,000 is receivables after 2 years. However, if the inflow is available right now, the firm may be ready to accept even 70% of Rs.10,000 i.e., Rs.7,000 only. This 70% or .7 is the CE factor. For different years the CE factors will be different to account for the timing as well as the varying degree of risk involved. It may be noted that higher the riskiness of a cash flow, the lower will be the CE factor.

$$\text{Cash flow} \times \text{CE factor} = \text{CE Cash flow} \times \text{Risk-free ROR} = \text{NPV}$$

Positive accept.

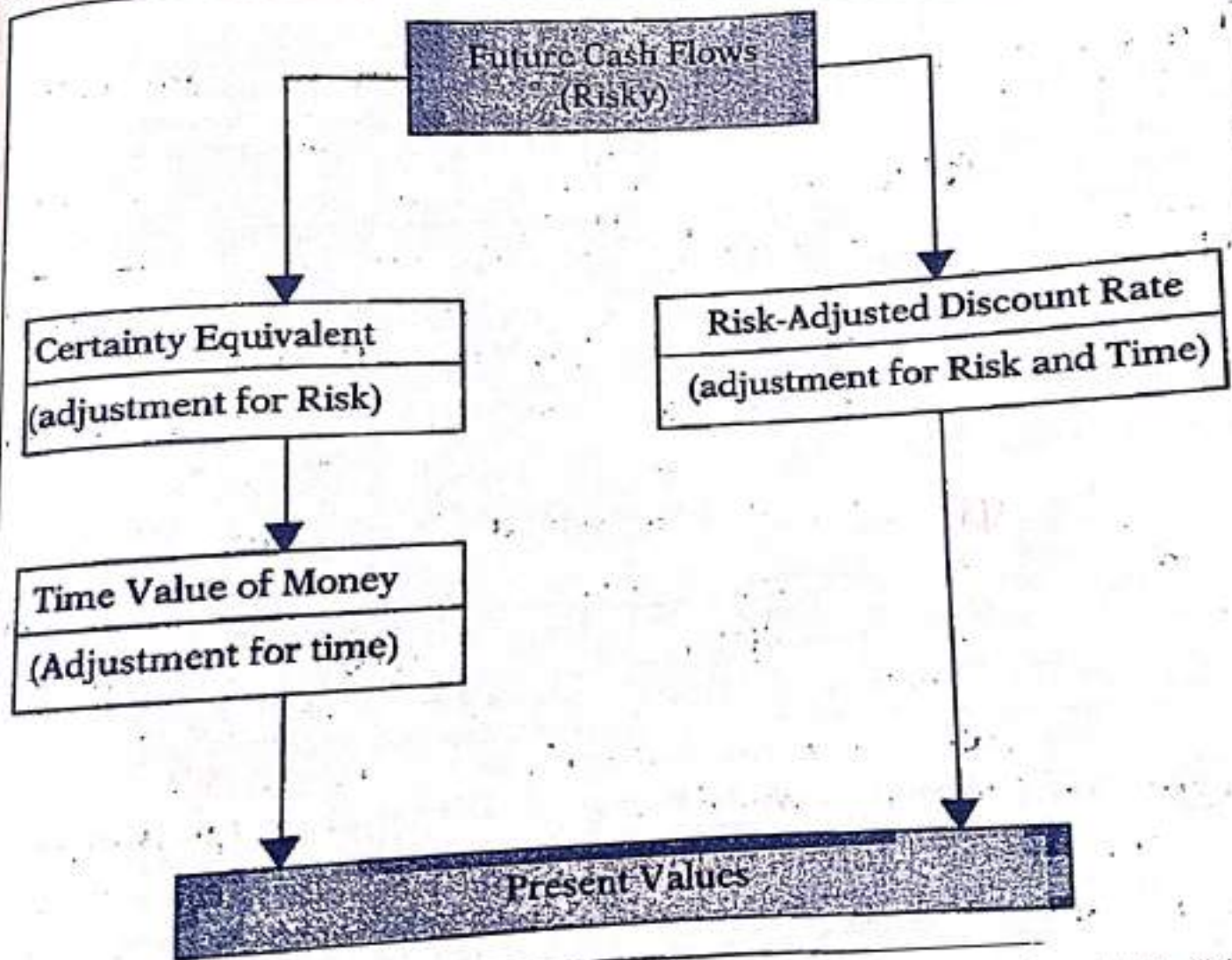
RADR always greater than risk free rate

Riskless cash flow is considered

3. The expected cash flows for different years as calculated in step 1 above are multiplied by the respective CE factors and the resultant figures are described as certainty equivalent cash flows.
4. Once all the cash flows are reduced to CE cash flows then these CE cash flows are discounted at risk free rate to find out the NPV of the proposal.

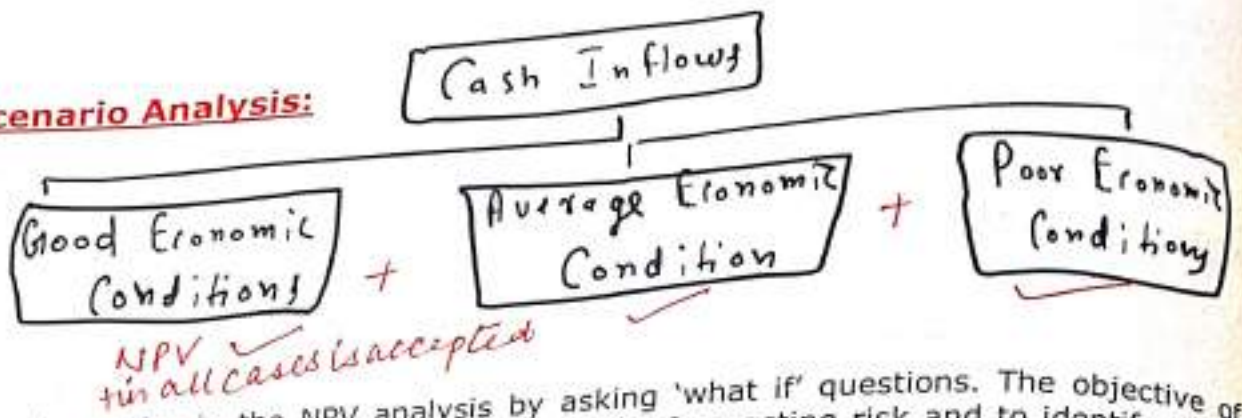
RADR versus CE Approach:

Both the RADR and the CE approach attempt to incorporate the project risk, of course, in a different way. The RADR incorporates the risk by increasing the discount rate i.e., it deals with the denomination of the NPV formula. The CE approach incorporates the risk by deflating the expected cash flow to CE cash flows and so it deals with the numerator of the NPV formula. In case of RADR, there is an implied assumption that the risk of the proposal increases at a constant rate over the life of the product. On the other hand, the CE approach incorporates the different degrees of risk involved for different years.



The RADR tends to club together the risk free rate, the risk involved and the risk premium, while the CE approach maintains a distinction between the risk free rate and the risk. The discount rate in CE approach is taken as the risk is incorporated by adjusting the cash flows. It may be said therefore, that though both RADR and the CE approach attempt to incorporate the risk, yet they differ in their approach. The relative position of these two techniques have been presented in fig. it shows that RADR converts the risky cash flows into present values in 1 stroke, while the CE approach makes separate adjustments for time and the risk.

4. Scenario Analysis:



One can improve in the NPV analysis by asking 'what if' questions. The objective of such an attempt could be to assess the degree of forecasting risk and to identify those variable which are more critical to the success or failure of the project. Two such forms of this 'what if' analysis are commonly applied. These are Scenario Analysis and Sensitivity Analysis.

In Scenario Analysis, the first step is to calculate the NPV of the project on the basis of estimated cash flows. This is known as the base case. Then an investigation is made about the possibility of error in these cash flows projections. One such attempt could be put an upper and lower limits on various variables. These may be denoted as the pessimistic and optimistic projections. In other cases, more and more estimations can be made and each possibility is called a scenario. Each of such scenario will have a NPV. If NPV of more and more alternative scenarios are positive, the decision maker would have confidence in proceeding with the project. However, if substantial number of scenarios look bad, then the forecasting risk may be assumed to be higher.

Scenario Analysis can be used to tell as to what can happen but it does not tell us whether or not to take up the project. Another problem with this is not that a lot of time and resources are required as a project can be studied in an unlimited number of alternative scenarios.

5. Sensitivity Analysis:

factor का Impact Check करनी on NPV

लिख, NPV (+10000) आ डिस्, नी Check करनी

1) अगर Dis Rate ↑ है जामा नी NPV (-) or 0 है समनी है
काल

2) अगर Annual Cash flow ↓ है जामा, नी NPV सब 0 है समनी है।

Sensitivity Analysis is a variation of Scenario Analysis. The basic idea in the former is to freeze all the variables except one at a time and then see the effected change in one variable on the NPV.

The NPV of project is based upon the series of cash flows and the discount factor. Both these determinants depend upon so many variables such as sales revenue, input cost, competition, etc. Given the level of all these variables, there will be a set series of cash flows and hence there will be a NPV of the proposal. If any of these variables changes, the value of NPV is sensitive to all these variables. However, the value of NPV will not change in the same proportion for a given change in any one of these variables. For some variables the NPV may be less sensitivity Analysis (SA) deals with the sensitivity of the NPV in relation to different variables contributing to the NPV. In SA, an attempt is

made to find out the extent to which an adverse variation in a variable can be absorbed before the NPV becomes zero.

The following steps are required to apply the SA to capital budgeting proposals:

- a) Based on the expectations for the future, the cash flows are estimated in respect of the proposal. NPV of the proposal is calculated on the basis of these cash flows.
- b) To identify the variables which have a bearing on the cash flows of a proposal. For example, some of these variables may be the selling price, cost of inputs, market share, market growth rate etc.
- c) To find out the effect of change in any of these variables on the value of NPV. This exercise should be performed for all the factors individually. For example, in case of a project involving the product sale, the effect of change in different variable such as a number of units sold, selling price, discount rate etc., can be taken up on the NPV or IRR of the project. This information can be used in conjunction with the basic capital budgeting analysis to decide whether or not to take up the project. If NPV turns out to be very sensitive to relatively small changes in some component of the cash flows, then the forecasting risk associated with that variable is high.

Statistical Techniques

The different techniques discussed above as conventional techniques fail to measure and quantify the risk in precise terms. On the other hand, there are certain statistical technique available to measure and incorporate risk in a capital budgeting decision process. These techniques, as discussed below, can be used to evaluate the risk-return characteristics of a capital budgeting proposal. The most important concept used in these statistical techniques is that of probability. Therefore, before analyzing the statistical techniques of incorporate risk, the concept of probability must also be understood.

The concept of Probability: The probability may be defined as the likelihood of happening or non-happening of an event. It may be described as a measure of chance of happening or non-happening of an event. For example, one may say that there are 20% chances that the sales will increase by 80% during the year, or that there are 75% chances that the firm will be able to achieve 50% market share over a period of next 5 years. These description of 20% and 75% chances are the description of probability of the respective events. So, the probability may be taken as a measure of an opinion about the likelihood of happening of an event. If the event is certain to happen, then the probability is defined as one and if the event has no chance of occurrence, then the probability is described as 0. So, the probability always has a value between 0 and 1.

While estimating the cash inflows resulting from a proposal, say, at the end of year d1, a finance manager may find that he is not having one estimation of cash inflow rather he has a series of estimation of cash inflows for that year and for each estimation there is a probability that the actual cash flows may be same as estimated. For example, the following is the series of estimated cash inflows together with their probabilities at the end of year 1.

Similarly, series of estimated cash inflows may be available for different other years also. Two points are worth noting here. First, that the total of probabilities for any year would always be equal to one, and second, that the actual cash inflow may be any figure, even other than the cash inflow given in the series. It may be noted that the series of expected cash inflow together with the associated probabilities for a particular year is also known as *probability distribution*.

1. Probability Distribution:

The probability distribution may be defined as a set of possible cash flows that may occur at a point of time and their probabilities of occurrence. In the probability distribution given above for year 1, there are 4 possible cash inflows. The probabilities given for these cash inflows can be interpreted as follows: There is a 20% chance that the cash inflows will be Rs.1,00,000; there is 40% chance that the cash inflow will be Rs.1,50,000 and so on.

In some cases, the probabilities can be assigned on the basis of past experience or historical data. But it may not always be possible in a capital budgeting decision. The reason for this is obvious. The capital budgeting decisions are, generally, not of repetitive nature. Moreover, data available from the experience of other firms may not be available or not at all relevant, because each capital budgeting situation is a specific situation. Therefore, in most of the capital budgeting situations, the probabilities are usually assigned by the decision maker on the basis of some relevant facts and figures and his subjective considerations.

If the decision maker foresees a risk in the proposal then he has to prepare a separate probability distribution to summarize the possible cash flow for each year through the economic life of the proposal. Thereafter, the next step is to find out the expected value of probability distribution for each year.

2. Simulation Analysis:

Sensitivity Analysis
Examine effect of change
in one variable at a
time

Simulation
Develop distrib. of NPV

Hitler
Chances of $NPV > 0$

Simulation is yet another statistical technique to deal with uncertainty and is also based on the concept of probabilities. Theoretically speaking, simulation refers to 'Creation of an Appearance without the Reality'. Thus, in simulation, the appearance seems to be true but it is not real. Simulation, therefore, refers to representation of a system which reacts to a change in any of input variable in a similar way as to that variable which is being simulated. There are several techniques of simulation, however, the Monto Carlo Method is the most common. The Monto Carlo Method is based on the concept of random numbers and is useful in the analysis of uncertainty.

The simulation analysis can be applied to capital budgeting decision situations also. When applied to capital budgeting, the simulation requires the generation of values of cash flows using predetermined probability distribution and the random numbers. The different components of cash flows are placed in relation to one another in a mathematical model. The process of generating the values of cash flows is repeated numerous times to result in a probability distribution of cash flows. The process of generating the random number and using the probability distribution of cash flows help generating values of different variables. These values are then put in a mathematical model to develop a NPV. By repeating the same process for number of times, say, a thousand or ten thousand times, a probability distribution of NPV is created. The simulation allows to consider the projects under alternative scenarios. The decision maker can consider the effect of a limited number of plausible combinations of variables affecting the outcome of a proposal. Thus, simulation tries to imitate the performance of the project by randomly selecting observations from each of the variables that affect the outcome of the project, combing these observations to determine the final outcome of the project and continuing this process until a representative record of the project's probable outcome is assembled.

3. Decision Tree Approach:

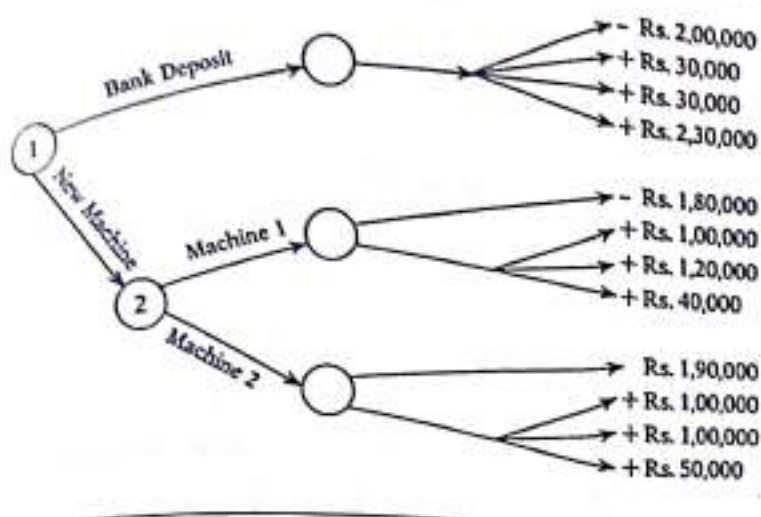
Quite often a firm may have to take a sequential decision i.e., the present decision is affected by the decisions taken in the past or it affects the future decisions of the same firm. In capital budgeting, the evaluation of a project frequently requires a sequential decision making process where the accept-reject decision is made in several stages. Instead of taking a decision once for all, it is broken up into several parts and stages. At each stage there may be more than one option available and the firm may have to decide every time that which option is to be taken for. This can be explained with the help of a simple situation.

A firm is considering to launch a new product and install a plant with capacity of 10,000 units a month. It is hopeful of selling the entire production. However, if due to one or the other factor, the demand is not generated to lift even the break-even level of production, then the firm will face a heavy loss. In this case, it will be better for the firm to first install a pilot project and go for test marketing. If the product is accepted by the market, full-fledged plant may be installed in the next stage. This is a two-stage decision. The first occurs before the test market. At that point, cash flows related to both the test and to the production must be considered. After the test, another decision must be made. At this point, the cash flow related to the market test are sunk costs and are irrelevant to the decision to be made. At this second point, the decision to be made cannot affect the cash flows already made in connection with the market test. Hence according to the incremental cash flows rule, they are not relevant. The only relevant flows are those related to the production phase. However, in practice there may be multi stages decision also.

An analytical technique used in sequential decisions is decision tree. The decision tree approach can take care of these types of multi stages decisions. The decision tree approach gets its name because of the resemblance with a tree having number of branches. A decision tree is a branching diagram representing a decision problem as a series of decisions to be taken under conditions of uncertainty. A present decision depends upon the past decision and their outcomes. The decision trees are the diagrams that permit the various decisions alternatives, their outcomes and probabilities of their occurrences to be mapped in a clear fashion. In a typical decision tree, therefore, the project is broken down into clearly defined stages, and the possible outcomes at each stage are listed along with the probabilities and cash flows effect of each outcome.

Example: ABC & Co. has funds of Rs.2,00,000 which expected are not required for next few years and hence can be deposited in a bank @ 15% interest payable annually. Alternatively, the funds can be used to install a new machine for the production of a new item. For this, the firm has two options before it: Machine 1 costing Rs.1,80,000 which is expected to give annual cash inflows of Rs.1,00,000, Rs.1,20,000 and Rs.40,000 respectively for next three years. Machine 2 costing Rs.1,90,000 which is expected to give annual cash inflows of Rs.1,00,000, Rs.1,00,000 and Rs.50,000 respectively for next three years. Present the decision situation in a decision tree and evaluate the options.

Solution: The above situation can be presented as follows:



	PVP @ 15%	PV (Rs)
- Rs. 2,00,000	1.000	-2,00,000
+ Rs. 30,000	.870	+ 26,100
+ Rs. 30,000	.756	+ 22,680
+ Rs. 2,30,000	.658	+ 1,51,340
	NPV =	120
- Rs. 1,80,000	1.000	-1,80,000
+ Rs. 1,00,000	.870	+ 87,000
+ Rs. 1,20,000	.756	+ 90,720
+ Rs. 40,000	.658	+ 26,320
	NPV =	24,040
Rs. 1,90,000	1.000	-1,90,000
+ Rs. 1,00,000	.870	+ 87,000
+ Rs. 1,00,000	.756	+ 75,600
+ Rs. 50,000	.658	+ 32,900
	NPV =	5,500

Multiple Choice Questions

1. Capital Budgeting is a part of :

- a) Investment Decision.
- b) Working Capital Management.
- c) Marketing Management.
- d) Capital Structure.

2. Capital Budgeting deals with :

- a) Long term Decisions.
- b) Short term Decisions.
- c) Both (a) and (b)
- d) Neither (a) nor (b)

3. Which of the following is not used in Capital Budgeting ?

- a) Time Value of Money
- b) Sensitive Analysis
- c) Net Assets Method.
- d) Cash flows.

4. Capital Budgeting Decisions are :

- a) Reversible.
- b) Irreversible
- c) Unimportant
- d) All of the above.

5. Which of the following is not incorporated in Capital Budgeting ?

- a) Tax-Effect.

- b) Time Value of Money
- c) Required Rate of Return.
- d) Rate of Cash Discount.

6. Which of the following is not a capital budgeting decision ?

- a) Expansion Programme.
- b) Merger.
- c) Replacement of an Asset.
- d) Inventory Level.

7. A sound Capital Budgeting technique is based on :

- a) Cash Flows. *inc.*
- b. Accounting Profit.
- c) Interest Rate on Borrowings.
- d) Last Dividend Paid.

8. Which of the following is not a relevant cost in Capital Budgeting ?

- a) Sunk Cost.
- b) Opportunity Cost.
- c) Allocated Overheads.
- d) Both (a) and (c) above.

9. Capital Budgeting Decisions are based on :

- a) Incremental Profit.
- b) Incremental Cash flows.

- c) Incremental Assets.
- d) Incremental Capital.

10. Which of the following does not effect cash flows from a proposal :

- a) Salvage Value.
- b) Depreciation Amount
- c) Tax Rate Change.
- d) Method of Project Financing.

11. Cash inflows from a project include :

- a) Tax Shield of Depreciation.
- b) After-tax Operating Profits.
- c) Raising of Funds.
- d) Both (a) and (b)

12. Which of the following is not true with reference to capital budgeting ?

- a) Capital budgeting is related to asset replacement decisions.
- b) Cost of capital is equal to minimum required rate of return.
- c) Existing investment in a project is not treated as sunk cost.
- d) Timing of cash flows is relevant.

13. Which of the following is not followed in capital budgeting?

- a) Cash Flows Principle.
- b) Interest Exclusion Principle.
- c) Accrual Principle
- d) Post-tax Principle.

14. Depreciation is incorporated in cash flows because it

- a) Is unavoidable cost.
- b) Is a cash flow.
- c) Reduces Tax liability.
- d) Involves an outflow.

15. Which of the following is not true for capital budgeting ?

- a) Sunk costs are ignored.

- b) Opportunity costs are excluded.
- c) Incremental cash flows are considered.
- d) Relevant cash flows are considered.

16. Which of the following is not applied in capital budgeting ?

- a) Cash Flows be calculated in incremental terms.
- b) All costs and benefits are measured on cash basis.
- c) All accrued costs and revenues be incorporated.
- d) All benefits are measured on after tax basis.

17. Evaluation of Capital Budgeting Proposals is based on Cash Flows because :

- a) Cash flows are easy to calculate.
- b) Cash flows are suggested by SEBI.
- c) Cash is more important than profit.
- d) None of the above.

18. Which of the following is not included in increment cash flows ?

- a) Opportunity Costs.
- b) Sunk Costs.
- c) Change in Working Capital.
- d) Inflation effect.

19. A proposal is not a Capital Budgeting proposal if it :

- a) is related to Fixed Assets.
- b) brings long-term benefits.
- c) brings short-term benefits only.
- d) has very large investment.

20. In capital Budgeting, Sunk cost is excluded because it is

- a) of small amount.
- b) not incremental.
- c) not reversible
- d) all of the above.

21. Which of the following statements is correct?

- a) If $PI < 1$, its NPV is less than zero.
- b) If $PI = 0$, its NPV is greater than zero.
- c) If $PI > 1$, its NPV will be negative.
- d) PI of a project is always greater than one.

22. Profitability Index method is an extension of:

- a) Net Present Value.
- b) Internal Rate of Return.
- c) Payback Period.
- d) Accounting Rate of Return.

23. Which of the following variables is not known in internal Rate of Return.

- a) Initial Cash Flows.
- b) Discount Rate
- c) Terminal inflows.
- d) Life of the Project.

24. In case of Mutually Exclusive Proposals:

- a) Only the best project is selected.
- b) All Projects with Positive NPV are selected.
- c) Even Negative NPV Project may be selected.
- d) At least two proposals are selected.

25. Reinvestment Rate Assumption is implied in

- a) Net Present Value.
- b) Internal Rate of Return.
- c) Both (a) and (b).
- d) None of the above.

26. Pay back period technique is based on :

- a) All cash flows
- b) Only higher Cash Flows
- c) Earlier Cash Flows
- d) Selected Cash Flows.

27. In Capital Budgeting Decisions, a single cost of capital is used because :

- a) Required Rate of Return is same for all projects.
- b) It avoids calculation of Required Rate for different projects.
- c) Both (a) and (b)
- d) None of the above.

28. PI of a Project is the ratio of Present Value of Inflows to :

- a) Initial Cost.
- b) PV of outflows.
- c) Total Cash inflows.
- d) Total outflows.

29. NPV of a proposal indicates :

- a) Net Incremental Profit.
- b) Net addition to Wealth.
- c) Total Value of the Proposal.
- d) None of the above.

30. NPV method and IRR method always give to mutually exclusive projects :

- a) Same Ranking.
- b) Different Ranking
- c) Inverse Ranking
- d) None of the above.

31. Which of the following method of evaluation of capital budgeting proposals focuses on liquidity?

- a) Internal Rate of Return.
- b) Net Present Value
- c) Accounting Rate of Return.
- d) Payback Period.

32. In case of selection of mutually exclusive projects, the rule is :

- a) Only the best one.
- b) All the good ones.
- c) All Positive NPV projects.
- d) None of the above.

33. Which method of capital budgeting assumes that the cash flows are reinvested at project's rate of return?

- b) Net Present Value.
- c) Internal Rate of Return.
- d) Accounting Rate of Return.

34. In case of risky projects the required rate of return would generally be :

- a) Higher
- b) Lower
- c) Same as for others.
- d) None of the above.

35. Which of the following methods state the return from a project in percentage form?

- a) Terminal Value Method.
- b) Discounted Payback Method.
- c) Internal Rate of Return.
- d) Net Present Value.

36. Which of the following methods focuses on the maximization of the wealth of shareholders?

- a) Accounting Rate of Return.
- b) Payback Period.
- c) Profitability Index.
- d) Internal Rate of Return.

37. Which of the following assumes that cash flows from a project are uniform throughout the life of the project ?

- a) Internal Rate of Return.
- b) Net Present Value.
- c) Profitability Index.
- d) None of the above. (PBP)

38. Project costing Rs.8,00,000 and a life of 5 years is expected to bring cash inflows of Rs. 2,00,000 p.a. What is the payback period?

- a) 5 years.
- b) 4 years.
- c) 3 years.
- d) None of the above.

39. A project has a Profitability Index of 1.30 What does it mean ?

- a) That NPV is less than zero.

- b) That the project returns Rs. 1.30 for every Re invested in project.
- d) That IRR is 1.30 times that of the Hurdle Rate.

40. Accounting Rate of Return is based on :

- a) Average Expected Profit.
- b) Average Past Profit.
- c) Average Cash Profit.
- d) Life of the Project.

41. NPV technique is based on

- a) Discounting Procedure.
- b) Compounding Procedure.
- c) Averaging Procedure.
- d) None of the above.

42. Which of the following statement is correct with reference to Capital Budgeting?

- a) All Capital Budgeting techniques lead to same decision.
- b) Internal Rate of Return does not consider time value of money.
- c) NPV method is superior to Payback method as the former considers time value of money.
- d) Cash flows of a project are calculated before tax.

43. Which of the following is likely to increase the NPV of a project?

- a) Increase in cost of capital.
- b) Decrease in working capital.
- c) Spreading cash flows over a longer period.
- d) Decreasing the net revenues.

44. If IRR of a project is equal to opportunity cost of capital then :

- a) Project should be repeated.
- b) NPV will be zero.
- c) Project has no cash flows.
- d) NPV will be positive.

45. Number of IRR for a project is equal to :

a) A number of Cash flows.

b) Number of Cash Outflow

c) Life of the Project.

d) Changes in the signs of

Answers

1-a	2-a	3-c	4-b	5-d	6-d	7-a	8-d
11-d	12-c	13-c	14-c	15-b	16-c	17-c	18-b
21-a	22-a	23-b	24-a	25-c	26-c	27-c	28-b
31-d	32-a	33-c	34-a	35-c	36-c	37-d	38-b
41-a	42-c	43-b	44-b	45-d			

NPV & IRR Contradiction
in Mutually Ex. Inv.

- o Different Life
 - Size
 - Cash flow
 - Reinvestment
 - ^{rate} Time

Net Present Value
Index / Success PV I

In case of Capital Rationing
or Funds are scarce today
but no scarcity in future

o More than 1 project
which are not in. exclusive

o No project can be delayed

o All projects are infinitely
divisible

NPV I = 7/0 Accept

CHAPTER 7

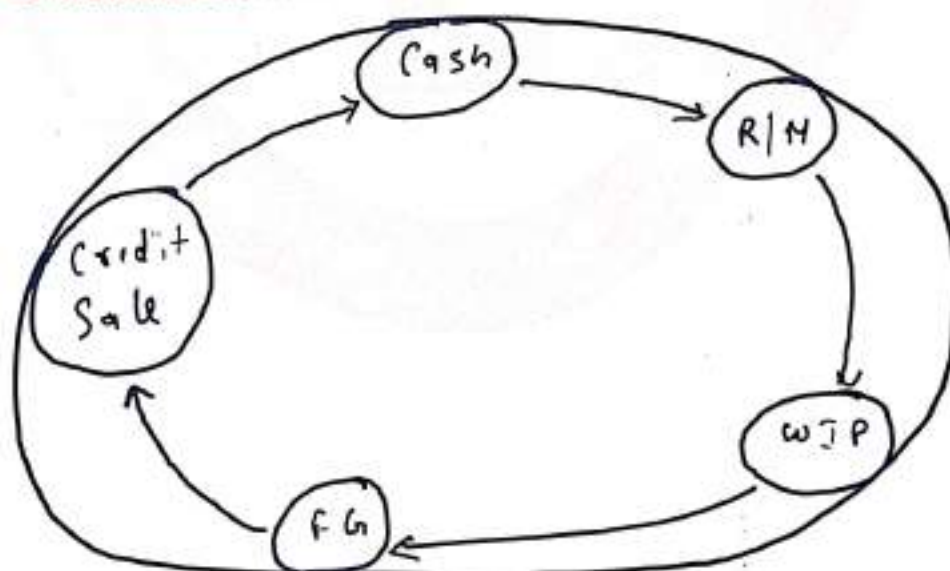
WORKING CAPITAL

The term working capital is commonly used for the capital required for day-to-day working in a business concern, such as for purchasing raw material, for meeting day-to-day expenditure on salaries, wages, rents rates, advertising etc. But there are much disagreement among various financial authorities (Financiers, accountants, businessmen and economists) as to the exact meaning of the term working capital.

NEED FOR WORKING CAPITAL

The need for working capital (gross) or current assets cannot be over emphasized. Given the objective of financial decision making to maximize the shareholders wealth, it is necessary to generate sufficient profits. The extent to which profits can be earned will naturally depend, among other things, upon the magnitude of the sales. A successful sales programme is, in other words, necessarily for earning profits by any business enterprise. However, sales do not convert into cash instantly; there is invariably a time-lag between the sale of goods and the receipt of cash. There is, therefore, a need for working capital in the form of current assets to deal with the problem arising out of the lack of immediate realization of cash against goods sold. Therefore, sufficient working capital is necessary to sustain sales activity. Technically, this is referred to as operating or cash cycle. The operating cycle can be said to be at the heart of the need for working capital. 'The continuing flow from cash to suppliers, to inventory, to accounts receivable and back into cash is what is called the operating cycle.' In other words, the term cash cycle refers to the length of time necessary to complete the following cycle of events:

1. Conversion of cash into inventory;
2. Conversion of inventory into receivables;
3. Conversion of receivables into cash.



If it were possible to complete the sequences instantaneously, there would be no need for current assets (working capital). But since it is not possible, the firm is forced to have current assets. Since cash inflows and outflows do not match, firms have to necessarily meet obligations when they become due. Similarly, firms must have adequate inventory to guard against the possibility of not being able to meet demand for their products. Adequate inventory, therefore, provides a cushion against being out of stock. If firms have to be competitive, they must sell goods to their customers on credit which necessitates the holding of accounts receivable. It is in these ways that an adequate

level of working capital is absolutely necessary for smooth sales activity which, in turn, enhances the owner's wealth.

The operating cycle consists of three phases.

In **phase I** cash gets converted into inventory. This includes purchase of raw materials, conversion of raw materials into work-in-progress, finished goods and finally the transfer of goods to stock at the end of the manufacturing process. In the case of trading organizations, this phase is shorter as there would be no manufacturing activity and cash is directly converted into inventory. The phase is, of course, totally absent in the case of service organizations.

In **phase II** of the cycle, the inventory is converted into receivables as credit sales are made to customers.

Firms which do not sell on credit obviously not have phase II of the operating cycle.

The last phase, **phase III**, represents the stage when receivables are collected. This phase completes the operating cycle. Thus, the firm has moved from cash to inventory, to receivables and to cash again.

CONCEPTS OF WORKING CAPITAL



There are two concepts of working capital-gross and net.

- **Gross working capital** refers to the firm's investment in current assets, Current assets are the assets which can be converted into cash within an accounting year and include cash, short-term securities, debtors (accounts receivable or book debts), bills receivable and stock (inventory).
- **Net working capital** refers to the difference between current assets and current liabilities. Current liabilities are those claims of outsiders which are expected to mature for payment within an accounting year and include creditors (accounts payable), 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. A negative net working capital occurs when current liabilities are in excess of current assets.

Permanent and Temporary Working Capital

The operating cycle, thus, creates the need for current assets (working capital). However, the need does not come to an end after the cycle is completed. It continues to exist. To explain this continuing need of current assets, a distinction should be drawn between permanent and temporary working capital. Business activity does not come to an end after the realization of cash from customers. For a company, the process is continuous and, hence, the need for a regular supply of working capital. However, the magnitude of working capital required is not constant, but fluctuating. To carry on 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. This portion 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. The basic distinction between permanent and temporary working capital is illustrated in Figure below:

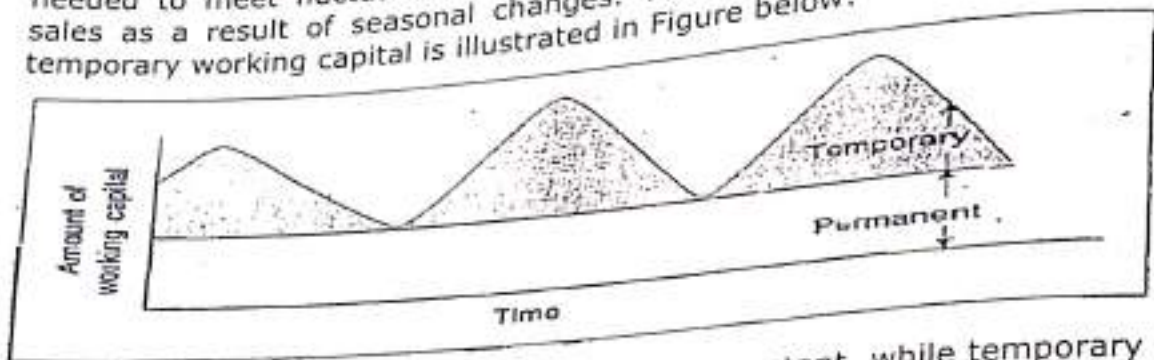
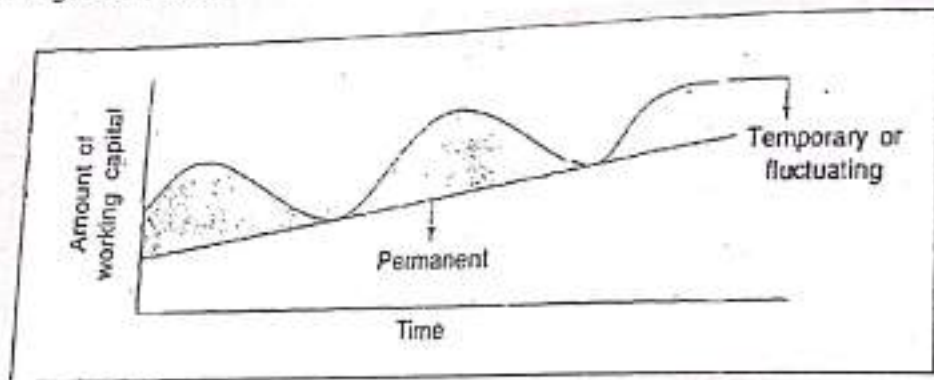
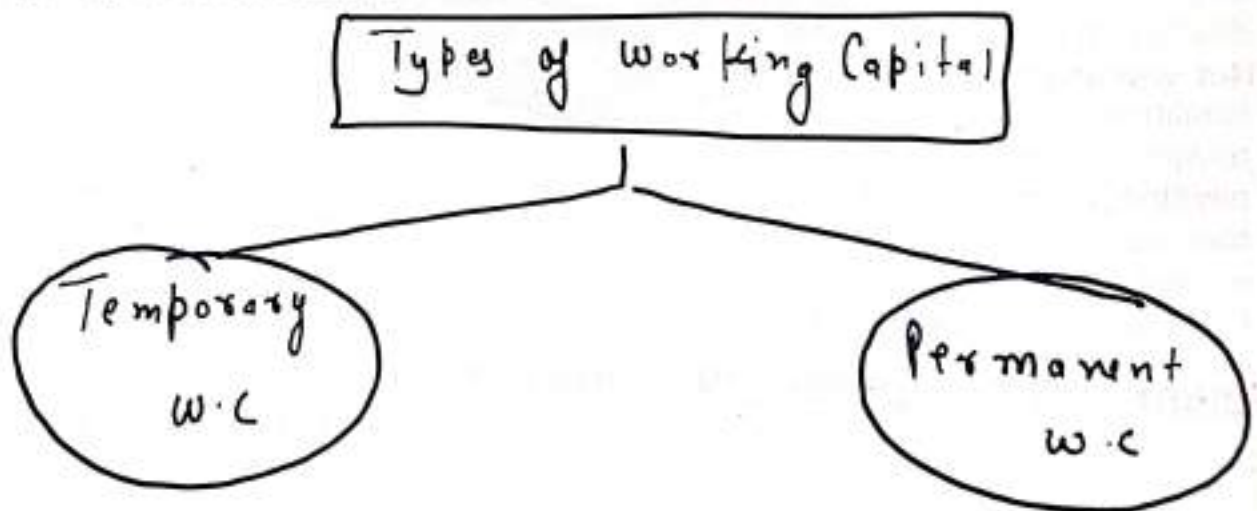


Figure shows that the permanent level is fairly constant, while temporary working capital is fluctuating—increasing and decreasing in accordance with seasonal demands. In the case of an expanding firm, the permanent working capital line may not be horizontal. This is because the demand for permanent current assets might be increasing (or decreasing) to support a rising level of activity. In that case the line would be a rising one as shown in Figure below:



Both kinds of working capital are necessary to facilitate the sales process through the operating cycle. Temporary working capital is created to meet liquidity requirements that are of a purely transient nature.



*London Committee
Hard core Current
Assets*

POLICIES FOR FINANCING CURRENT ASSETS



A firm can adopt different financing policies vis-à-vis current assets. Three types of financing may be distinguished as:

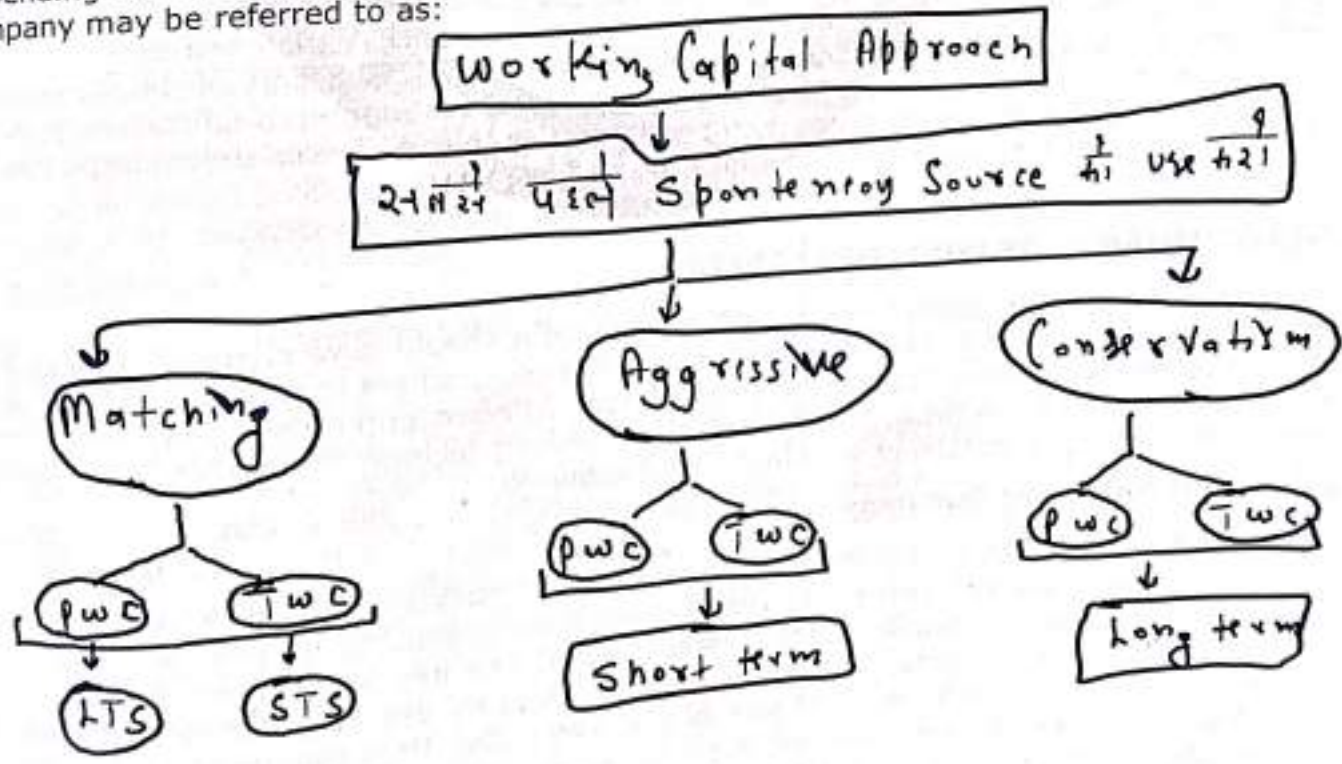
• **Long-term financing** The sources of long-term financing include ordinary share capital, preference share capital, debentures, long-term borrowings from financial institutions and reserves and surplus (retained earnings).

• **Short-term financing** The short-term financing is obtained for a period less than one year. It is arranged in advance from banks and other suppliers of short term finance in the money market. Short-term finance includes working capital funds from banks, public deposits, commercial paper, factoring of receivables etc.

• **Spontaneous financing** Spontaneous financing refers to the automobiles sources of short-term funds arising in the normal course of a business. Trade (suppliers') credit and outstanding expenses are examples of spontaneous financing. There is no explicit cost of spontaneous financing. A firm is expected to utilize these sources of finances to the fullest extent. The real choice of financing current assets, once the spontaneous sources of financing have been fully utilized, is between the long-term and short-term sources of finances.

What should be the mix of short and long term sources in financing current assets?

Depending on the mix of short and long-term financing, the approach followed by a company may be referred to as:



Matching Approach

The firm can adopt a financial plan which matches the expected life of assets with the expected life of the source of funds raised to finance assets. Thus, a ten-year loan may be raised to finance a plant with an expected life of ten years; stock of goods to be sold in thirty days may be financed with a thirty day commercial paper or a bank loan. The purpose of financing is to pay for assets, the source of financing and asset should be relinquished simultaneously. Using long-term financing for short-term assets is expensive as funds will not be utilized for the full period. Similarly, financing long-term assets with short-term financing is costly as well as inconvenient, as arrangement for the new short-term financing will have to be made on a continuing basis. *Normal*

When the firm follows a **matching approach** (also known as **hedging approach**), long-term financing will be used to finance fixed assets and permanent current assets and short-term financing to finance temporary or variable current assets. However, it should be realized that exact matching is not possible because of the uncertainty about the expected lives of assets.

Conservative Approach

A firm in practice may adopt a conservative approach in financing its current and fixed assets. The financing policy of the firm is said to be conservative when it depends more on long-term funds for financing needs. Under a conservative plan, the firm finances its permanent assets and also a part of temporary current assets with long-term financing. In the periods when the firm has no need for temporary current assets, the idle long-term funds can be invested in the tradable securities to conserve liquidity. The conservative plan relies heavily on long-term financing and therefore, the firm has less risk of facing the problem of shortage of funds. *Recession / Slump*

Aggressive Approach

A firm may be aggressive in financing its assets. An aggressive policy is said to be followed by the firm when it uses more short-term financing than warranted by the matching plan. Under an aggressive policy, the firm finances a part of its permanent current assets with short-term financing. Some extremely aggressive firms may even finance a part of their fixed assets with short-term financing. The relatively large use of short-term financing makes the firm more risky. *Boom*

DETERMINANTS OF WORKING CAPITAL:-

A firm should plan its operations in such a way that it should have neither too much nor too little working capital. The total working capital requirement is determined by a wide variety of factors. These factors, however, affect different enterprises differently. They also vary from time to time. In general, the following factors are involved in a proper assessment of the quantum of working capital required.

1. General Nature of Business

The working capital requirements of an enterprise are basically related to the conduct of business. Enterprises fall into some broad categories depending on the nature of their business. For instance, public utilities have certain features which have a bearing on their working capital needs. The two relevant features are: (i) the cash nature of business, that is, cash sale, and (ii) sale of services rather than commodities. In view of these features, they do not maintain big inventories and have, therefore, probably the least requirement of working capital. At the other extreme are trading and financial enterprises. The nature of their business is such that they have to maintain a sufficient

amount of cash, inventories and book debts. They have necessarily to invest proportionately large amounts in working capital.

2. Production Cycle

Another factor which has a bearing on the quantum of working capital is the production cycle. The term 'production or manufacturing cycle' refers to the time involved in the manufacture of goods. It covers the time-span between the procurement of raw materials and the completion of the manufacturing process leading to the production of finished goods. Funds have to be necessarily tied up during the process of manufacture, necessitating enhanced working capital. In other words there is some time gap before raw materials become finished goods. To sustain such activities the need for working capital is obvious. The longer the time-span (i.e. the production cycle), the larger will be the tied-up funds and, therefore, the larger is the working capital needed and vice-versa.

3. Business Cycle

The working capital requirements are also determined by the nature of the business cycle. Business fluctuations lead to cyclical and seasonal changes which, in turn, cause a shift in the working capital position, particularly for temporary working capital requirements. The variations in business conditions may be in two directions: (i) upward phase when boom conditions prevail & (ii) downturning phase when the economic activity is marked by a decline. During the upswing of business activity, the need for working capital is likely to grow to cover the lag between increased sales and receipt of cash as well as to finance purchases of additional material to cater to the expansion of the level of activity. Additional funds may be required to invest in plant and machinery to meet the increased demand. The downturn phase of the business cycle has exactly an opposite effect on the level of working capital requirement. The decline in the economy is associated with a fall in the volume of sales which, in turn, leads to a fall in the level of inventories and book debts.

4. Production Policy

The quantum of working capital is also determined by production policy. In case of certain lines of business, the demand for products is seasonal, that is, they are purchased during certain months of the year. What kind of production policy should be followed in such cases? There are two options open to such enterprises: either they confine their production only to periods when goods are purchased or they follow a steady production policy throughout the year and produce goods at a level to meet the peak demand. In the former case, there are serious production problems. During the slack season, the firms have to maintain their working force and physical facilities without adequate production and sale. When the peak period arrives, the firms have to operate at full capacity to meet the demand.

5. Credit Policy

The credit policy relating to sales and purchases also affects the working capital. The credit policy influences the requirement of working capital in two ways: (i) through credit terms granted by the firm to its customers/buyers of goods; (ii) credit terms available to the firm from its creditors. The credit terms granted to customers have a bearing on the magnitude of working capital by determining the level of book debts. The credit sales result in higher book debts (receivables). Higher book debts mean more working capital. On the other hand, if liberal credit terms are available from the suppliers of goods (trade creditors), the need for working capital is less. The working capital requirements of a business are, thus, affected by the terms of purchase and sale, and the role given to credit by a company in its dealings with creditors and debtors.

6. Growth and Expansion

As a company grows, it is logical to expect that a larger amount of working capital is required. It is, of course, difficult to determine precisely the relationship between the growth in the volume of business of a company and the increase in its working capital.

The composition of working capital in a growing company also shifts with economic circumstances and corporate practices. Other things being equal, growth industries require more working capital than those that are static.

7. Profit Level

The level of profits earned differ from enterprise to enterprise. In general, the nature of the product, hold on the market, quality of management and monopoly power would by and large determine the profit earned by a Firm.

8. Level of Taxes The first appropriation out of profits is payment or provision for tax. If tax liability increases, it leads to an increase in the requirement of working capital and vice-versa.

9. Dividend Policy Another appropriation of profits which has a bearing on working capital is dividend payment. The payment of dividend consumes cash resources and, thereby, affects working capital to that extent. Conversely, if the firm does not pay dividend but retains the profits, working capital increases, in planning working capital requirements, therefore, a basic question to be decided is whether profits will be retained or paid out to shareholders.

10. Depreciation Policy Depreciation policy also exerts an influence on the quantum of working capital. Depreciation charges do not involve any cash outflows. The effect of depreciation policy on working capital is, therefore, indirect. In the first place, depreciation affects the tax liability and retention of profits. Depreciation is allowable expenditure in calculating net profits. Enhanced rates of depreciation lower the profits and, therefore, the tax liability and, thus, more cash profits. Higher depreciation also means lower disposable profits and, therefore, a smaller dividend payment. Thus cash is preserved.

WORKING CAPITAL FINANCING:-

After determining the level of working capital, a firm has to decide how it is to be financed. The need for financing arises mainly because the investment in working capital current assets, that is, raw materials, work/stock-in-process, finished goods and receivables typically fluctuates during the year. The main sources of working capital financing namely, trade credit, bank credit, commercial papers and factoring as follows.

1. TRADE CREDIT

Trade credit refers to the credit extended by the supplier of goods and services in the normal course of transaction/business/sale of the firm. According to trade practices, cash is not paid immediately for purchases but after an agreed period of time. Thus deferral of payment (trade credit) represents a source of finance for credit purchases.

There is, however, no formal/specific negotiation for trade credit. It is an informal arrangement between the buyer and the seller. There are no legal instruments/acknowledgements of debt which are granted on an open account basis. Such credit appears in the records of the buyer of goods as sundry creditors/accounts payable.

Advantages

Trade credit, as a source of short-term/working capital finance, has certain advantages. It is easily, almost automatically, available. Moreover, it is a flexible and spontaneous source of finance. The availability and magnitude of trade credit is related to the size of operations of the firm in terms of sales/purchases. For instance, the requirement of credit purchases to support the existing sales is Rs 5 lakh per day. If the purchases are made on a credit of 30 days, the average outstanding accounts payable/trade credit (finance) will amount to Rs 1.5 crore (Rs 5 lakh x 30 days). The increase in purchases of goods to support higher sales level to Rs 6 lakh will imply a trade credit finance of Rs 1.8 crore (Rs 6 lakh x 30 days). If the credit purchases of goods decline, the availability of trade credit will correspondingly decline. Trade credit is also an informal, spontaneous

source of finance. Not requiring negotiation and formal agreement, trade credit is free from the restrictions associated with formal/negotiated source of finance/credit.

Costs Trade credit does not involve any explicit interest charge. However, there is an implicit cost of trade credit. It depends on the credit terms offered by the supplier of goods. If the terms of the credit are, say, 45 days net, the payable amount to the supplier of goods is the same whether paid on the date of purchase or on the 45th day and, therefore, trade credit has no cost, that is, it is cost-free. But if the credit terms are, say, 2/15, net 45, that is, there is cash discount for prompt payment, the trade credit period beyond the cash discount period has a cost = $[(\text{Discount}/1 - \text{Discount}) \times (360/\text{Credit period} - \text{Discount period})]$. The implicit interest rate/cost = $[(0.02/1 - 0.02) \times (360/45 - 15)] = 24.5$ per cent. Alternatively, the credit terms, 2/15, net 45, imply that the firm (buyer) is entitled to 2 per cent discount for payment made within 15 days when the entire payment is to be made within 45 days. Since the net amount is due in 45 days, failure to take the discount means paying an extra 2 per cent for using the money for an additional 30 days. If a firm were to pay 2 per cent for every 30-day period over a year, there would be 12 such periods ($360 \text{ days} \div 30 \text{ days}$). This represents an annual interest rate/cost of 24 per cent. If the terms of credit are 2/10, net 30, the cost of credit works out to 36.4 per cent. The smaller the difference between the payment day and the end of the discount period, the larger is the annual interest/cost of trade credit.

2. BANK CREDIT

Bank credit is the primary institutional source of working capital finance in India. In fact, it represents the most important source for financing of current assets.

Forms of Credit

Working capital finance is provided by banks in five ways:

- (i) **cash credits/overdrafts,**
- (ii) **loans,**
- (iii) **purchase/discount bills,**
- (iv) **letter of credit and**
- (v) **working capital term loans.**

Cash Credit/Overdrafts

Under cash credit/overdraft form/arrangement of bank finance, the bank specifies a predetermined borrowing/credit limit. The borrower can draw/borrow up to the stipulated credit/overdraft limit. Within the specified limit/line of credit, any numbers of draws/drawings are possible to the extent of his requirements periodically. Similarly, repayments can be made whenever desired during the period. The interest is determined on the basis of the running balance/amount actually utilized by the borrower and not on the sanctioned limit. However, a minimum (commitment) charge may be payable on the unutilized balance irrespective of the level of borrowing for availing of the facility. This form of bank financing of working capital is highly attractive to the borrowers because, firstly, it is flexible in that although borrowed funds are repayable on demand, banks usually do not recall cash advances/roll the mover and, secondly, the borrower has the freedom to draw the amount in advance as and when required while the interest liability is only on the amount actually outstanding. However, cash credit/overdraft is inconvenient to the banks and hampers credit planning.

Loans

Under this arrangement, the entire amount of borrowing is credited to the current account of the borrower or released in cash. The borrower has to pay interest on the total amount. The loans are repayable on demand or in periodic installments. They can also be renewed from time to time. As a form of financing, loans imply a financial discipline on the part of the borrowers.

Bills Purchased/Discounted

This arrangement is of relatively recent origin in India. With the introduction of the New Bill Market Scheme in 1970 by the Reserve Bank of India (RBI), bank credit is being made available through discounting of usance bills by banks.

The modus operandi of bill finance as a source of working capital financing is that a bill arises out of a trade sale-purchase transaction on credit. The seller of goods draws the bill on the purchaser of goods, payable on demand or after a usance period not exceeding 90 days. On acceptance of the bill by the purchaser, the seller offers it to the bank for discount/purchase. On discounting the bill, the bank releases the funds to the seller. The bill is presented by the bank to the purchaser/acceptor of the bill on due date for payment. The bills can also be rediscounted with the other banks/RBI. However, this form of financing is not popular in the country.

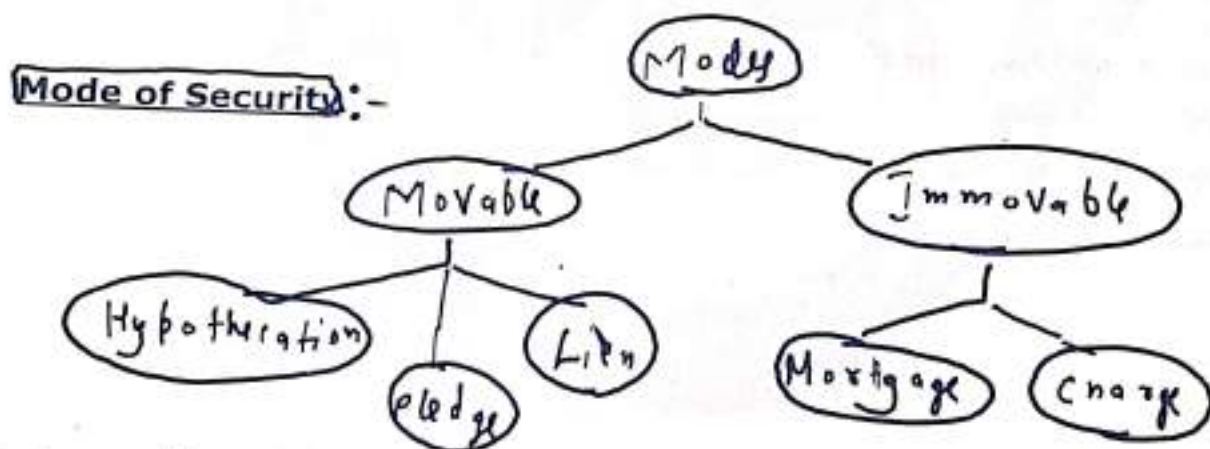
Term Loans for Working Capital

Under this arrangement, banks advance loans for 3-7 years repayable in yearly or half-yearly installments.

Letter of Credit

While the other forms of bank credit are direct forms of financing in which banks provide funds as well as bear risk, letter of credit is an indirect form of working capital financing and banks assume only the risk, the credit being provided by the supplier himself.

The purchaser of goods on credit obtains a letter of credit from a bank. The bank undertakes the responsibility to make payment to the supplier in case the buyer fails to meet his obligations. Thus, the modus operandi of letter of credit is that the supplier sells goods on credit/extends credit (finance) to the purchaser, the bank gives a guarantee and bears risk only in case of default by the purchaser.



Banks provide credit on the basis of the following modes of security:

- ❖ **Hypothecation** Under this mode of security, the banks provide credit to borrowers against the security of movable property, usually inventory of goods. The goods hypothecated, however, continue to be in the possession of the owner of these goods (i.e., the borrower). The rights of the lending bank (hypothecatee) depend upon the terms of the contract between the borrower and the lender. Although the bank does not have physical possession of the goods, it has the legal right to sell the goods to realise the outstanding loan. Hypothecation facility is normally not available to new borrowers.
- ❖ **Pledge** Pledge, as a mode of security, is different from hypothecation in that in the former, unlike in the latter, the goods which are offered as security are transferred to the physical possession of the lender. An essential prerequisite of pledge, therefore, is that the goods are in the custody of the bank. The borrower who offers the security is, called a 'pawnor' (pledgor), while the bank is called the 'pawnee' (pledgee). The lodging

of the goods by the pledgor to the pledgee is a kind of bailment. Therefore, pledge creates some liabilities for the bank. It must take reasonable care of goods pledged with it. The term 'reasonable care means care which a prudent person would take to protect his property. He would be responsible for any loss or damage if he uses the pledged goods for his own purposes. In case of non-payment of the loans, the bank enjoys the right to sell the goods.

❖ **Lien** The term 'lien' refers to the right of a party to retain goods belonging to another party until a debt due to him is paid. Lien can be of two types: (i) particular lien, and (ii) general lien. Particular lien is a right to retain goods until a claim pertaining to these goods is fully paid. On the other hand, general lien can be applied till all dues of the claimant are paid. Banks usually enjoy general lien.

❖ **Mortgage** It is the transfer of a legal/equitable interest in specific immovable property for securing the payment of debt. The person who parts with the interest in the property is called 'mortgagor' and the banking whose favour the transfer takes place is the 'mortgagee'. The instrument of transfer is called the 'mortgage deed'. Mortgage is, thus, conveyance of interest in the mortgaged property. The mortgage interest in the property is terminated as soon as the debt is paid. Mortgages are taken as an additional security for working capital credit by banks.

❖ **Charge** Where immovable property of one person is, by the act of parties or by the operation of law, made security for the payment of money to another and the transaction does not amount to mortgage, the latter person is said to have a charge on the property and all the provisions of simple mortgage will apply to such a charge. The provisions are as follows:

- A charge is not the transfer of interest in the property though it is security for payment. But mortgage is a transfer of interest in the property.
- A charge may be created by the act of parties or by the operation of law. But a mortgage can be created only by the act of parties.
- A charge need not be made in writing but a mortgage deed must be attested.
- Generally, a charge cannot be enforced against the transferee for consideration without notice. In a mortgage, the transferee of the mortgaged property can acquire the remaining interest in the property, if any is left.

3.COMMERCIAL PAPERS

Features

Commercial Paper (CP) is a short-term unsecured negotiable instrument, consisting of usance promissory notes with a fixed maturity. It is issued on a discount on face value basis but it can also be issued in interest-bearing form. A CP when issued by a company directly to the investor is called a direct paper. The companies announce current rates of CPs of various maturities, and investors can select those maturities which closely approximate their holding period. When CPs are issued by security dealers/dealers on behalf of their corporate customers, they are called dealer paper. They buy at a price less than the commission and sell at the highest possible level. The maturities of CPs can be tailored within the range to specific investments.

4.FACTORING

Factoring provides resources to finance receivables as well as facilitates the collection of receivables. Although such services constitute a critical segment of the financial services scenario in the developed countries, they appeared in the Indian financial scene only in the early nineties as a result of RBI initiatives. There are two bank-sponsored

organizations which provide such services: (i) SBI Factors and Commercial Services Ltd. and (ii) Can bank Factors Ltd. The first private sector factoring company, Foremost Factors Ltd, started operations since the beginning of 1997.

Definition and Mechanism

Definition Factoring can broadly be defined as an agreement in which receivables arising out of sale of goods/services are sold by a firm (client) to the 'factor' (a financial intermediary) as a result of which the title of the goods/services represented by the said receivables passes on to the factor. Henceforth, the factor becomes responsible for all credit control, sales accounting and debt collection from the buyer(s). In a full service factoring concept (without recourse facility), if any of the debtors fails to pay the dues as a result of his financial inability/insolvency/bankruptcy, the factor has to absorb the losses.

Mechanism Credit sales generate the factoring business in the ordinary course of business dealings. Realisation of credit sales is the main function of factoring services. Once a sale transaction is completed, the factor steps in to realise the sales. Thus, the factor works between the seller and the buyer and sometimes with the seller's banks together.

Functions of a Factor

Depending on the type/form of factoring, the main functions of a factor, in general terms, can be classified into five categories:

- Financing facility/trade debts;
- Maintenance/administration of sales ledger;
- Collection facility/of accounts receivable;
- Assumption of credit risk/credit control and credit restriction; and
- Provision of advisory services.

Financing Trade Debts The unique feature of factoring is that a factor purchases the book debts of his client at a price and the debts are assigned in favour of the factor who is usually willing to grant advances to the extent of, say, 80 per cent of the assigned debts. Where the debts are factored with recourse, the finance provided would become refundable by the client in case of non-payment of the buyer. However, where the debts are factored without recourse, the factor's obligation to the seller becomes absolute on the due date of the invoice whether or not the buyer makes the payment.

Administration of Sales Ledger The factor maintains the clients' sales ledgers. On transacting a sales deal, an invoice is sent by the client to the customer and a copy of the same is sent to the factor.

Provision of Collection Facility The factor undertakes to collect the receivable on behalf of the client relieving him of the problems involved in collection, and enables him to concentrate on other important functional areas of the business. This also enables the client to reduce the cost of collection by way of savings in manpower, time and efforts.

Credit Control and Credit Restriction Assumption of credit risk is one of the important functions of a factor. This service is provided where debts are factored without recourse. The factor in consultation with the client fixes credit limits for approved customers. Within these limits, the factor undertakes to purchase all trade debts of the customer without recourse.

Advisory Services These services are a spin-off of the close relationship between a factor and a client. By virtue of their specialized knowledge and experience in finance and credit dealings and access to extensive credit information, factors can provide a variety of incidental advisory services to their clients:

- Customer's perception of the client's products, changes in the marketing strategies, emerging trend sand so on;

- * Audit of the procedures followed for invoicing, delivery and dealing with sales returns;
- * Introduction to the credit department of bank/subsidiaries of banks engaged in leasing, hire-purchase and merchant banking.

Cost of Services The factors provide various services at a charge. The charge for collection and sales ledger administration is in the form of a commission expressed as a per cent of debt purchased. It is collected upfront/ in advance. The commission for short-term financing as advance part-payment is in the form of interest charge for period between the date of advance payment and the date of collection/guaranteed payment date. It is also known as discount charge.

Summary

❖ **Gross working capital** is the total of all current assets. Net working capital is the difference between current assets and current liabilities.

❖ In the management of working capital, two characteristics of current assets must be borne in mind: (i) **short life span**, and (ii) **swift transformation** into other asset forms.

❖ The working capital needs of a firm are influenced by several factors. (i) nature of business, (ii) seasonality of operations, (iii) production policy, (iv) market conditions, and (v) conditions of supply.

❖ An important working capital policy decision is concerned with the level of investment in current assets. Determining the optimal level of current assets involves a tradeoff between costs that rise with current assets and costs that fall with current assets. The former are referred to as carrying costs and the latter as shortage cost.

❖ According to the matching principle, the maturity of the sources of finance should match the maturity of the assets being financed. This means that fixed assets and permanent current assets should be supported by long-term sources of finance, whereas fluctuating current assets must be supported by short-term sources of finance.

❖ To estimate the cash requirement for working capital, you may follow a two step procedure: (i) Estimate the cash cost of various current assets required by the firm. (ii) Deduct the spontaneous current liabilities from the cash cost of current assets.

1. MANAGEMENT OF CASH AND MARKETABLE SECURITIES

MOTIVES FOR HOLDING CASH

Cash is the most liquid asset, but it does not earn any substantial return for the business. Nobody earns any income on the cash balance or currency being maintained, however, some interest income may be earned on short term deposits. But still everybody and every firm maintains some cash balance. What is the reason? Why the firm still keep some cash balance? It has been suggested that there are four primary motives for holding cash.

These are as follows :

1. Transaction Motive:

Business firms as well as individuals keep cash because they require it for meeting demand for cash flow arising out of day to day transactions. In order to meet the obligations for cash flows arising in the normal course of business, every firm has to maintain adequate cash balance. A firm requires cash for making payments for purchase of goods and services. Supplier of goods are paid in cash, employees are paid in cash, all

general operating expenses are also payable in cash. Interest on borrowings, taxes to government and dividends to shareholders are also payable in cash.

These cash outflows are met out of cash inflows arising out of cash sales or recovery from the debtors.

However, the inflows may not always be equal to cash outflows. In case the expected outflows are more than the expected inflows, then the deficiency together with some cash for safety margin must be arranged. Further, as the inflows and outflows are not fully and exactly synchronized, a firm is always required to maintain a minimum cash balance with it. The necessity of keeping a minimum cash balance to meet payment obligations arising out of expected transactions, is known as transaction motive for holding cash. The amount of cash a firm must hold to meet the relationship, by no means, is largely dependent upon the level of sales although the inflows and outflows and also be precisely measurable. In a normal situation, both the inflows and outflows and the net difference tend to increase or decrease in direct proportion to the level of sales.

2. Precautionary Motive:

The precautionary motive for holding cash is based on the need to maintain sufficient cash to act as a cushion or buffer against unexpected events. In spite of making best efforts, the future cash flows cannot be ascertained with 100% accuracy. One never knows about the happening of natural calamities or sudden increase in the cost of raw materials or any other factor such as strike, lockout, etc. Such events may seriously interrupt even the best planned financial plans and thus may temporarily make the cash budget ineffective and non-existent. Therefore, a firm should maintain larger cash balance than required for day to day transactions in order to avoid any unforeseen situation arising because of insufficient cash.

The necessity of keeping a cash balance to meet any emergency situation or unpredictable obligation, is known as precautionary motive for holding cash. The more is the possibility of the contingencies, the bigger is the amount required as a precautionary motive. The amount of cash, a firm must hold for transaction and precautionary depends upon

- Degree of predictability of its cash flows,
- Its willingness and capacity to take risk of running short of cash, and
- Available immediate borrowing powers.

A firm wishing absolutely to avoid or minimization the risk, will tend to have larger cash balances in order to meet all demands. In contrast, a firm willing to assume some risk for the sake of higher returns will tend to invest its cash balance in earning assets.

3. Speculative Motive :

Cash may be held for speculative purposes in order to take advantage of potential profit making situations. A firm may come across an unexpected opportunity to make profit, which is not usually available in normal routine. Some cash balance may be kept to take advantage of these windfalls e.g., an opportunity to purchase raw materials at a heavy discount, if paid in cash. The motive to keep cash balance for these purposes is obviously speculative in nature. The firm's desire to keep some cash balance to capitalize an opportunity of making an unexpected profit is known as speculative motive. The speculative motive provides a firm with sufficient liquidity to take advantage of unexpected profitable opportunities that may suddenly appear (and just as suddenly disappear if not capitalized immediately).

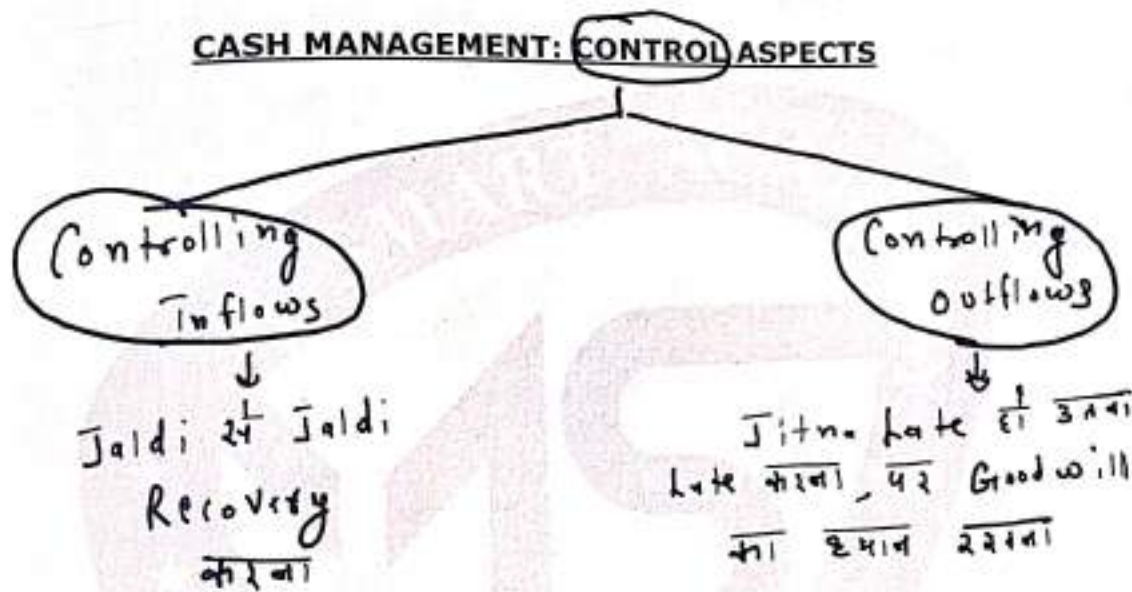
4. Compensation Motive:

Commercial banks require that in every current account, there should always be a minimum cash balance. This minimum cash balance may vary from Rs. 5,000 to Rs. 10,000. This amount remains as a permanent balance with the bank so long as the current account is operative. This minimum balance is generally not allowed by the bank

to be used for transaction purposes and therefore, it becomes a sort of investment by the firm in the bank. In order to avail the convenience of current account, the minimum cash balance must be maintained by the firm and this provides the compensation motive for holding cash.

Out of different motives, the transactions motive is the most obvious one and is found in every firm. Even the precautionary motive is common and a firm maintains cash balance both for the transaction motive and the precautionary motive. However, the speculative motive is a subjective one and may differ from one firm to another. Generally, the speculative motive is the least important component of a firm's preference for liquidity. The transaction and the precautionary motives account for most of the reasons why a firm holds cash balance. The compensation motive may be a compulsion and the firm may not have many options.

CASH MANAGEMENT: CONTROL ASPECTS



After the preparation of cash budget, the financial manager should also ensure that there are no significant differences between the expected/budgeted cash flows and the actual cash flows. This requires controlling and reviewing of the whole exercise on a regular basis. The financial manager should take appropriate steps for preventing any unexpected deviation in both the inflows as well as the outflows. These include decisions that answer the following questions:

- What can be done to speed up cash collections and slow down or better control cash outflows?
- What should be the composition of a marketable securities portfolio?

The efficiency of the firm's cash management program can be enhanced by the knowledge and use of various procedures aimed at (a) accelerating cash inflows, and (b) controlling cash outflows. The following points are worth nothing at this stage.

Controlling inflows: The financial manager should take steps for speedy recovery from debtors and for this purpose proper internal control system should be installed in the firm. Once the credit sales have been effected, there should be a built-in mechanism for timely recovery from the debtors. Periodic statements should be prepared to show the outstanding bills.

Incentives offered to the customers for early/prompt payments should be well communicated to them.

Once the cheques/ drafts received from customers, no delay should be there in depositing these receipts with the banks. The time lag in collection of receivables can be

considerably reduced by managing the time taken by postal intermediaries and banks. Concentration banking and lock box system help reducing this time lag.

A firm may open collection centres (banks) in different parts of the country to save the postal delays. This is known as **concentration banking**. Under this system, the collection centres are opened as near to the debtors as possible, hence reducing the time in despatch, collection etc. The firm may instruct the customers to mail their payments to a regional collection/bank rather than to the Central Office. The concentration banking result in saving of time of collection and hence result in better cash management.

However, the selection of collection centres must be based on the volume of billing/business in a particular geographical area. It may be noted that the concentration banking also involve a cost in terms of minimum cash balance required with a bank or in account. So, the concentration banking as a tool of controlling inflows may be availed by big firms only.

Under the lock-box-system, the customers mail their payments to a post office box near their work place. The firm arranges with a local bank or some other agency to collect to collect the payments and credit to the firm's account as quickly as possible. The lock-box system is economical only if there is a relatively large number of payments being received in a particularly area, as the expenses attached for maintaining the system may be significant. In India, the lock-box system is not popular. However, commercial banks usually provide service to their large clients of (i) collecting the cheques from the office of the client, and (ii) sending the high value cheques to the clearing system on the same day. Both these services help reducing the float of the large clients. However, these benefits are not free. Usually, the bank charges a fee for each cheque processed through the system. The benefits derived from the acceleration of receipts must exceed the incremental costs of the lock-box system, or the firm would be better off without it. The concentration banking and the lock-box system attempt to (i) reduce the mailing time of customers payments, (ii) reduce the time during which payments received remained uncollected, and (iii) speed of the movement of cash to the main office for distribution etc.

Controlling Outflows: An effective control over cash outflows or payments also help a firm in better cash management and reducing cash requirements. A financial manager should try to slow down the payments as much as possible. However, care must be taken that the goodwill and credit rating of the firm is not affected. Payments to creditors need not be delayed otherwise it may be difficult to secure trade credit at a later stage. There is a no need to make any early payment unless there is a discount offered. The discount offered by creditors for prompt payment must be evaluated properly in terms of costs and benefits of the discounts.

Balance of lying in the bank account should also be so managed as to take maximum advantage out of it. There may not be a balance in the bank account when the cheque is expected to be presented for payment. Outflows on account of expenses may also be delayed as far as possible, particularly when the expenses can be accrued easily. For example, if tax is to be deposited within 7 days of the expiry of a month, then tax must be paid only on the 7th day and not before.

Thus effective control of disbursements/outflows can result in larger cash balances. The underlying objective regarding cash outflows should be maximize the delays in making payments, without however, affecting the firm's goodwill and credit rating.

MANAGING THE FLOAT

With reference to the control of inflows and outflows, float is an important technique to lessen the length of the cash cycle. When a firm receives or makes payments in the form of cheques etc., there is usually a time gap between the time the cheque is written and time that elapses between the point when it issues a cheque and the time at which the funds underlying the cheque are actually debited in the bank account. For the payee

float refers to the time between the receipt of the cheque and the availability of the funds in its account. So, float denotes the funds that have been despatched by a payer (the firm making the payment). The float also exists when a payee has received funds in a spendable form but these funds have not been withdrawn from the account of the payer. Float has three components:

(i) Mail Time: It is the period between the issue of a cheque and its receipt by the payee.

(ii) Processing Time: It is the time between the cheque received by the payee and the deposit of the cheque in the bank account of the payee, and

(iii) Collection Time: It is the amount of time for transferring funds, through banking system, from the payer's account to that of the payee. In India, this collection time is generally three days, including the day of depositing a cheque.

To get an idea of the float mechanism and its utility in the management cash inflows and outflows, one must know the related banking procedure. When a cheque is issued by the paying firm, the bank balance of the firm is not immediately reduced, rather the bank reduce the balance only when the cheque is presented to it either personally or through the clearing system. The amount of cheques issued but not presented for payment is known as the payment float. Similarly, when the firm receive a cheque from the customer and deposits the cheque in the firm's account, the amount is not immediately credited to the firm's account, rather the banks credits the cheque amount only when it is cleared by the paying bank. The amount of cheques deposited in the banks, but not yet cleared, is known as the receipt float. The difference between the payment float and the receipt float is known as net float.

The net float at a point of time is simply the overall difference between the firm's available bank balance and the balance shown by the ledger account of the firm. If the net float is positive, i.e., payment float is more than receipt float, then the available bank balance exceeds the book balance. However, if the available balance is less than the book balance, then the firm has net negative float. If a firm has positive net float (i.e., the payment float is more than the receipt float), it can issue more cheques even if the net bank balance shown by the books of account may not be sufficient. A firm with a positive net float can use it to its advantage and maintain a smaller cash balance than it would have in the absence of the float. For example, a firm has a payment float of Rs.1,00,000 and receipt float of Rs.80,000. This firm has a positive net float, which may be ascertained as follows:

$$\begin{aligned} \text{Net float} &= \text{Payment float} - \text{Receipt float} \\ &= \text{Rs.1,00,000} - 80,000 = 20,000. \end{aligned}$$

Float and Electronic Fund Transfer: With the growth in use of computers, banks are now providing electronic fund transfer and electronic clearing transfer securities. Dividends payments by companies Refund of subscription money in case of IPO and Refund of tax by Income-tax Deptt. are now being made through electronic facility wherein the funds are transferred from one account to another within a few moments across India. In such transfers, there is no as such. Business houses are also using these facilities and payments and receipt are effected through electronic clearing system. If is so, then the question of float management does not arise. Even where the cheques are being used for payment, float period is reducing because of greater efficiency on the part of the banking system.

Investing Surplus Cash: On the basis of the cash budget, the financial manager may find that excess cash will be available for some time. This excess cash may be temporarily idle or may represent a permanent surplus balance. If the cash budget indicates that the excess cash is a permanent accumulation, the nit may be invested in some profitable capital project.

However, if a surplus cash is expected in a particular month, or for a short period of a few months only, then the financial manager should take steps to invest this excess money and earn some income. The determination of the surplus cash is a very critical exercise and a lot depends upon the experience of the financial manager. He should take care of the transactions, precautionary demand as well as sudden fluctuations in market before going for the investment of the surplus cash. He should also be paid with reference to the safety, liquidity, return and maturity period of the investment. This aspect has been discussed in detail at a later stage.

Arranging Funds for Cash Shortage: If a financial manager is anticipating cash shortage in any particular month, then he should devise ways to arrange additional funds for the requirement period from some reliable source. These requirements of funds are generally for a short duration only and hence funds from short term sources of finance like bank loan etc., may be arranged. However, if cash shortage is expected on a regular basis then the long term sources of funds may be tapped.

OPTIMUM CASH BALANCE: A FEW MODELS

The cash budget for a firm may indicate the period when it is expected to have a shortage of surplus of funds. If a shortage is expected, ways and means of over coming it must be thought of; and in case of expected surplus, its profitable usage in marketable securities should be explored. However before converting cash into marketable securities and vice-versa, the financial manager must determine and assess the optimum cash balance for the firm. He should also find out when and how much cash is to be converted. The problem of determining optimum cash balance for a firm in fact, implies a trade-off between risk and return of maintaining cash balance. Several models, have been suggested to deal with the problem of optimum cash balance. Two important models have been discussed here.

1. Baumol's Model: Suggested by W.J. Baumol (1952), this model is the same as the economic order quantity model of the inventory management. This model attempts to balance the income foregone on cash held by the firm against the transaction cost of converting cash into marketable securities or vice versa. This model can be presented as follows:

Assumption: The Baumol's model assumes that the firm uses cash at an already known rate per period and that this rate of use is constant.

Holding Cost: There is always a cost of holding cash by a firm. This cost may be the opportunity cost in terms of the interest foregone on the investment of this cash.

Transaction Cost: Whenever cash is to be converted into marketable securities, or vice-a-versa, there is always a cost involved in the form of brokerage, commission etc. This model is based on the proposition that in order to reduce the holding cost, a firm keeps the least amount of cash in hand. However, as the cash level depletes, the firm can acquire cash by selling some of its marketable securities. Each time the firm transacts in this way, it bears transaction cost, so it will like to transact as occasionally as possible. This could be done by maintaining a higher cash level involving a high holding cost. Thus, the firm has to deal with the holding cost as well as the transaction cost. The optimum cash is founded by controlling the holding cost and transaction cost so as to minimize the total cost of holding cash. In other words, the cash is recovered by selling marketable securities in such a way that the transaction cost is optimally balanced with the holding cost of cash. This model is almost the same as EOQ model of the inventory management and can be presented as follows:

$$C = \sqrt{\frac{2FT}{r}}$$

where, C = Cash required each time to restore balance to minimum cash

F = Total cash required during the year

T = Cost of each transaction between cash and marketable securities

r = Rate of interest on marketable securities.

As per Baumol's Model, the firm should start each period with the cash balance equaling 'C' and spend gradually until its balance comes to zero. At this time, the firm should replenish the cash equally 'C' from the sale of marketable securities. The model can be presented in a graphical form also. Figure shows the determination of optimum cash balance at a level at which the holding cost and the transaction cost are optimized.

The cash balance being maintained by the firm and the average cash balance have been depicted in the figure.

The Figure shows the resultant position of cash balance with the firm. Suppose a firm has total cash need of Rs.5,00,000 per annum, its rate of interest is 15% and every time it has to pay Rs.25 to enter into a transaction of marketable securities, then the optimum cash it requires every time and which is also to equal to the maximum cash level of the firm may be found as follows:

$$C = \sqrt{\frac{2 \times 25 \times 5,00,000}{.15}} = \text{Rs.}12,910$$

Limitations of the Model: The Baumol's model suffers from the following short comings:

(i) The model assumes a constant rate of use of cash. This is a hypothetical assumption. Generally the cash outflows in any firm are not regular and hence this model may not give correct results.

(ii) The transaction cost will also be difficult to be measured since these depend upon the type of investment as well as the maturity period.

In spite of the limitations, the model has a theoretical value. It gives an idea as to how the holding cost and transaction cost should be optimized by the firm. The cash balance being maintained by the firm. The cash balance being maintained by the firm should be a level close to optimum level as given by the model so that the total cost is minimized.

2. Miller-Orr Model: Miller and Orr (1966) have expanded the Baumol's model which is not applicable if the demand for cash is not steady. In case, uncertainty over cash flows is large, the inventory type model cannot be used. If balances fluctuate randomly, then a stochastic model can be used to set control limits. The Miller Orr model argues that change in cash balance over a given period are random in size as well as indirection. The cash balance of firm may fluctuate irregularly over a period of time. The model assumes (i) out of the two assets i.e., cash and marketable securities, the latter has a marginal yield, and (ii) transfer of cash to marketable securities and vice-a-versa is possible without any delay but of course at some cost. The model has specified two control limits for cash balance. An upper limit, H, beyond which cash balance need not be allowed to go and a lower limit, L, below which the cash level is not allowed to reduce. The cash balance should be allowed to move within these limits. If the cash reaches the upper control limit, H, then at this point, a part of the cash should be invested in marketable securities in such a way that the cash balance comes to down to a pre-determined level called the return level, R. If the cash balance reaches the lower level, L,

then sufficient marketable securities should be sold to realize cash so that the cash balance is restored to the return level, R. No transaction between cash and marketable securities is undertaken so long as the cash balance is between the two limits of H and L. The Miller-Orr model has been presented in figure.

The spread between the lower and the upper limit computed by the model is that which minimizes the sum of transaction cost and the interest cost. The firm buys securities when it gets to the upper level and reduces its cash balance to the return level; and sells securities when it gets to the lower limit and raise its cash balance to the same point. The model requires three steps. The first step involves specifying a minimum cash balance, which comprises the lower limit for cash balance (for some firms, it may be zero).

The second step, involves estimating the variability in future cash flows. This could be assessed on the basis of past experience of the firm. The third step involves computing the spread as a function of the variability, the transaction cost and the market interest rate. This spread is added to the lower cash limit in order to find out the upper cash limit for the firm. The Miller-Orr model has a superiority over the Baumol's model. The latter assumes constant need and constant rate of use of funds, the Miller-Orr model, on the other hand, is more realistic and maintains that the actual cash balance may fluctuate between the higher and the lower limits. The model may be defined as:

$$Z = \sqrt{\frac{3TV}{4i}}$$

or $Z = [3TV/4i]^{1/3}$

Where, T = Transaction cost of conversion

V = Variance of daily cash flows, and

i = Daily % interest rate on investments.

SUMMARY

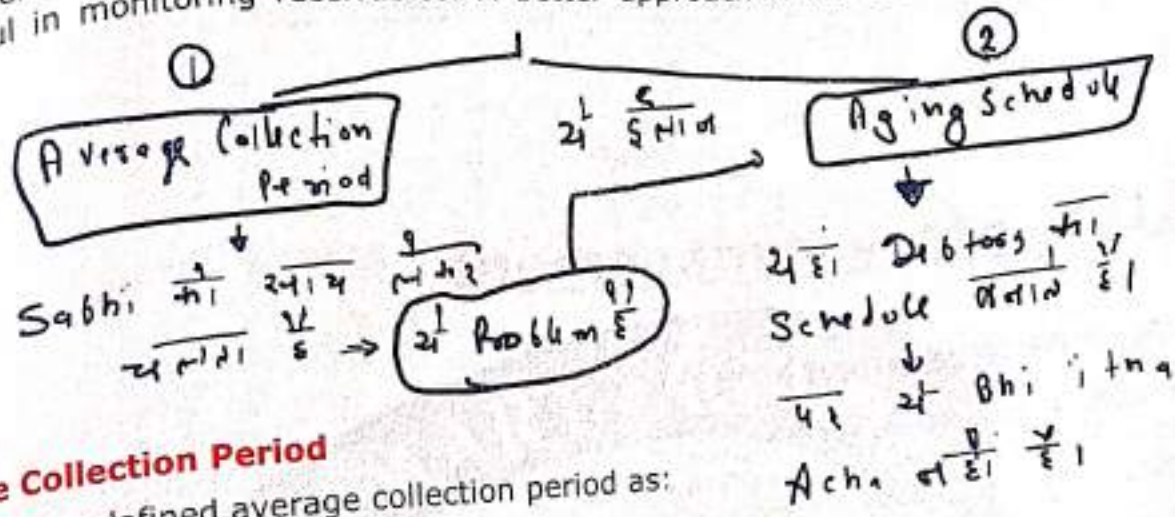
- ❖ As John Maynard Keynes put forth, there are three possible motives for holding cash, viz., transaction motive, precautionary motive, and speculative motive.
- ❖ The principal method of short-term cash forecasting is the receipts and payments method. The cash budget, prepared under this method, shows the timing and magnitude of expected cash receipts and payments over the forecast period, irrespective of how they are classified in accounting.
- ❖ The method generally used for long-term cash forecasting is the adjusted net income method, which resembles the funds flow statement.
- ❖ To enhance the efficiency of cash management, collections and disbursements must be properly monitored. In this context, the following are helpful: prompt billing, expeditious collection of cheques control of payables, and playing the float.
- ❖ A variety of options are available for investing surplus funds available for short period: The major options in India are fixed deposits with banks, Treasury bills, and money market mutual fund schemes: the minor options are commercial paper, certificates of deposit, inter-corporate deposits, ready forwards, and bill discounting.
- ❖ Keith V. Smith says that financial managers can consider a series of seven strategies for handling the excess cash balance with the firm: (i) do nothing, (ii) make ad hoc investments, (iii) ride the yield curve, (iv) develop guidelines, (v) utilize control limits, (vi) manage with a portfolio perspective, and (vii) follow a mechanical procedure.
- ❖ William J. Baumol has proposed a model which applies the economic order quantity (EOQ) concept, commonly used in inventory management to determine the cash conversion size (which in turn influences the average cash holding of the firm).
- ❖ Expanding on the Baumol Model, Miller and Orr consider a stochastic generating process for periodic changes in cash balance.

2. Receivable Management

MONITORING RECEIVABLE

A firm needs to continuously monitor and control its receivable to ensure the success of collection efforts.

Two traditional methods of evaluating the management of receivables are: (1) average collection period (ACP) and (2) aging schedule. These methods have certain limitations to be useful in monitoring receivables. A better approach is the collection experience matrix.



1. Average Collection Period

We have earlier defined average collection period as:

$$ACP = \text{Debtors} \times 360 / \text{Credit Sale}$$

The average collection period so calculate is compared with the firm's stated credit period to judge the collection efficiency. For example, if a firm's stated credit period is 25 days and the actual collection period is 40 days, then one can conclude that the firm has a delay in cash inflows, which impairs the firm's liquidity position and increases the chances of bad-debit losses. The average collection period measures the quality of receivables since it indicates the speed of their collectability.

There are two limitations of this method. First, it provides an average picture of collection experience and is based on aggregate data. For control purposes, one needs specific information about the age of outstanding receivables. Second, it is susceptible to sales variations and the period over which sales and receivables have been aggregated. Thus, average collection period cannot provide a very meaningful information about the quality of outstanding receivables.

2. Aging Schedule

The aging schedule removes one of the limitations of average collection period. It breaks down receivables according to the length of the time for which they have been outstanding. We can repeat our example in Chapter 25 to illustrate aging schedule of receivables:

If the firm's stated credit period is 25 days, the aging schedule indicates that 50 per cent of receivables remain beyond the period. A significant amount of receivables remains uncollected, much longer than the firm's credit period. Thus, aging schedule provides more information about the collection experience. It helps to spot out the slow-paying debtors. However, it also suffers from the problem of aggregation, and does not relate receivables to sales of the same period.

Outstanding	Outstanding(rs)	Percentage
0-25	200,000	50.0
26-35	100,000	25.0
36-45	50,000	12.5
46-60	30,000	7.5
Over 60	20,000	5.0
	<u>400,000</u>	<u>100.0</u>

3. Inventory Management

NATURE OF INVENTORIES

Inventories are stock of the product a company is manufacturing for sale and components that make up the product. The various forms in which inventories exist in a manufacturing company are: raw materials, work-in-process and finished goods.

- Raw material is those basic inputs that are converted into finished product through the manufacturing process. Raw material inventories are those units which have been purchased and stored for future productions.
- Work-in-process inventories are semi manufactured products. They represent products that need more work before they become finished product for sale.
- Finished goods inventories are those completely manufactured products which are ready for sale. Stock of raw materials and work-in-process facilitate production, while stock of finished goods is required for smooth marketing operations. Thus, inventories serve as a link between the production and consummation of goods.

NEED TO HOLD INVENTORIES

The question of managing inventories arises only when the company holds inventories. Maintaining inventories involves tying up of the company's funds and incurrance of storage and handling costs. If it is expensive to maintain inventories, why do companies hold inventories? There are three general motives holding inventories.

- **Transactions motive**, which emphasizes the need to maintain inventories to facilitate smooth production and sales operations.
- **Precautionary motive**, which necessitates holding of inventories to guard against the risk of unpredictable changes in demand and supply forces and other factors.
- **Speculative motive**, which influences the decision to increase or reduce inventory levels to take advantage of price fluctuations.

OBJECTIVE OF INVENTORY MANAGEMENT

In the context of inventory management, the firm is faced with the problem of meeting two conflicting needs:

- To maintain a large size of inventories of raw material and work-in-process for efficient and smooth production and of finished goods for uninterrupted sales operations.
- To maintain a minimum investment in inventories to maximize profitability.

1. Economic Order Quantity (EOQ)

One of the major inventory management problems to be resolved is how much inventory should be added when inventory is replenished. If the firm is buying raw materials, it has to decide the lots in which it has to be purchased on replenishment. If the firm is planning a production run, the issue is how much production to schedule (or how much to make). These problems are called order quantity problems, and the task of the firm is to determine the optimum or economic order quantity (or economic lot size). Determining an optimum inventory level involves two types of costs: (a) ordering costs and (b) carrying costs. The economic order quantity is that inventory level that minimizes the total of ordering and carrying costs.

Ordering and Carrying Costs

Ordering costs	Carrying costs
<ul style="list-style-type: none"> • Requisitioning • Order placing • Transportation • Receiving, inspecting & storing • Clerical & staff 	<ul style="list-style-type: none"> • Water housing • Handling • Clearing & staff • Insurance • Deterioration & obsolescence

Economic order quantity = $2 \times \text{quantity required} \times \text{ordering/carrying cost}$

$EOQ = 2AO/c$

To illustrate the use of EOQ formula, let us assume data of the example, taken to illustrate the trial and error approach. As assumed earlier, if the total requirement is order is rs37.50 and carrying cost per unit is rs1, the economic order quantity will be:

$EOQ = 2 \times 1,200 \times 37.5 / 1 = 300 \text{ units}$

② JIT

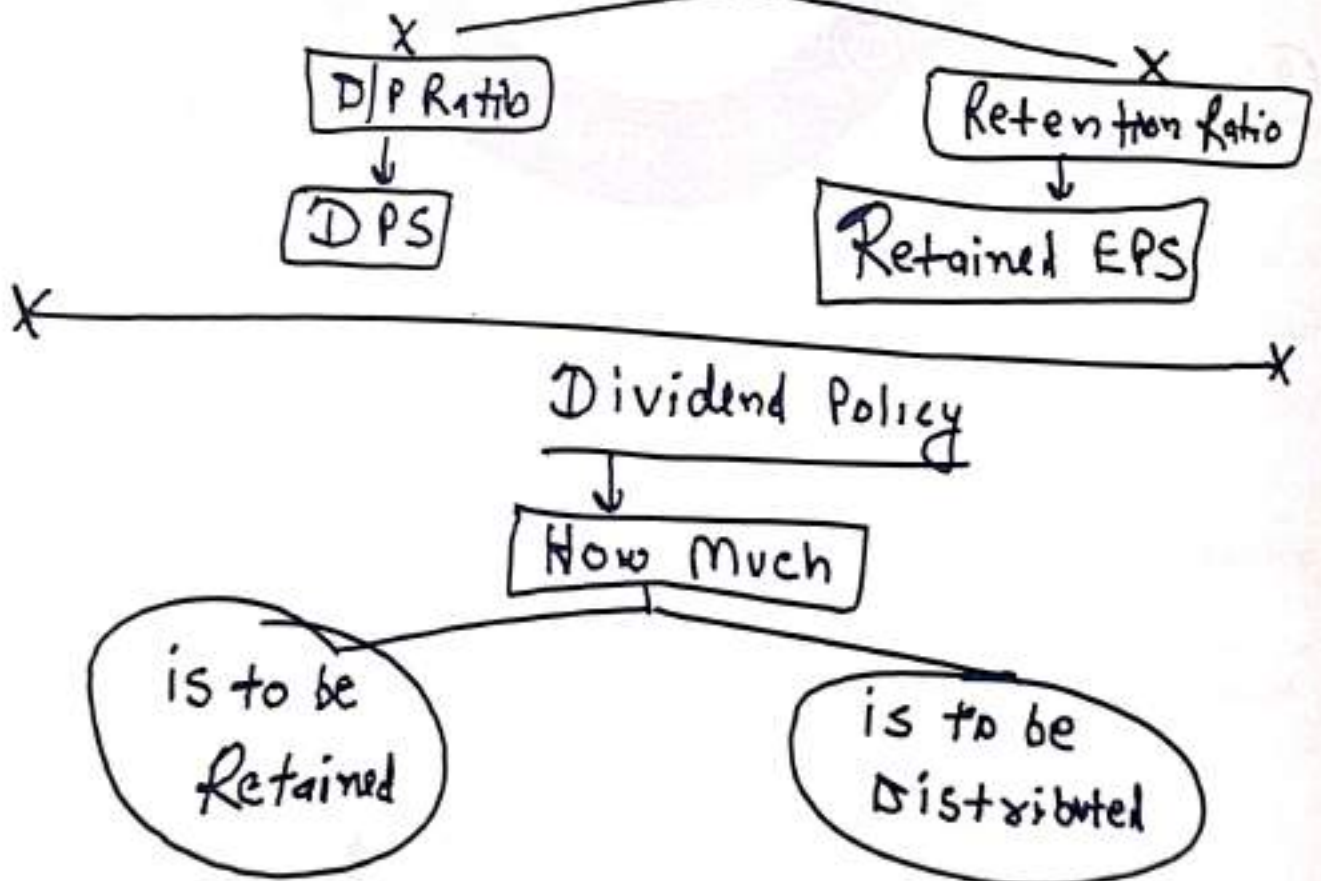
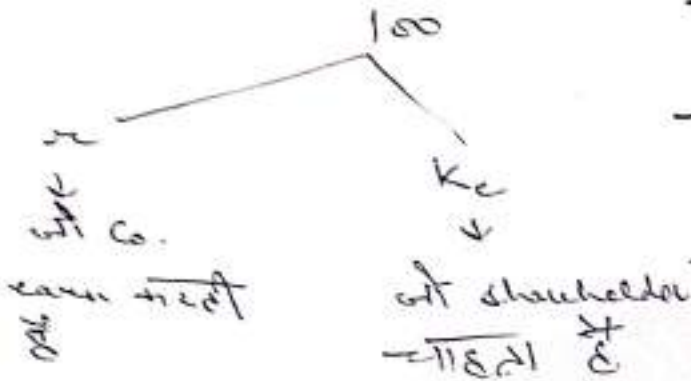
③ ABC Technique

CHAPTER 8

DIVIDEND POLICY

PROFITABILITY TABLE

	Sale
-	<u>VC</u>
	Cont
-	<u>F.C</u>
	EBIT [Earning Before Int & Tax]
-	<u>Int</u>
	EBT [Earning Before Tax]
-	<u>Tax</u>
	EAT
-	<u>Prefer Div</u>
	EFE
÷	<u>No of Share</u>
=	EPS

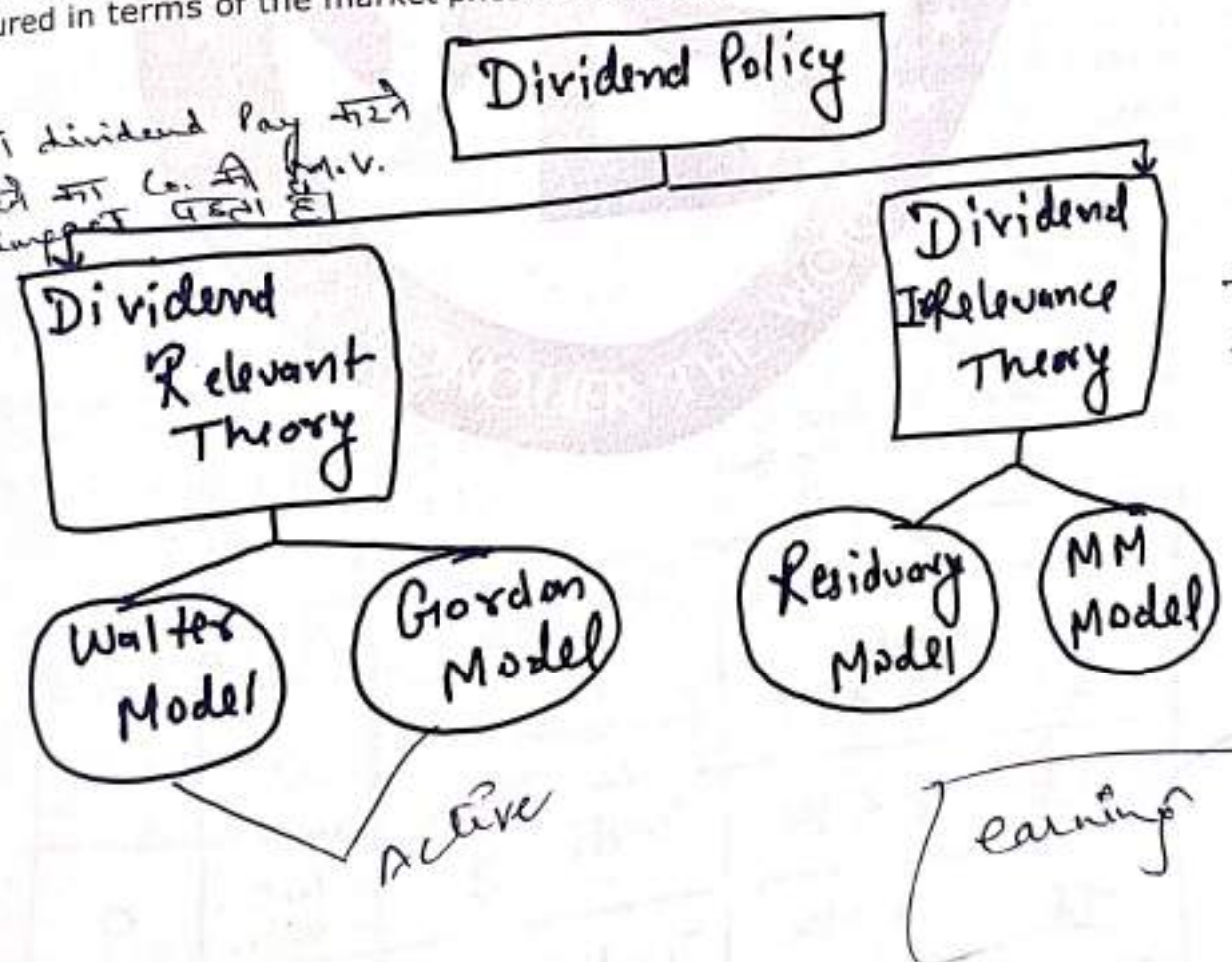


Dividends refer to that portion of a firm's net earnings which are paid out to the shareholders. Our focus here is on dividend paid to the ordinary shareholders because holders of preference shares are entitled to a stipulated rate of dividend. Moreover the discussion is relevant to widely-held public limited companies as the dividend issue does not pose a major problem for closely-held private limited companies. Since dividends are distributed out of the profits, the alternative to the payment of dividends is the retention of earnings/profits. **The retained earnings constitute an easily accessible important source of financing the investment requirements of firms.** There is, thus, type of inverse relationship between retained earnings and cash dividends: larger retentions, lesser dividends; smaller retentions, larger dividends. Thus, the alternative uses of the net earnings—dividends and retained earnings—are competitive and conflicting. A major decision of financial management is the dividend decision in the sense that the firm has to choose between distributing the profits to the shareholders and plugging them back into the business. The choice would obviously hinge on the effect of the decision on the maximization of shareholders' wealth. Given the objective of financial management of maximizing present values, the firm should be guided by the consideration as to which alternative use is consistent with the goal of wealth maximization. That is, the firm would be well advised to use the net profits for paying dividends to the shareholders if the payment will lead to the maximization of wealth of the owners. If not, the firm should rather retain them to finance investment programs. The relationship between dividends and value of the firm should, therefore, be the decision criterion.

There are, however, conflicting opinions regarding the impact of dividends on the valuation of a firm. According to one school of thought dividends are irrelevant so that the amount of dividends paid has no effect on the valuation of a firm. On the other hand, certain theories consider the dividend decision as relevant to the value of the firm measured in terms of the market price of the shares.

के द्वारा dividend pay करने का मूल्य का Co. की M.V. पर impact पड़ता है।

का impact पड़ता है।



RELEVANCE OF DIVIDENDS

In sharp contrast to the MM position, there are some theories that consider dividend decisions to be an active variable in determining the value of a firm. The dividend decision is, therefore, relevant. We critically examine below two theories representing this notion: (i) **Walter's Model** and (ii) **Gordon's Model**.

1. Walter's Model

Proposition Walter's model supports the doctrine that dividends are relevant. The investment policy of a firm cannot be separated from its dividends policy and both are, according to Walter, interlinked. The choice of an appropriate dividend policy affects the value of an enterprise.

The key argument in support of the relevance proposition of Walter's model is the relationship between the return on a firm's investment or internal rate of return (r) and its cost of capital or the required rate of return (k). The firm would have an optimum dividend policy which will be determined by the relationship of r and k . In other words, if the return on investments exceeds the cost of capital, the firm should retain the earnings, whereas it should distribute the earnings to the shareholders in case the required rate of return exceeds the expected return on the firm's investments. The rational is that if $r > k$, the firm is able to earn more than what the shareholders could by reinvesting, if the earnings are paid to them. The implication of r

$< k$ is that shareholders can earn a higher return by investing elsewhere. Walter's model, thus, relates the distribution of dividends (retention of earnings) of available investment opportunities. If a firm has adequate profitable investment opportunities, it will be able to earn more than what the investors expect so that $r > k$. Such firms may be called growth firms. For growth firms the optimum dividend policy would be given by a D/P ratio of zero. That is to say, the firm should plough back the entire earnings within the firm. The market value of the shares will be maximised as a result.

In contrast, if a firm does not have profitable investment opportunities (when $r < k$), the shareholders will be better off if earnings are paid out to them so as to enable them to earn a higher return by using the funds elsewhere. In such a case, the market price of shares will be maximized by the distribution of the entire earnings as dividends. A D/P ratio of 100 would give an optimum dividends policy.

Finally, when $r = k$ (normal firms) it is a matter of indifference whether earnings are retained or distributed.

This is so because for all D/P ratios (ranging between zero and 100) the market price of shares will remain constant. For such firms, there is no optimum dividend policy (D/P ratio).

Situation	firm type	D/P Ratio	R/K Ratio
If $r > k_e$	Growth	0	100
If $r < k_e$	Declining	100	0
If $r = k_e$	Indifferent	Any	Any

Assumptions: The critical assumptions of Walter's Model are as follow:

1. All financing is done through retained earnings: external sources of funds like debt or new equity capital are not used.
2. With additional investments undertaken, the firm's business risk does not change. It implies that **r and k are constant.**
3. There is no change in the key variables, namely, beginning earnings per share, E, and dividends per share, D. The values of D and E may be changed in the model to determine results, but, any given **value of E and D** are assumed to remain **constant** in determining a given value.

EPS & DPS constant

4. The firm has perpetual (or very long) life.

- The following information is available in respect of a firm:
- Capitalization rate (K_e) = 0.10
 - Earnings per share (E) = Rs .10
 - Assumed rate of return of investments (r): (i) 15, (ii) 8, and (iii) 10.

Show the effect of dividend policy on the market price of shares, using Walter's model.

Interpretation

The calculations of the value of shares according to Walter's formula shown in Tables yield the following conclusions:

1. When the firm is able to earn a return on investments exceeding the required rate of return that is, $r > K_e$, the value of shares inversely related to D/P ratio: as the payout ratio increases, the market value of shares declines. (shown in Table). Its value is the highest when the D/P ratio is zero. If, therefore, the firm retains its entire earnings, it will maximise the market value of shares (Rs 150). When all earnings are distributed, its value is the lowest. In other words, the optimum payout ratio (dividend policy) is zero.
2. It is clear from shown in Table that when $r < K_e$ that is, when the firm does not have ample profitable investment opportunities, the D/P ratio and the value of shares are positively correlated: as the payout ratio increases; the market price of the shares also increases. The dividend policy is optimum when the D/P ratio = 100 per cent. In other words, when $r < K_e$, the firm would be well advised to distribute the entire earnings to the shareholders.
3. For a situation in which $r = K_e$, the market value of shares is constant irrespective of the D/P ratio (shown in Table); there is no optimum dividend policy D/P ratio. In other words, the market price of shares is not affected by the D/P ratio. Whether the firm retains the profits or distributes dividends is a matter of indifference. This is a hypothetical situation. In actual practice, the two values (r and k) are different and Walter concludes that dividend policy does matter as a variable in maximizing share prices.

Limitations

The Walter's model, one of the earliest theoretical models, explains the relationship between dividend policy and value of the firm under certain simplified assumptions. Some of the assumptions do not stand critical evaluation. In the first place, the Walter's model assumes that the firm's investments are financed exclusively by retained earnings; no external financing is used. The model would be only applicable to all-qui firms. Secondly, the model assumes that r is constant. This is not a realistic assumption because when increased investments are made by the firm, r also changes. Finally, as regards the assumption of constant K_e , the risk complexion of the firm has a direct bearing on it. By assuming a constant K_e , Walter's model ignores the effect of risk on the value of the firm.

$$P_0 = \frac{DPS}{K_e} + \frac{r}{K_e} (EPS - DPS)$$

2. Gordon's Model

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

1. The firm is an all-equity firm. No external financing is used and investment programmes are financed exclusively by retained earnings.
2. r and K_e are constant.
3. The firm has perpetual life.
4. The retention ratio, once decided upon, is constant. Thus, the growth rate, ($g = br$) is also constant.
5. $K_e > br$

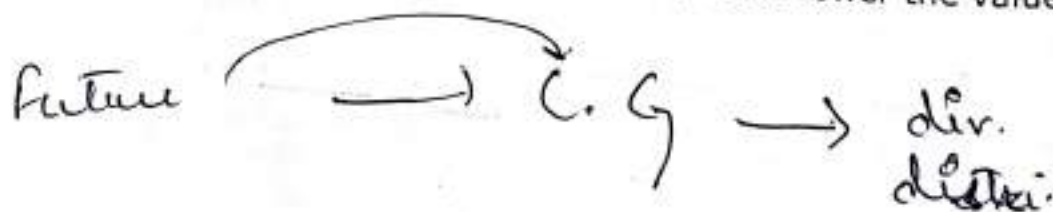
Arguments It can be seen ^{here} that the assumptions of Gordon's model that they are similar to those of Walter's model. As a result, Gordon's model, like Walter's, contends that dividend policy of the firm is relevant, and that investors put a positive premium on current incomes/dividends. The crux of Gordon's arguments is a two-fold assumption: (i) investors are risk averse, and (ii) they put a premium on a certain return and discount/penalize uncertain returns.

As investors are rational, they want to avoid risk. The term risk refers to the possibility of not getting a return on investment. The payment of current dividends ipso facto completely removes any change of risk.

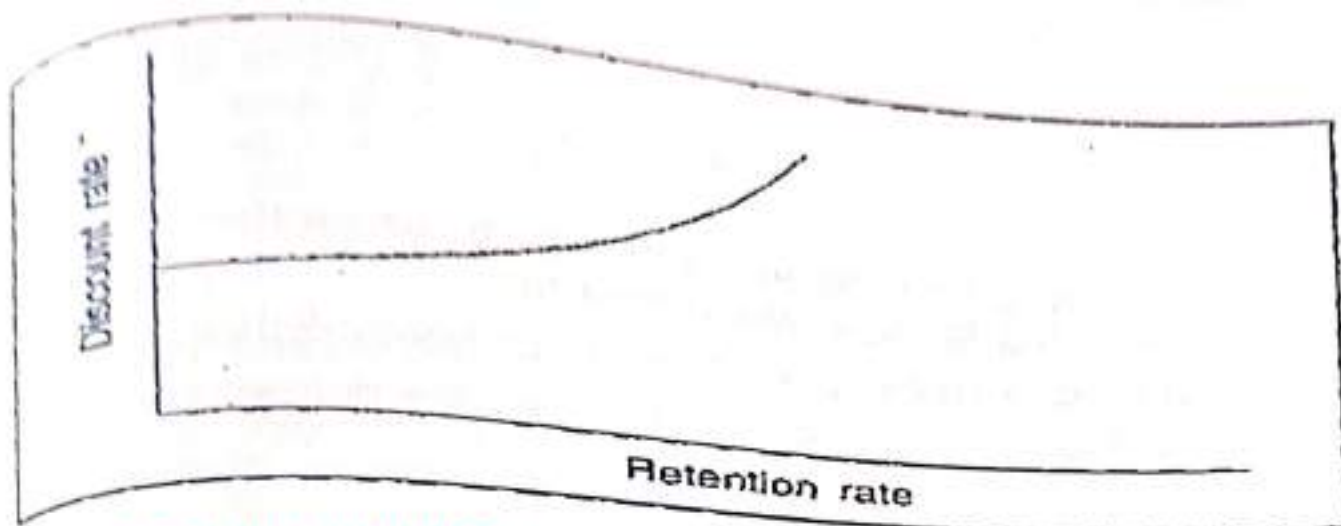
If, however, the firm retains the earnings (i.e. current dividends are withheld), the investors can expect to get a dividend in future. The future dividend is uncertain, both with respect to the amount as well as the timing. The rational investors can reasonably be expected to prefer current dividend. In other words, they would discount future dividends, that is, they would place less importance on it as compared to current dividend. The retained earnings are evaluated by the investors as risky promise. In case the earnings are retained, therefore, the market price of the shares would be adversely affected.

The above argument underlying **Gordon's model of dividend relevance** is also described as a **bird-in-the-Hand** argument. That a bird in hand is better than two in the bush is based on the logic that what is available at present is preferable to what may be available in the future. Basing his model on this argument,

Gordon argues that the future is uncertain and the more distant the future is, the more uncertain it is likely to be. If, therefore, current dividends are withheld to retain profits, whether the investors would at all receive them later is uncertain. Investors would naturally like to avoid uncertainty. In fact, they would be inclined to pay a higher price for shares on which current dividends are paid. Conversely, they would discount the value of shares of a firm which postpones dividends. The discount rate would vary, as shown in Figure, with the retention rate or level of retained earnings. The term retention ratio means the percentage of earnings retained. It is the inverse of D/P ratio. The omission of dividends, or payment of low dividends, would lower the value of shares.



$$P = \frac{D_0 (1+g)}{r}$$



Dividend Capitalization Model According to Gordon, the market value of a share is equal to the present value of future streams of dividends. A simplified version of Gordon's model can be symbolically expressed as

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

Where P = Price of a share

E = Earnings per share

b = Retention ratio or percentage of earnings retained.

1 - b = D/P ratio, i.e. percentage of earnings distributed as dividends

k_e = Capitalization rate/cost of capital

br = g = Growth rate = rate of return on investment of an all-equity firm.

The implications of dividends policy according to Gordon's model are illustrated shown in Example.

The following information is available in respect of the rate of return on investment (r), the capitalization rate (k_e) and earnings per share (E) of Hypothetical Ltd.

r = 12 per cent

E = Rs 20

Determine the value of its shares, assuming the following:

D/P ratio (1 - b)	Retention ratio (b)	k_e (%)
(a) 10	90	20
(b) 20	80	19

Solution The value of shares of Hypothetical Ltd for different D/P and retention ratios is depicted shown in Table.

Dividend Policy and Value of Shares of Hypothetical Ltd (Gordon's Model)

(a) D/P Ratio

$$0.12 = 0.108$$

Retention

$$P = \frac{Rs. 20 (1-0.9)}{0.20 - 0.108} = \frac{Rs. 2}{0.092} = Rs. 21.74$$

(b) D/P ratio

Retention ratio

$$P = \frac{Rs. 20 (1-0.8)}{0.19 - 0.096} = Rs. 42.55$$

$$br(g) = 0.9 \times 0.12 = 0.108$$

$$br = 0.8 \times 0.12 = 0.096$$

Gordon, thus, contends that the dividend decision has a bearing on the market price of the share. The price of the share is favorably affected with more dividends.

Two Theory have been discussed here to focus on the Irrelevant of Dividend Policy for valuation of the firm:

1. Residual Theory of Dividend: Dividend Decision is Passive decision.

अगर firm के पास Investment opportunity है तो Retained earning को वहाँ use करेंगे और अगर Invest के बाद कुछ

बचेगा तो उसे Dividend के form में distribute करेंगे।

In this, the firm doesn't decide as to how much Dividend be paid rather it decides.

Assumption is that firm finance its invt. decision by retaining Profits (As external finance is costly)

2. Modigliani & Miller Approach (MM): They argued that the market price of a share is affected by the earnings of the firm & is not influenced by the Pattern of income distribution. **What matter is the Invt. decisions which determine the earning of the firm.**

It may be noted that there will not be any change in the MM proposition whether the new funds are raised by the issue of fresh shares or by the issue of debt securities.

The success of the MM model depends upon the arbitrage process i.e. that is replacement of amount paid as dividend by the issue of fresh capital. The arbitrage process involves two simultaneous actions. With reference to Div. Policy, these two actions are:

(i) Payment of Div. by the firm

$$nP_0 = \frac{(n+m)P_1 - I + E}{(1+k_e)}$$

n = new no. of eq sh.

m = old no. of eq sh.

P_0 = old market price &

I_1 = Investment

E = earning

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

(ii) Raising of fresh Capital

$$m = \frac{Invnt - (earning - n \times DPS)}{P_1}$$

MP at the end

P_1 = New mkt price.

Assumption:

(i) The capital market are perfect & investor behave rationally, No transaction cost & no time lag AND NO TAX

(ii) All in for. are freely available to all the investors.

(iii) Securities are dividable & can be split into any fraction.

(iv) Fixed investment Policy & certainty of earning.

Information Asymmetry and Agency Costs and the Case for Dividend Payments

Managers in practice may not share complete information with shareholders. This gap between information available with managers and what is actually shared with shareholders is called information asymmetry. This leads to several agency problems, viz; conflicts between managers and shareholders.

Managers may not have enough incentive to disclose full information to shareholders. They may act in their own self-interest and take away the firm's wealth in the form of non-pecuniary benefits. Shareholders incur agency costs to obtain full information about a company's investment plans, future earnings, expected dividend payments, etc. The shareholders-managers conflict can be reduced through monitoring which includes bonding contracts and limiting the power of managers vis-à-vis allocation of wealth and managerial compensation. However, monitoring involves costs that are referred to as agency costs.

Payment of dividend allocates resources to shareholders, and thus, alleviates the need for monitoring and incurring agency costs.

INFORMATION CONTENT OF DIVIDENDS AND DIVIDEND SIGNALING

It is contended that dividends are relevant because they have information value. A company can make statements about its expected earnings growth to inform shareholders in order to create a favorable impression on them. However, these statements would be paid better attention if they follow with a dividend action-a disbursement of cash. The cash payment for dividends conveys to shareholders that the company is profitable and financially strong. When a firm changes its dividend policy in a significant manner, investors assume that it is in response to an expected change in a firm's profitability which will last long. An increase in payout ratio signals to shareholders a permanent or long-term increase in a firm's expected earnings. It is, therefore, argued that the announcement of changes in dividend policy influences shares prices, and that managers use the dividend changes to convey information about the future earnings of their companies. They may also influence the perceptions of the investors about the risk of the company which follows a stable dividend policy. This sort of argument is also known as the dividend-signaling hypothesis.

TYPES OF DIVIDEND POLICY:-

1.) Regular dividend policy: in this type of dividend policy the investors get dividend at usual rate. Here the investors are generally retired persons or weaker section of the society who want to get regular income.

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 maintaining 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 paid to the shareholders.

It is of three types:

a) Constant dividend per share: here 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.

b) Constant pay out ratio: it means the payment of fixed percentage of earning as dividend every year.

c) Stable rupee dividend + extra dividend: it means the payment of low dividend per share constantly + extra dividend in the year when the company earns high profit.

Merits of stable dividend policy:

- It helps in creating confidence among the shareholders.
- It stabilizes the market value of shares.
- It helps in maintaining 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 sometime afraid of giving regular dividend.
- Due to not so much successful 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.

Stability of dividends is considered a desirable policy by the management of most companies in practice.

Many surveys have shown that shareholders also seem generally to favour this policy and value stable dividends higher than the fluctuating ones. All other things being the same, the stable dividend policy may have a positive impact on the market price of the share.

Stability of dividends also means regularly in paying some dividend annually, even though the amount of dividend may fluctuate over the years, and may not be related with earnings. There are a number of companies, which have records of paying dividend for a long, unbroken period. More precisely, stability of dividends refers to the amounts paid out regularly. Three forms of such stability may be distinguished.

- Constant dividend per share or dividend rate
- Constant payout
- Constant dividend per share plus extra dividend.

CLIENTELE Effect: There are some investor who prefer high pay-out (Low Retention) & there are one shareholder which prefer low pay-out (high retention). Given the diversity of investor and that of dividend policy of company, investor tend to invest in those companies whose dividend Policy match their Preference. This is known as clientele effect.

- **Issue of Bonus** shares is another way of distribution of profit among the shareholders, are also known as scrip dividend. Or issue of bonus share by capitalization of profit.
- Since, the number of shares Inc. as a result of bonus shares, the **Book value** and the **earning per share of the companies will decrease.**
- **A share split** is a method to increase the number of outstanding shares through a proportional reduction in the par value of the share. A share split affects only the par value and the number of outstanding shares; the shareholders' total funds remain unaltered.

• **Reverse Split** - Under the situation of falling price of a company's share, the company may want to reduce the number of outstanding shares to prop up the market price per share. The reduction of the number of outstanding shares by increasing per share par value is known as a reverse split. For example, a company has 20 lakh outstanding shares of Rs.5 par value per share. Suppose it declares a reverse split of one-for-four. After the split, it will have 5 lakh shares of Rs.20 par value per share. The reverse split is sometimes used to stop the market price per share below a certain level, say, Rs.10 per share which is the par value of most shares in India. The reverse split is generally an indication of financial difficulty, and is, therefore, intended to increase the market price per share.

SUMMARY:

- ❖ **Walter model** and **Gordon model** argue that a higher dividend payout hurts (benefits) Shareholders when the return on invested capital is greater (lesser) than the cost of capital.
- ❖ According to the **traditional position** a generous dividend policy enhances stock prices.
- ❖ Miller and Modigliani (MM) have advanced the **dividend irrelevance hypothesis** that says that the value of the firm is independent of its dividend policy.
- ❖ The critics of MM agree that, under the assumptions made by MM dividends are irrelevant. They, however, dispute the validity of the 'dividend irrelevance' theorem by challenging the assumptions of MM.
- ❖ The **radical position** argues that a low dividend payout ratio increases share value.
- ❖ The plausible reasons for paying dividends are investor preference, information signaling, and clientele effects. The dubious reasons for paying dividends are the bird in hand fallacy and the existence of temporary cash.
- ❖ Dividend policy involves two issues: (i) what should be the long-term **payout ratio?** (ii) How stable should the dividends be over time?
- ❖ The dividend payout ratio depends on factors such as funds requirements, liquidity, shareholder preferences, control and taxes.
- ❖ Most firms use the **residual dividend policy** that sets the long-run payout ratio in such a way that equity requirements are met with retained earnings.
- ❖ According to the **Lintner model**, firms try to reach the target payout ratio gradually over a period of time because shareholders prefer a steady progression in dividends.
- ❖ **Bonus shares** are share issued to existing shareholders when apportion of reserves and surplus is capitalized
- ❖ In a **stock split**, the par value per share is reduced and the number of share is increased.
- ❖ Under a **share buyback** plan, a firm buys back some of its outstanding shares. Shares buybacks are subject to certain regulations.
- ❖ There are several motivations of justifications for share buyback: efficient allocation of resources, price stability, tax advantage, voluntary character, and no implied commitments. Two common objections to share buybacks are: (i) when a buyback takes place there is an unfair advantage. (ii) Corporate insiders may resort to manipulation.

Lintner Model: supports the view on stability of Dividend.

$$D_1 = D_0 + \left(EPS \times \frac{D}{P} \text{Ratio} - D_0 \right) A.F$$

CLIENTELE Effect: There are some investor who prefer high pay-out & there are some sh. Holder which prefer low pay-out (High Retention). Given the diversity of

investor & that of Dividend policy of company, investor tend to invest in those companies whose div. policy make their preference. This is known as clientele effect.

> Issue of **Bonus shares** is another way of distribution of profit among the share holders, are also known as stock dividend or issue of bonus share by capitalisation of profit.

> Information Content: The Dividend may therefore be taken as an important communication tool. Div. payment से Investor Co. के बारे में expectation लगाते हैं। Hence Informational content is an element of Dividend Policy.

Since, the No. of shares inc. as a result of bonus shares, the book value and the earning per share of the companies will decrease.

Dividend Types

1. Cash Dividends:

Cash dividends are, by far, the most popular form of dividend. In cash dividends, stockholders receive cheques for the amounts due to them. Cash generated by business earnings is used to pay cash dividends. Sometimes, the firm may issue additional stock to use proceeds so derived to pay cash dividends or bank may be approached for the purpose. Generally, stockholders have strong preference for cash dividends.

2. Stock Dividends:

Stock dividends rank next to cash dividends in respect of their popularity. In this form of dividends, the firm issues additional shares of its own stock to the stockholders in proportion to the number of shares held in lieu of cash dividends. The payment of stock dividends does not affect cash and earning position of the firm nor is ownership of stockholders changed.

3. Scrip Dividend: *Short term maturity*

Scrip dividend means payment of dividend in scrip or promissory notes. Sometimes companies need cash generated by business earnings to meet business requirements or withhold the payment of cash dividend because of temporary shortage of cash.

In such cases the company may issue scrip or notes promising to pay dividend at a future date. The scrip usually bears a definite date of maturity. Sometimes maturity date is not stipulated and its payment is left to the discretion of Board of Directors. Scrip may be interest bearing or non-interest bearing. Such dividends are relatively scarce.

4. Bond Dividend:

As in scrip dividends, dividends are not paid immediately in bond dividends; instead company promises to pay dividends at future date and to that effect issues bonds to stockholders in place of cash. The purpose of both bond and scrip dividends is alike, i.e. postponement of dividend payment.

Difference between the two is in respect of date of payment and their effect is the same. Both result in lessening of surplus and in addition to the liability of the firm. The only difference between bond and scrip dividends is that the former carries longer maturity date than the latter.

5. Property Dividends:

In property dividends, Company pays dividends in the form of assets other than cash. Generally, assets that are superfluous for the Company are distributed as dividends to

stock-holders of subsidiaries owned by the Company may use its products to pay dividends. Securities of this form of dividend is not vogue in India. Company may also take the form of property dividends.

MULTIPLE CHOICE QUESTION

1. **Walter's Model suggests for 100% D/P Ratio when:**

- a) $K_e = r$
- b) $K_e < r$
- c) $K_e > r$
- d) $K_e = 0$

2. **If a firm has $K_e < r$, the Walter's Model suggests for:**

- a) 0% Payout
- b) 100% Payout
- c) 50% Payout
- d) 25% Payout

3. **Walter's Model suggests that a firm can always increase the value of the share by:**

- a) Increasing Dividend
- b) Decreasing Dividend
- c) Constant Dividend
- d) None of the above.

4. **'Bird in hand' argument is given by:**

- a) Walter's Model
- b) Gordon's Model
- c) MM Model
- d) Residuals Theory

5. **Residuals Theory argues that dividend is a:**

- a) Relevant Decision
- b) Active Decision
- c) Passive Decision
- d) Decision

6. **Dividend irrelevance argument of MM Model is based on:**

- a) Issue of Debentures
- b) Issue of Bonus Share
- c) Arbitrage
- d) Hedging

7. **Which of the following is true for MM Model?**

- a) Share price goes up if dividend is paid
- b) Share price goes down if dividend is not paid
- c) Market value is unaffected by Dividend policy
- d) All of the above.

8. **Which of the following stresses on investor's preference for current dividend than higher future capital gains?**

- a) Walter's Model
- b) Residuals Theory
- c) Gordon's Model
- d) MM Model.

9. **MM Model of Dividend irrelevance uses arbitrage between:**

- a) Dividend and Bonus
- b) Dividend and Capital Issue
- c) Profit and Investment
- d) None of the above.

10. **If $K_e = r$, then under Walter's Model, which of the following is irrelevant?**

- a) Earnings per share
- b) Dividend per share
- c) D/P Ratio
- d) None of the above.

11. **MM Model argues that dividend is irrelevant as**

- a) the value of the firm depends upon earning power
- b) the investors buy shares for capital gain
- c) dividend is payable after deciding the retained earnings
- d) dividend is a small amount

12. which of the following represents passive dividend policy

- a) that dividend is paid as a % of EPS
- b) that dividend is paid as constant amount
- c) that dividend is paid after retaining profits for investment.
- d) all of the above.

13. In case of Gordon's Model, the MP for zero payout is zero, it means that:

- a) Shares are not traded
- b) Shares available free of cost
- c) Investors are not ready to offer any price
- d) None of the above.

14. Gordon's Model of dividend relevance is same as

- a) No-growth Model of equity valuation
- b) Constant growth Model of equity valuation
- c) Price-Earning Ration
- d) Inverse of Price Earnings Ration

15. If 'r' = 'ke', than MP by Walter's Model and Gordon Model for different payout ratios' would be:

- a) Unequal
- b) Zero
- c) Equal
- d) Negative

16. Dividend Payout Ratio is:

- a) $PAT \div Capital$
- b) $DPS \div EPS$
- c) $Pref. Dividend \div PAT$
- d) $PREF. Dividend \div Equity Dividend$

17. Dividend declared by a company must be paid in:

- a) 20 days
- b) 30 days
- c) 32 days
- d) 42 days

18. Dividend Distribution Tax is payable by:

- a) Shareholders to Government
- b) Shareholders to Company
- c) Company to Government

d) Holding to Subsidiary Company

19. Shares of face value of Rs. 10 are 80% paid up. The company declares a dividend of 50%. Amount of dividend per share is:

- a) Rs. 5
- b) Rs. 4
- c) Rs. 80
- d) Rs. 50

20. Which of the following generally not result in increase in total dividend liability?

- a) Share-split
- b) Right Issue
- c) Bonus Issue
- d) All of the above.

21. Dividends are paid out of

- a) Accumulated Profits
- b) Gross Profit
- c) Profit after Tax
- d) General Reserve

22. In India, if Dividend on equity shares is not paid within 30 days it is transferred to Investors Education Fund in:

- a) 2 days
- b) 3 days
- c) 4 days
- d) 7 days

23. Every company should follow:

- a) High Dividend Payment
- b) Low Dividend Payment
- c) Stable Dividend Payment
- d) Fixed Dividend Payment

24. 'Constant Dividend Per Share' Policy is considered as:

- a) Increasing Dividend Policy
- b) Decreasing Dividend Policy
- c) Stable Dividend Policy
- d) None of the above.

25. Which of the following is not a type of dividend payment?

- a) Bonus Issue
- b) Right Issue
- c) Share-Split
- d) Both (b) and (c)

26. Which of the following is an element of dividend policy?

- a) Production capacity
- b) Change in Management
- c) Informational content
- d) Debt service capacity

27. Stability of dividend policy means that

- a) Same amount of dividend be paid every year
- b) Dividends be paid regularly two-three time in a year
- c) Extra dividend be paid every year
- d) There need not be much variation in dividend payment over years.

28. Stock split is a form of:

- a) Dividend Payment
- b) Bonus Issue
- c) Financial restructuring

d) Dividend in kind

29. In stock dividend,

- a) Authorized capital always increase
- b) Paid up capital always increases
- c) Face value per share decreases
- d) Market price for share decrease.

30. Which of the following is not considered in Linter's Model?

- a) Dividend payout ratio
- b) Current EPS
- c) Speed of Adjustment
- d) Preceding year EPS

$$DPS = \text{of } PY + POR + EPS + AR$$

31. Which of the following is not relevant for dividend payment for year?

- a) Cash flow position
- b) Profit position
- c) Paid up capital
- d) Retained Earnings

Answers :

1-c	2-a	3-d	4-b	5-c	6-c	7-c	8-c	9-b	10-c
11-a	12-c	13-c	14-b	15-c	16-b	17-b	18-c	19-b	20-a
21-c	22-d	23-c	24-c	25-d	26-c	27-d	28-c	29-d	30-d
31-d									

$r = \text{Co's return}$

$k_e = \text{Cap Rate / Sh. return}$

Relevant
↓
Market value
Active

Irrelevant
↓
Earning per share
Passive

Growth firm \rightarrow 0% DP, mP, mP, mP

Decline firm \rightarrow 100% DP, mP, mP

CHAPTER 9

ASSET SECURITIZATION

The conversion of existing or future cash in flows of any person into tradable security which then may be sold in the market. The cash inflow from financial assets such as mortgage loans, automobile loans, trade receivables, credit card receivables, fare collections become the security against which borrowings are raised.

- Securitization therefore, is a process by which the future cash inflows of an entity (originator) are converted and sold as debt instruments called pay through or pass through certificates with a fixed rate of return to the holders of beneficial interest. The originator of a typical securitization transfers a portfolio of financial assets to a Special Purpose Vehicle (SPV), commonly a trust.
- The SPV is basically funded by investors. In return for the transfer, the originator gets cash up-front on the basis of a mutually agreed valuation of the receivables. The transfer value of the receivables is done in such a manner so as to give the lenders a reasonable rate of return.

HOW IS IT DIFFERENT FROM FINANCING THROUGH STRAIGHT BOND OR DEBENTURE ISSUE?

- In a straight bond or debenture issue, in the event of the company going bust, the investors would have a tough time getting their funds back, if at all.
- However, if one invests in a securitized instrument, investors are assured of interest payments even if the finance company goes bust, as the securitized loans are separated from the finance company's books through a SPV which holds these assets.
- At the same time, as securitized instruments can be traded, the investor is provided with liquidity as the securitized bond can be sold in the market.

WHAT ARE BENEFITS TO THE ISSUER?

The issuer can raise funds of longer maturities than he would have been able to through the conventional routes like bonds or term loans.

WHAT CAN BE SECURITISED?

All assets that generate funds over time can be securitised. These include

- Repayments under car loans,
- money due from owners of credit cards,
- airline ticket sales,
- toll collections from roads or bridges, and
- sales of petroleum-based products from oil refineries.

In fact, artists have even raised funds by securitizing the royalty they will get out of future sales of their records.

What is a Special Purpose Vehicle (SPV)?

An SPV is an entity specially created for doing the securitization deal. It invites investment from investors, uses the invested funds to acquire receivables of the originator and then uses the realizations from the receivables transferred to it to pay the investors, thereby giving them a reasonable return. An SPV may be a trust, corporation, or any other legal entity. Its activities are

- > Holding title to transferred financial assets
- > Issuing beneficial interest
- > Collecting cash proceeds from assets held, reinvesting proceeds in financial instruments pending distribution to the holders of beneficial interests and otherwise servicing the assets held.
- > Distributing proceeds to the holders of the beneficial interests,

What are Pass Through Certificates ?

A Pass Through Certificate is an instrument which signifies transfer of interest in the receivable in favor of the holder of the Pass Through Certificate. The investors in a pass through transaction acquire the receivables subject to all their fluctuations, prepayment etc. The material risks and rewards in the asset portfolio, such as the risk of interest rate variations, risk of prepayments, etc. are transferred to the investors.

The features of Pass Through Certificate

- > Investors get a proportional interest in pool of receivables
- > Collections month after month are divided proportionally
- > All investors receive proportional payments - no slower or faster repayment, though in some cases, some investors may be senior over others
- > No reinvestment of cash collected by the SPV

What are Pay Through Certificates?

In case of Pay Through Certificates, the SPV instead of transferring undivided interest on the receivables issues debt securities such as bonds, repayable on fixed dates, but such debt securities in turn would be backed by the mortgages transferred by the originator to the SPV.

The SPV may make temporary reinvestment of cash flows to the extent required for bridging the gap between the date of payments on the mortgages along with the income out of reinvestment to retire the bonds. Such bonds were called mortgage - backed bonds.

What are the advantages of securitization for the Originator?

- > Help raise funds at a rating higher than what is the actual rating of the originator.
- > Securitization deal is that the securitized assets (receivables) go off the balance sheet of the originator. This is especially helpful in the banking industry which has to adhere to capital adequacy norms.
- > Besides, the asset portfolio (receivables) is liquidated releasing cash which in turn reduces the need for demand and time liabilities that are subject to statutory reserves in case of banks.
- > Another advantage is that small investors can profit from such deals since they can invest small sums in the SPV and acquire beneficial interest.
- > Securitization keeps the other traditional lines of credit undisturbed. Hence, it increases the total financial resources available to the firm.

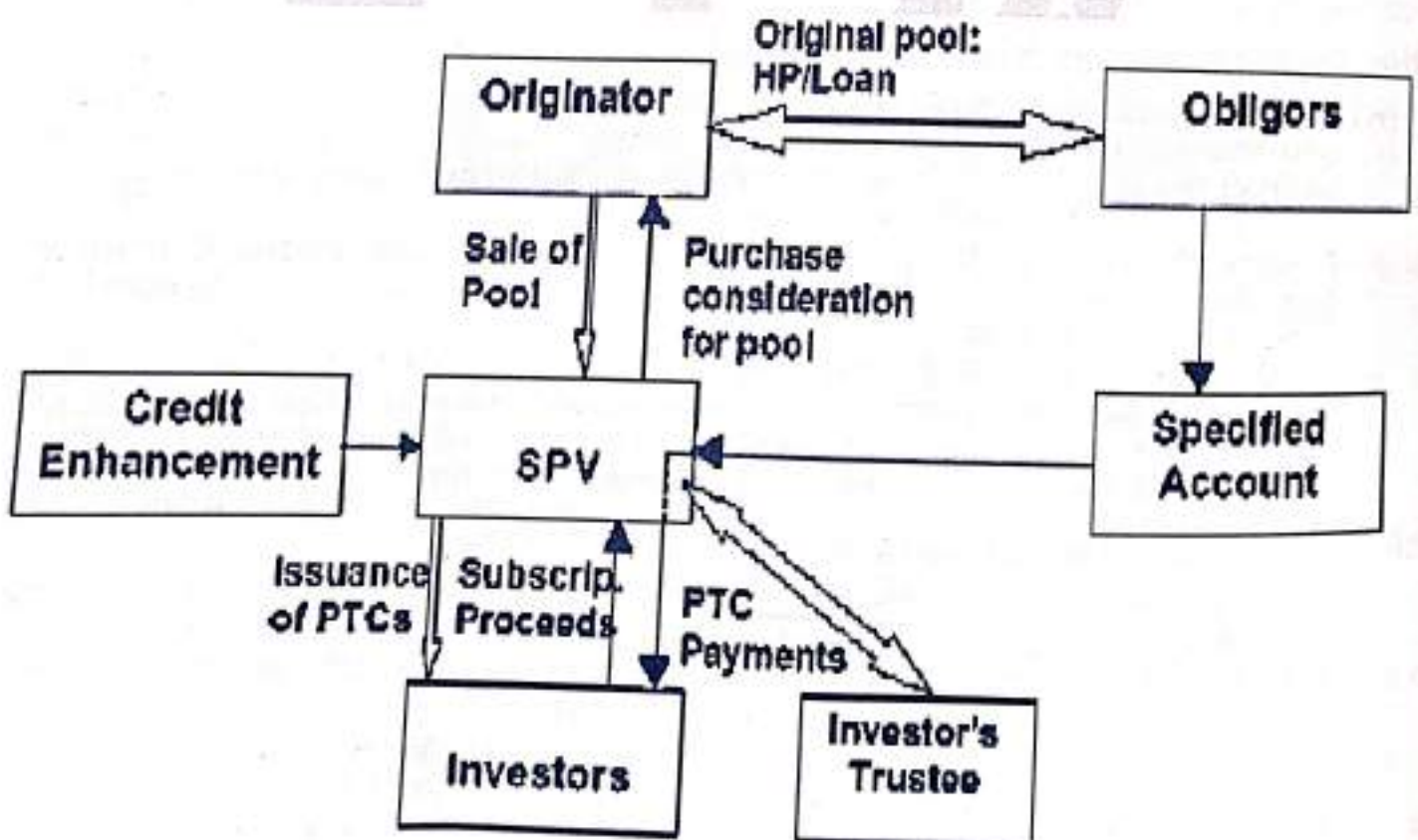
What are the demerits of securitization for the Originator ?

- > Since securitization is off-balance sheet funding, the true picture of the originators' financial position is not clear merely from the balance sheet.
- > The best assets of the company may be transferred to the SPV and the company may be left with sub-standard assets on its books.
- > The greatest demerit of securitization is its opaqueness. A company may have taken huge liabilities but that may not be apparent from the balance sheet or conventional financial statements of the company. This is especially true where the securitization is with recourse i.e. if the receivables which have been securitized to the SPV become bad, the SPV will have the right to recover the dues from the originator.

- The originator may have a lot of contingent liabilities without anyone being aware of it. The case of the collapse of Enron is too recent in memory to forget the problems associated with off-balance sheet funding.

Process of Securitization of Receivables

- 1) The originator determines which assets he wants to securities for raising funds.
- 2) The SPV is formed.
- 3) The SPV is funded by investors and issues securities to the investors.
- 4) The SPV acquires the receivables under an agreement at their discounted value.
- 5) The servicer for the transaction is appointed, normally the originator.
- 6) The debtors are /are not notified depending on the legal requirements.
- 7) The servicer collects the receivables, usually in an escrow mechanism, and pays off the collection to the SPV.
- 8) The SPV either passes the collection to the investors, or reinvests the same to pay off to investors at stated intervals.
- 9) In case of default, the servicer takes action against the debtors as the SPV's agent.
- 10) When only a small amount of outstanding receivables are left to be collected, the originator may clean up the transaction by buying back the outstanding receivables.
- 11) At the end of the transaction, the originator's profit, if retained and subject to any losses to the extent agreed by the originator, in the transaction is paid off.



- Originator sells pool of lease / hire purchase / loan receivables to a Special Purpose Vehicle
- SPV issues Pass Through Certificates (PTCs) to investors to raise funds for payment of purchase consideration to the Originator
- PTCs represent the beneficial interest of investors in the pool of receivables and credit enhancement
- Investor's Trustee would be appointed to manage the transaction and act in the interest of the investors
- Originator would be appointed as the servicer to continue to collect moneys from the Obligors and monitor the underlying contracts.
- Specified Account would be set up where collections from the Obligors would be deposited by the service on a monthly basis.

Disclosures required to be made by the Originator

The following disclosures are to be made in financial statements regarding securitization deals :-

- Accounting policies for measuring the retained interest and valuation of assets transferred to the SPV
- The nature of securitization (eg recourse or non-recourse, etc)
- Cash proceeds
- Gain or loss from securitization of financial assets
- Key assumptions for measuring the fair value of retained interest at the time of securitization
- Cash flows between the SPV and the transferor
- Securitization, no doubt opens up new avenues of funding for entities in need on liquidity. However, it is a double edged sword. If one does not exercise adequate caution, one may find that the contingent debt burden is too high to survive.

SECURITISATION IN INDIA: OBSTACLES AND FUTURES

Securitization of assets has been immensely successful in developed capital markets. In India, however, very few transactions of small value have taken place so far. Several obstacles are hindering the growth of securitization in India:

- Stamp duty on transfer of assets by originator to the SPV, as high as up to 13%.
- If PTC issued in form of a receipt, it is not transferable by endorsement & delivery; if PTC is issued in form of a promissory note it will attract stamp duty.
- Ambiguity on whether PTCs can be regarded as negotiable promissory notes.
- Unresolved tax issues - who will be taxed?
- Weak foreclosure laws failing to provide adequate comfort to investors in ABSs.

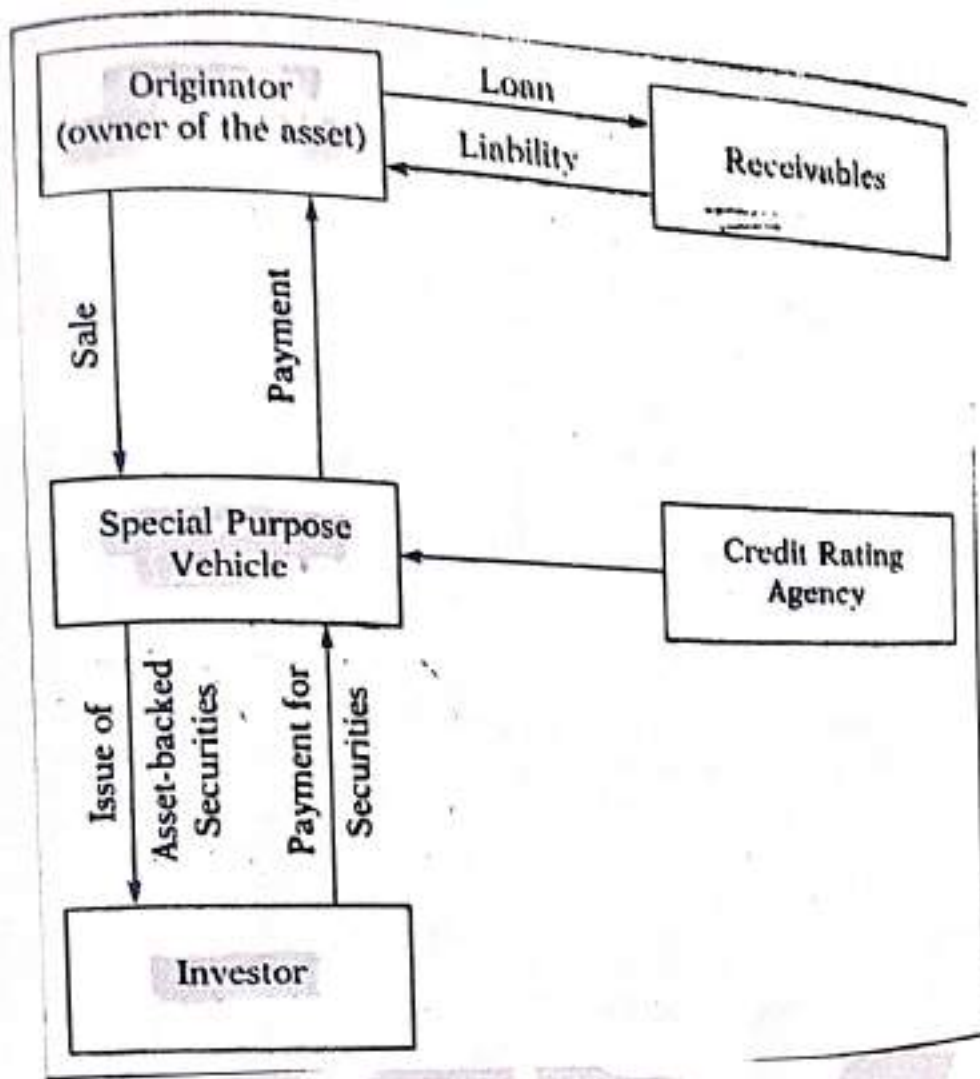
During recent past, several financial innovations have come up to exist. Securitization is one of them. Securitization is a process of converting some assets into securities and thereby getting finance. The process of securitization helps raising funds. In securitization, illiquid assets of a corporate are transformed into more liquid assets through the issue of some financial investment (securities). The assets so transformed disappear from the balance sheet of the owner and are funded (paid) by the investors through the financial instrument. These financial instruments are backed by the expected future cash flows.

When a lender finances loans to borrowers, the former receives repayment and interest over a period of years. This limits the capacity of the lender to give fresh loans. In order to recover the liquidity, he can pool the loans together and sell his right to receive future cash flows. This is called the process of securitization. The lender gets the consideration for securitization up-front. The concept and process of securitization can be explained with the help of an example. Say, XYZ Ltd. has receivables of Rs.10,00,000 realizable after a time gap in one lump sum or several periodic receipts. The company XYZ Ltd., known as the Originator, transfers these receivables to an intermediary, called Special Purpose Vehicle (SPV) for cash. The payment in cash would be equal to the discounted value of receivables. The difference between the discounted value and the par value of receivable will be profit for the SPV. The SPV will issue the marketable securities which are backed by the receivables. The pricing of these instruments is based on the quality of the assets.

Parties to the Securitization Transaction. There are 3 primary parties to the securitization process. These are:

- I. Originator:** It is the owner of the assets which is to be securitized. It may be called the initiator of the process. It sells its assets, transfers legal and beneficial rights and generates the cash from such sale.
- II. SPV:** It is the intermediary to whom the assets are sold. It may be a trust or a company, specially created for this purpose and has existence, independent of the originator. SPV must be capable of acquiring and holding assets. It is engaged only in securitization business. The SPV breaks the loan into convenient amounts and sells these to investors. The SPV works only as a conduct and the investors of SPV have undivided interest in the asset securitized which appears in the balance sheet of the SPV.
- III. Investors.** They buy the instruments issued by the SPV. Investors may be individuals or institutional such as mutual funds, banks, etc. When investors buy the instruments, they acquire participating interest in the total pool of receivables.

Other parties involved in a securitization transaction are the receivables (who are transferred to the SPV), the credit rating agency (involved in the credit rating of receivable), etc. The securitization process has been depicted in figure:



Following points are worth noting about securitization:

- The underlying asset (receivables) are created by the originator by extending loans. The loans are repaid by the receivables to the originator, thus creating an asset for the latter.
- Originator should select the receivables to be securitized keeping in view the homogeneity in nature, size and conditions of receivables.
- A servicer for the transaction may be appointed to administer the entire scheme.
- The receivables may or may not be notified about the scheme.
- The originator collects the receivables on behalf of the SPV, keeps the money in an escrow account from where the money can be withdrawn by the SPV.
- Money so collected by the SPV can be passed on to the investors or may be invested in some other securities.
- The SPV issues an instrument to the investors. The instrument is known as Asset-backed Security or Pay/Pass Through Certificate (PTCs). The PTCs give investors a charge against the securitized asset, while the assets themselves are owned by the SPV. The PTCs may be issued as a debt, certificate of beneficial ownership or other instrument. The PTCs may be guaranteed by the bank.
- The SPV will devise a separate scheme for each financial asset taken over. Qualified institutional buyer may invest in it.

In nutshell, securitization is a process of separating future receivables from the balance sheet of the asset holder and transferring these receivables to an SPV which sells them to different investors in form of marketable securities. Securitization provides finance or refinancing facility. If, instead of securitization, borrowing route is adopted, it would unnecessarily affect the debt-equity ratio. Moreover, rate of interest in borrowing depends upon the credit rating of the asset holder (originator), while in case of securitization, rate of interest on PTC depends upon the credit rating of the SPV.

Securitization is different from factoring. In case of factoring, only the existing receivables are acquired. These receivables are accrued but not due for payment. However, in case of securitization, even future receivables can be acquired (securitized).



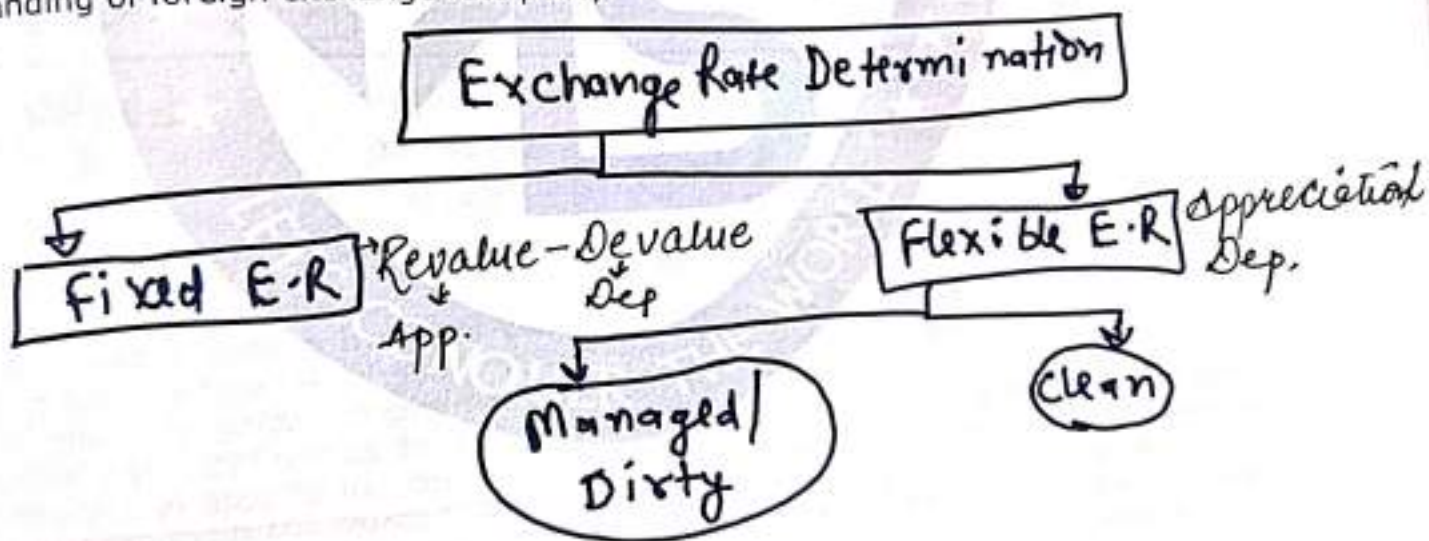
CHAPTER 10

INTERNATIONAL MONETARY AND FINANCIAL SYSTEM

Introduction: The international financial and monetary system is defined as the institutional frameworks within which international payments are made, national currencies are exchanged and cross currency exchange rates are determined. It is a complex system consisting of policies, institutions, practices, regulations and mechanisms that determine foreign exchange rates. It includes the collective financial institutions that facilitate and regulate the flow of investment and capital funds worldwide. Its key players include national stock exchanges, commercial banks, central banks, and finance ministries, in addition to specialized institutions such as the Bank for International Settlements (BIS), International Monetary Fund (IMF) and the World Bank. It has two broad components: **the foreign exchange market** and **the international capital market**.

Basics of Foreign Exchange

A **currency** is a form of money and a unit of exchange of currencies between buyers and sellers for cross-border transactions of trade and investment. There are two major aspects of exchange rates that are of relevance in the understanding of foreign exchange rate policy.



- Exchange Rate Determination**
It deals with the **manner** in which exchange rates are determined i.e. how the price of one currency versus another is fixed. Specifically, it deals with the concepts of fixed, flexible/floating, managed and pegged exchange rates.
 - Fixed Exchange Rate:** It is said to be **fixed** if the monetary authority or the central bank of the country determines its value, in response to certain policy requirements.
 - Flexible/Floating Exchange Rate:** It is said to be **flexible/floating** if the free market and supply of the foreign exchange market determine its value.

- **Pegged Exchange Rate:** The value of one currency is tied or fixed to the value of another currency or gold. Movements of exchange rates are known as **devaluation** or **depreciation** (fall) and **revaluation** or **appreciation** (rise).

Devaluation of a currency: Under the **fixed exchange rate system**, the devaluation of a currency refers to a decline in the value of domestic currency in terms of the foreign currency. For example, if the value of the rupee falls from INR 40 per USD to INR 45 per USD, the rupee is said to have undergone devaluation.

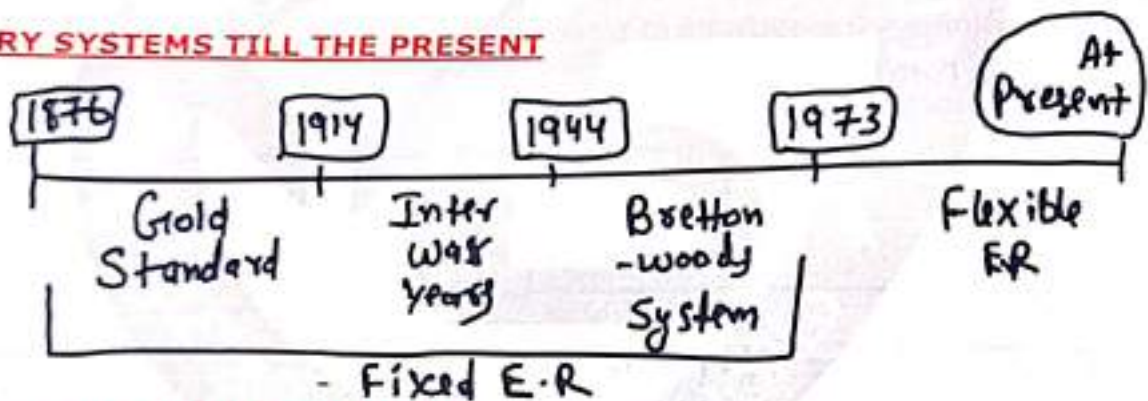
Revaluation of a currency: Under the **fixed exchange rate system**, the revaluation of a currency refers to an increase in value of domestic currency in terms of the foreign currency.

Depreciation refers to a **fall** in value of domestic currency in terms of a foreign currency under a **flexible or floating exchange rate** system and **appreciation** is the **increase** in value of domestic currency in terms of foreign currency under a **flexible or floating exchange rate** system.

2. Currency Convertibility

It deals with the **purpose** for which currencies need to be exchanged for each other. **Currency convertibility** refers to the freedom to exchange domestic currencies for foreign currencies for a given purpose and at a given conversion rate.

MONETARY SYSTEMS TILL THE PRESENT



1. The Gold Standard (1876-1914): The gold standard gained acceptance as an international monetary system during the 1870s. Under this system, each country pegged its money to gold. The government of each country using the gold standard agreed to buy or sell gold on demand at its own fixed parity rate. The relationship between countries using gold was determined by the amount of gold of a given quality that backed the respective currency. For example, before 1914, the British pound sterling contained 113.066 grains of pure gold and the United States dollar contained 23.22 grains. Thus, the gold content of the pound was 4.866 times greater than that of the dollar. The exchange rate at the time was logically GBP 1 = USD 4.866.

The limited supply and uneven distribution of gold prevented its widespread use in international transactions while also serving as reserves for a nation's monetary system. This led to the abandonment of the gold standard in 1914. After World War I, the gold standard was re-established but the effects of the Great Depression of the 1930s led to its final abandonment by Britain in 1931, the United States in 1933 and in all other countries by 1937.

2. The Inter-war Years and World War II (1914-44)

During World War I and the early 1920s, currencies were allowed to fluctuate over fairly wide ranges in terms of both gold and other currencies. This created arbitrage opportunities for international speculators. Such fluctuations hampered world trade in

the 1920s, thereby, contributing to the Great Depression in the 1930s. The United States returned to a modified gold standard in 1934, when the US dollar was devalued to USD 35 per ounce of gold from the USD 20.67 per ounce of gold. From 1934 to the end of World War II, exchange rates were determined by each country currency's value in terms of gold. During World War II and its immediate aftermath, many of the main trading currencies lost their convertibility into other currencies. The dollar was the only major trading currency that continued to be convertible.

3. The Bretton Woods System (1944-1973)

Under the provisions of the **Bretton Woods Agreement signed in 1944**, the government of each member country pledged to maintain a fixed or pegged exchange rate for its currency in terms of dollar or gold. Since one ounce of gold was set equal to USD 35, fixing a currency's gold price was equivalent to setting its exchange rate relative to the dollar. For example, the Deutsche mark was set equal to 1/140 of an ounce of gold, meaning it was worth USD 35, which was equivalent to DM 140. Participating countries agreed to try to maintain the value of their currencies within a ± 1 per cent band by buying and selling foreign exchange or gold as needed. A devaluation of up to 10 per cent was allowed without formal approval by IMF. A devaluation of more than 10 per cent was permitted only if the IMF agreed that a country's balance of payments was in a **"fundamental disequilibrium (it is consistent balance of payments deficit reaching an unmanageable level)"**. In **December 1971**, the major trading nations of the world signed the **Smithsonian Agreement**, in **Washington DC**, according to which the United States agreed to devalue the dollar to USD 38 per ounce of gold. Furthermore, the allowed floating band around par value was expanded from ± 1 per cent to ± 2.25 per cent. By late February 1973, a fixed rate system appeared no longer feasible given the speculative flows of currencies.

Concluded Points:

- The value of members' currency set in terms of gold or US dollar, meaning that the exchange rate was fixed.
- Provision for adjustable pegs, meaning that a country could devalue its currency to remedy its continued balance of payments problem.
- Members' currencies were convertible into the US dollar and the US dollar was convertible into gold. This means the dollar was as strong as gold.

4. The Post-Bretton Woods System (1973-Present)

4.1 Floating - Independent and managed

In a floating rate system, it is the market forces that determine the exchange rate between two currencies. The system of **managed floating** involves intervention by the monetary authorities of the country for the purpose of exchange rate stabilization. The process of intervention interferes with the market forces and so it is known as **"dirty"** floating as against independent floating which is known as **"clean"** floating. The purpose of independent floating system is to moderate the rate of change and to prevent undue fluctuation in the exchange rate while the purpose of managed floating system is to establish a level for the exchange rate.

Intervention is direct and indirect: When the monetary authorities stabilize the exchange rate through changing **interest rates**, it is **indirect** intervention. When monetary authorities purchase and sell foreign currency in the domestic market, it is **direct** intervention. When they sell foreign currency, its supply increases and domestic currency appreciates against foreign currency. When they purchase foreign currency, its supply decreases and domestic currency tends to depreciate vis-à-vis the foreign

4.2 Pegging of Currency

Normally, a developing country pegs its currency to a strong currency or to a currency with which it conducts a very large part of its trade. Pegging involves fixed exchange rate. A currency can be pegged to a single currency, a basket of currency and SDR. Sometimes, pegging is a legislative commitment that is often known as the currency board arrangement. The currency board pegs the domestic currency to the currency of another nation and buys and sells the foreign currency reserves in order to maintain the parity value. Again, it is a fact that the exchange rate is fixed in case of pegging, yet it fluctuates within a narrow margin of at most ± 1.0 per cent around the central rate. On the contrary, in some countries, the fluctuation band is wider and this arrangement is known as "pegged exchange rates within horizontal bands".

4.3 Crawling Peg

It is a hybrid of fixed-rate and flexible rate systems. It is an automatic system for revising the exchange rate, setting a par value around which the rate can vary up to a given percentage point. The par value is revised regularly according to a formula determined by the authorities. Once the par value is set, the central bank intervenes whenever the market value approaches a limit point. For example, the par value of the Indian rupee is 30 rupees for one USD and that it can vary ± 2 per cent around this rate between INR 30.60 and INR 29.40. If the dollar approaches the rate of INR 30.60, the central bank intervenes by buying rupees and selling dollars. If the dollar approaches INR 29.40, the central bank intervenes by selling rupees and buying dollars. Suppose, the dollar was hovering around 30.60, the government might then set the new par value at 30.60 with new limit points at INR 31.21 and INR 29.99.

4.4 Target Zone Arrangement

The target-zone arrangement is a joint float system cooperatively arranged by a group of nations sharing some common interests and goals. In a target zone arrangement, the intra-zone exchange rates are fixed. An example of such an arrangement was found in European Monetary Union (EMU) before coming in of Euro. Under this system, countries adjust their national economic policies to maintain their exchange rates within a specific margin around agreed-upon, fixed central exchange rates.

Exchange Rate Quotations

The value of one currency in the units of another is called exchange rate. The demand and supply of currencies lead to fluctuations in the exchange rates of currencies.

1. Spot and Forward Quote

The amount agreed for foreign exchange transaction may be delivered either immediately (spot) or at a later date (forward).

- **Spot rate**: Spot rate is the price agreed for purchase or sale of foreign currency with delivery and payment to take place not more than two business days after the day the transaction has been concluded.
- **Forward rate**: Forward rate is the price at which the foreign exchange rate is quoted for delivery at a specified later date. The exchange rate is fixed at the time of entering the contract.

If the forward rate is lower than the spot rate, it will be a case of **forward discount** whereas if the forward rate is higher than the spot rate, it will be a case of **forward premium**.

2. Direct and Indirect Quote

A **direct quote** gives the home currency price of a certain quantity of foreign currency, usually one unit or 100 units. If India quotes the exchange rate between the rupee and USD directly, the quotation will be written as Rs. 45/US\$.

An **indirect quote** gives the value of one unit of home currency in terms of foreign currency. If India adopts indirect quote, the banks in India will quote the exchange rate as US\$ 0.022/Rs. $1 \text{ ₹} =$

3. Buying and Selling Rates

Buying rate is called **bid rate** and **selling rate** is called **ask rate** or **offer rate**. Bid rate is always given first, which is followed by the ask rate quote. Suppose, the rupee-US dollar rate is Rs. 45.00-45.30/US\$, the former is the buying rate and the latter is the selling rate. The former is the rate at which the banks purchase a foreign currency from the customer. The selling rate is the rate at which the banks sell any foreign currency to their customers. Since the banks need some profit in these transactions, the selling quote is higher than the buying quote. The difference between these two quotes forms the banks' profit and it is called **spread**.

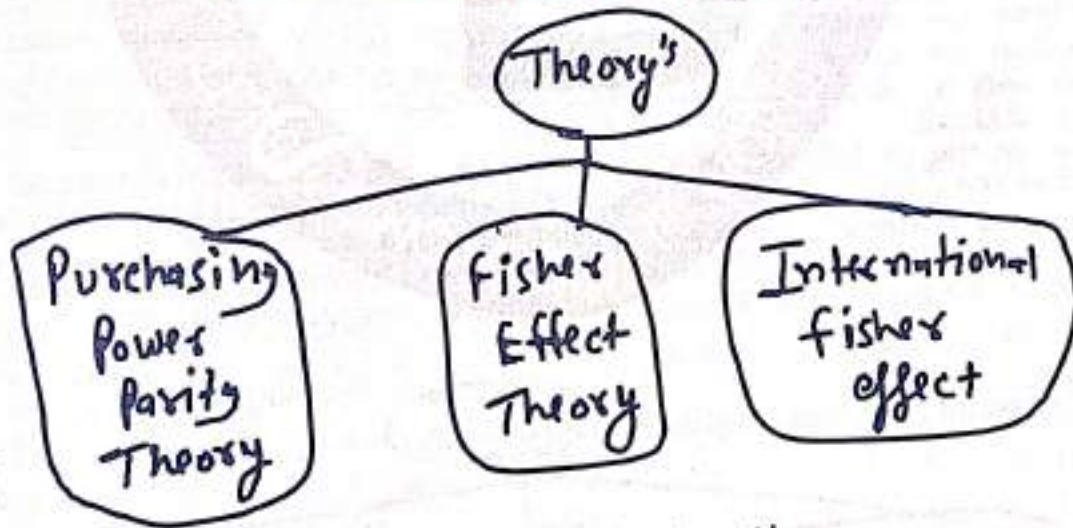
4. Cross Exchange Rates

Cross rate is the exchange rate between two currencies determined via a common currency. For example, value of Indian rupees in British pounds is determined as:

Value of an Indian rupee in US\$ / value of a British pound in US\$ or (39.5075/0.5106)
= Rs. 77.3746 per British pound

Thus, exchange rate for 1 British pound equals Rs. 77.3746.

Determination of Exchange Rates



1. Purchasing Power Parity Theory *Gaustav Cassell*

Assumption:

- (a) Non-existence of tariffs and other trade barriers and
- (b) Zero cost of transport.

The **law of one price**, the simplest concept of purchasing power parity (PPP), states that identical goods should cost the same in all nations. Therefore, the prices of goods sold in different countries, converted to a common currency, should be identical. The equilibrium price rate between two currencies would be equal to the ratio of price levels in two countries as defined:

Similar Goods \rightarrow Rate \rightarrow Same

If difference \rightarrow due to inflation

US \rightarrow 20\$

India \rightarrow ₹ 1000, ₹ 1500

₹ 37 = ₹ 75

Inflation, Curr. Depreciate

Price
 India USA
 ₹ 1000 \$ 20 $\Rightarrow 1000 \text{ ₹} = 20 \text{ \$}$
 $\Rightarrow 1 \text{ ₹} = 50 \text{ ₹}$

$$S_e = P_x / P_y$$

S_e indicates spot exchange rate, and P_x and P_y indicate the price level in two different countries x and y.

It is normally the **inflation rate** differential between two countries that influences the exchange rate between their currencies. The influence of inflation rate finds a suitable explanation in the PPP theory.

2. Fisher Effect Theory

Establishing a relationship between the inflation and interest rates, the Fisher Effect theory states that the nominal interest rate 'r' in a country is determined by the real interest rate 'R' and the expected inflation rate 'I' as follows:

$$\text{Nominal interest rate} = \text{Real interest rate} + \text{Expected Inflation Rate}$$

constant

NOMINAL interest rate is used to assess exchange rate movements as it includes interest and inflation rates, both of which affect exchange rates.

3. International Fisher Effect (IFE)

It is a combination of the conditions of the PPP theory and Fisher's effect. The PPP theory suggests the exchange rate is determined by the inflation rate differentials, while the Fisher Effect states that the nominal interest rate is higher in a country with a higher inflation rate. Combining, these two propositions, the IFE states that the interest rate differential shall equal the inflation rate differential.

constant for all

$$\begin{array}{l} \text{Nominal} = R_{\text{int}} + \text{Inflation Rate} \\ \text{India (ID)} = 5\% + 7\% \\ \text{US (8\%)} = 5\% + 3\% \\ \hline \quad \quad \quad 4\% \quad \quad \quad 4\% \text{ (UR)} \end{array}$$

Factors influencing Exchange Rate

1. Rate of Inflation
2. Rate of Interest
3. Market intervention by the central bank of the country
4. Real income of people
5. Bilateral trade relations
6. Customer tastes
7. Investment profitability
8. Product availability
9. Productivity changes
10. Trade policies
11. Psyche of the participants or the **Bandwagon Effect** : When a speculator being dominant in the market expects a drop in the value of a particular currency, he starts selling it forward. The other speculators follow the lead. As a result, the currency tends to depreciate despite favorable impact of inflation and interest rate. This factor played a crucial role in the depreciation of rupee during the closing months of 1997.

Types of Foreign Exchange (Currency) Exposure



Foreign exchange exposure is classified into three types viz. Transaction, Translation and Economic Exposure. **Transaction exposure** deals with actual foreign currency transaction. **Translation exposure** deals with the accounting representation and **economic exposure** deals with little macro level exposure which may be true for the

whole industry rather than just the firm under concern. Foreign exchange exposure is said to exist for a business or a firm when the value of its future cash flows is dependent on the value of foreign currency / currencies. If a British firm sells products to a US Firm, cash inflow of British firm is exposed to foreign exchange and in a case of the US based firm cash outflow is exposed to foreign exchange. Why we are so skeptical about this exposure? Simple! It is because the exchange rates tend to change or fluctuate. In the above situation, we saw how a firm directly involved in the foreign currency dealing is exposed to the risk of foreign exchange. It may be surprising to know that a firm with no such direct connection may also be found exposed to foreign currency risk. Just to share an example, if a company producing small electronics products in Sri Lanka is competing against the products imported from China. Types of Foreign Exchange (Currency) Exposure - Transaction, Translation and Economic Exposure Now if the price of Chinese Yuan per Sri Lankan Rupee is decreased, there will be a decreased in cost advantage to the importers over that Sri Lankan company. It is evident from the example that the firm having no direct access to forex can also be impacted. Commonly, the exposure is classified into three types of foreign currency exposure:

1. TRANSACTION EXPOSURE: The simplest kind of foreign currency exposure which anybody can easily think of is the transaction exposure. As the name itself suggests, this exposure pertains to the exposure due to an actual transaction taking place in business involving foreign currency. In a business, all monetary transactions are meant for profits as its end result. There are all the chances of that final objective getting hampered if it is a foreign currency transaction and the currency market moves towards the unfavourable direction. If you have bought goods from a foreign country and payables are in foreign currency to be paid after 3 months, you may end up paying much higher on the due date as currency value may increase. This will increase your purchase price and therefore the overall costing of the product compelling the profit percentage to go down or even convert to lose. Transaction exposure normally occurs due to foreign currency debtors of sale, payment for imported goods or services, receipt / payment of dividend, or payment towards the EMIs of debts etc.

2. TRANSLATION EXPOSURE: This exposure is also well known as accounting exposure. It is because the exposure is due to the translation of books of accounts into the home currency. Translation activity is carried out on account of reporting the books to the shareholders or legal bodies. It makes sense also as the translated financial statements show the position of the company as on a date in its home currency. Gains or losses arising out of translation exposure do not have more meaning over and above the reporting requirements. Such exposure can even get reversed in the next year translation if currency market moves in the favorable direction. This kind of exposure does not require too much of management attention.

3. ECONOMIC EXPOSURE: The impact and importance of this type of exposure are much higher compared to the other two. Economic exposure directly impacts the value of a firm. That means, the value of the firm is influenced by the foreign exchange. The value of a firm is the function of operating cash flows and the assets it possesses. The economic exposure can have bearings on assets as well as operating cash flows. Identification and measuring of this exposure is a difficult task. Although, the asset exposure is still measurable and visible in books but the operating exposure has links to various factors such as competitiveness, entry barriers, etc which are quite subjective and interpretation of different experts may be different. These three types of foreign

currency exposures are very important to understand for an international finance manager. Analyzing the exposure to foreign exchange helps have the right view of the firm's business and therefore take informed decisions.

Economic exposure is that form of exchange rate risk which influences the cash flow and revenue and cost stream of a firm.

MANAGING FOREIGN EXCHANGE RISKS(RISK MANAGEMENT)

Hedging is a common term in foreign exchange management and refers to the **avoidance of foreign exchange risk and covering an open position**. In international operations, firms often receive payments in a foreign currency at a future date which is a cause for concern due to the changes in the **spot rate** that may cause them to make higher payment or receive less than expected in terms of their domestic currency. This may significantly affect the anticipated profits. The main techniques are:

1. Forward Contracts

A forward contract is a commitment to buy or sell a specific amount of foreign currency at a later date or within a specific time period and at an exchange rate stipulated when the transaction is made. The delivery or receipt of the currency takes place on the agreed forward value date.

2. Future Contracts

Commonly used by MNEs as hedging instruments, future contracts are standardized contracts that are traded on organized futures markets for a specific delivery date only. In case of currency futures, the rates are matched everyday with the movements in the spot rates and on this basis, profits and losses are settled every day. This process is called "**marking to the market**".

Marking to the market: It refers to comparing today's exchange rate with yesterday's till maturity and transferring the profit/loss to a margin money account created for this purpose.

The process of marking to market can be explained with the help of an example. Suppose, an investor buys Canadian dollar futures (Can. \$100000) at US\$0.75 on a Monday morning; which is to mature within two days. At the close of Tuesday, if the price rises to US\$0.755, the investor shall profit $100000 \times (US\$0.755 - 0.750)$ or US\$500. But if the price falls to US\$0.749, the investor will have to bear the loss. The amount of loss will be deducted from the margin money. If the loss is big and as a result, the margin money falls below a certain level, which is called **maintenance margin**, the investor receives a margin call for depositing the margin money within a specified period. Again, on Wednesday, the prevailing price on that day will be compared with the price prevailing on Tuesday and the profit or loss will be determined. On the maturity day, the investor receives the amount of the contract, after the adjustment of profit/loss.

Difference between forward and futures contracts

Sr. no.	Characteristics	Forward contract	Futures contracts
1	Size of contract	Tailored to individual needs	Standardized
2	Maturity	Tailored to individual needs	Standardized
3	Method of transaction	Over-the-counter deal	Dealing on the floor of the exchange

4	Commission	Spread between banks' buying and selling price	Brokerage Fee
5	Security deposit	Not required except for compensating bank balances	Margin money to be deposited with the clearing house
6	Clearing operation	No clearing house	Clearing house for daily settlements
7	Access	Limited to very large customers	Open to anyone who needs hedging or speculation
8	Regulation	Self-regulating	Regulated by the rules of the stock exchange
9	Liquidation	Mostly settled by actual delivery; a few by offsetting contract	Mostly by offsetting contract; a few by actual delivery.
10	Issued by	Commercial banks	Foreign stock exchanges

3. Options

The buyer of currency options possesses the right to buy or sell foreign currency after the lapse of a specified period at a rate determined on the day the contract is made. It is the buyer of a currency options has the freedom to exercise the options if the agreed upon rate turns in his favor. If it is not, he can let the options expire.

• Types of Currency Options Market

The options market is of three types namely, listed currency options market, over the counter options market and currency futures options market.

- i. **The listed currency options market** is found as a part of the stock exchanges. The size and maturity of the contract are normally fixed. The option buyer or the seller makes the deal with the clearing house, of course, with the help of a broker.
- ii. **The over the counter market**, options deal are finalized with the banks. The size of the contract is normally bigger and the banks repackage the size of the contract according to the clients' needs.
- iii. **The currency futures options market**, the options are marked to market meaning that they undergo daily settlement as in the case of a futures contract.

• Types of Options Contracts

There are two types of options namely call option and put option.

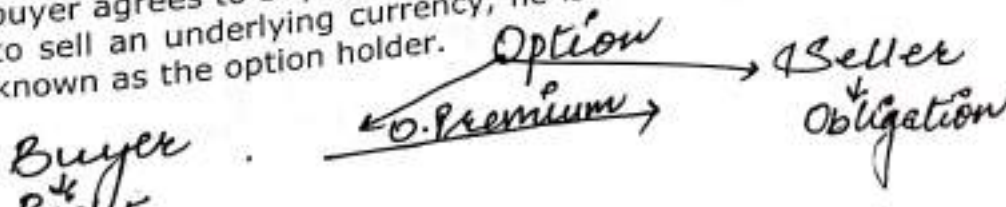
In a **call option**, the buyer of the option agrees to buy the underlying currency where
 In a **put option**, the buyer of the option agrees to sell the underlying currency.

Again, the call and put options are of two types: European option and American option

European option is exercised only on maturity whereas American option may be exercised even before maturity. It is normally in the buyer's interest to exercise the option before maturity. This is why American options command a higher price than European options.

Bermudan → early exercise is restricted to certain date during the life of the option.

OPTIONS TERMINOLOGY:
 1. **Option buyer:** Option buyer is a person or a firm who holds the right to buy options. If the option buyer agrees to buy an underlying currency, he is the buyer of a call option. If he agrees to sell an underlying currency, he is the buyer of a put option. The option buyer is also known as the option holder.



- 2. Option Seller:** option seller is the party that is obliged to perform if the option is exercised. He is the party who charges a premium for granting such a privilege to the buyer. The option seller is also known as the option writer.
- 3. Exercise Price:** It is the price at which options are exercised. It is also known as the strike price.
- 4. At-the-money:** It is the situation when the strike price is equal to the spot price on the maturity date (strike price = spot price).
- 5. In-the-money position** occurs when the spot rate favors the option buyer. It is when spot rate > strike price in a call option and when spot rate < strike rate in a put option.
- 6. Out-of-the-money** occurs when the spot rate does not favour the option buyer. It is when spot rate < strike price in a call option and spot rate > strike price in a put option.
- Premium:** Premium is the value or price of the option that the option-buyer pays to the option seller at the time of signing of the contract. It is also called option value or the option price.

HOW IS PREMIUM PRICING ARRIVED AT :

The price of an Option Premium is controlled by two factors – intrinsic value and time value of the option.

INTRINSIC VALUE

Intrinsic Value is the difference between the cash market spot price and the strike price of an option. It can either be positive (if you are in-the-money) or zero (if you are either at-the-money or out-of-the-money). An asset cannot have negative Intrinsic Value.

TIME VALUE

Basically puts a premium on the time left to exercise an options contract. This means if the time left between the current date and the expiration date of Contract A is longer than that of Contract B, Contract A has higher Time Value.

This is because contracts with longer expiration periods give the holder more flexibility on when to exercise their option. This longer time window lowers the risk for the contract holder and prevents them from landing in a tight spot.

At the beginning of a contract period, the time value of the contract is high. If the option remains in-the-money, the option price for it will be high. If the option goes out-of-money or stays at-the-money this affects its intrinsic value, which becomes zero. In such a case, only the time value of the contract is considered and the option price goes down. As the expiration date of the contract approaches, the time value of the contract falls, negatively affecting the option price.

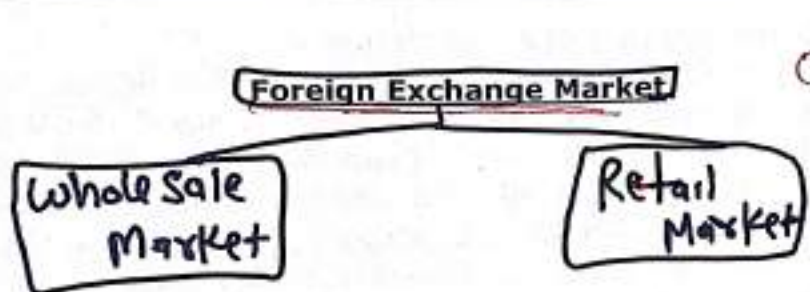
CALL OPTION

The 'Call Option' gives the holder of the option the right to buy a particular asset at the strike price on or before the expiration date in return for a premium paid upfront to the seller. Call options usually become more valuable as the value of the underlying asset increases. Call options are abbreviated as 'C' in online quotes.

PUT OPTION:

The Put Option gives the holder the right to sell a particular asset at the strike price anytime on or before the expiration date in return for a premium paid up front. Since you can sell a stock at any given point of time, if the spot price of a stock falls during the contract period, the holder is protected from this fall in price by the strike price that is pre-set. This explains why put options become more valuable when the price of the underlying stock falls. Similarly, if the price of the stock rises during the contract period, the seller only loses the premium amount and does not suffer a loss of the entire price of the asset. Put options are abbreviated as 'P' in online quotes.

	Call Option	Put Option
In-the-money	Strike price < Spot price of underlying asset	Strike price > Spot price of underlying asset
At-the-money	Strike price = Spot price of underlying asset	Strike price = Spot price of underlying asset
Out-of-the-money	Strike price > Spot price of underlying asset	Strike price < Spot price of underlying asset



It refers to the organizational settings within which individuals, businesses, governments and banks buy and sell foreign currencies. It is an over-the-counter market which consists of trading desks at major agencies dealing in foreign exchange throughout the world connected by telephones, telex and so on. Again, it is the round the clock market, meaning that the transactions can take place any time within 24 hours of the day. Most markets have an electronic system for transfer of funds which saves time and energy. The system existing in **New York is known as the Clearing House Inter bank Payment System (CHIPS)**.

The foreign exchange market is not confined to a specific building or location where traders exchange currencies. Currencies are generally exchanged for one another by business firms over a telecommunication network. Trading in the foreign exchange market has historically taken place by telephone, telex or the **Society for Worldwide Inter-bank Financial Telecommunication (SWIFT) system**. In November 2007, SWIFT opened its first office in India at **Mumbai**. The most important trading centers are London (31 percent of activity), New York (19 percent of activity), Tokyo (8 percent of activity), and Singapore (5 percent of activity). Major secondary trading centers are Zurich, Frankfurt, Paris, Hong Kong and Sydney.

Commercial banks of a country operate as 'clearing houses' for the foreign exchange demanded and supplied for foreign transactions by the country's residents. In the process, banks of a country will have over-supply of some of the foreign currencies whereas they would have shortage of others. This imbalance in demand and supply of foreign currencies would be overcome by the commercial banks by selling and buying from each other through the intermediary of foreign exchange brokers. Bank for International Settlements (BIS) is the principal financial institution that acts as the prime counterparty for central banks in their financial transactions and serves as the bank for central banks. The BIS was established on 17th May, 1930 headquartered in Basel, Switzerland and there are two representative offices in the Hong Kong SAR and Mexico City.

Types of Foreign Exchange Markets

1. Inter-bank or wholesale market

A bank can purchase a foreign currency from other banks if there is a shortage. Such trading between banks is termed as the inter-bank market, wherein banks can get quotes, or they can contract brokers who sometimes act as intermediaries, matching a

bank desiring to sell a given currency with another desiring to buy that currency. Thus, the inter-bank is the wholesale foreign exchange market in which major banks trade currencies with each other.

2. Retail Market

Transaction size of retail foreign exchange market is very small whereas the spread between buying and selling prices is large. It consists of travelers and tourists who exchange one currency to another in the form of traveler's cheques or currency notes.

Types of Market Participants in Forex Market

The participants in the foreign exchange market are **individuals, firms, banks, the government and occasionally, international agencies.** Individuals are normally tourists who exchange currencies. They are also migrants sending a part of their income to their family members living in their home country. Firms that participate are generally importers and exporters. Exporters prefer to get the payments in their own currency or in a strong convertible currency. Importers need foreign exchange for making payments for the import. When firms and individuals approach the local branch of a bank, the local branch, in turn, approaches the foreign exchange department in its regional office or head office. The latter deals in foreign exchange with other banks on behalf of the customers. Thus, there are two tiers in the foreign exchange market. One tier involves the transactions between the final customers and banks. The other tier consists of the transactions between two banks. It is the second tier of the market that accounts for the largest segment of the total foreign exchange transactions in the market. The reason is that the purpose of inter-bank transactions is not only to meet the foreign exchange demand of the final customers but also to reap gains out of movement in foreign exchange rates. Commercial banks dominate the foreign exchange market. Monetary authorities also participate in this market with the aim to stabilize the value of the domestic currency.

The \$4 trillion dollar Forex market witnesses a lot of market participants. However, all of these participants have different motives. An understanding of these motives is required to predict their behavior in the markets. Also, some of these participants have deeper pockets, better information and are more active than the others. Therefore, any student of Forex trading must be aware of the different kinds of participants that they are likely to come across when they trade in this market.

1. Forex Dealers

Forex dealers are amongst the biggest participants in the Forex market. They are also known as broker dealers. Most Forex dealers in the world are banks. It is for this reason that the market in which dealers interact with one another is also known as the interbank market. However, there are some notable non-bank financial institutions also that deal in foreign exchange. These dealers participate in the Forex markets by providing bid-ask quotes for currency pairs at all times. All brokers do not participate in all currency pairs. Rather, they may specialize in a specific currency pair. Alternatively, a lot of dealers also use their own capital to conduct proprietary trading operations. When both these operations are combined, Forex dealers have a significant participation in the Forex market.

2. Brokers

The Forex market is largely devoid of brokers. This is because a person need not deal with brokers necessarily. If they have sufficient knowledge, they can directly call the dealer and obtain a favorable rate. However, there are brokers in the Forex market. These brokers exist because they add value to their clients by helping them obtain the best quote. For instance, they may help their clients obtain the lowest buying price or

the highest selling price by making available quotes from several dealers. Another major reason for using brokers is creating anonymity while trading. Many big investors and even Forex dealers use the services of brokers who act as henchmen for the trading operations of these big players.

3. Hedgers Importer/Exporter

There are many businesses which end up creating an asset or a liability priced in foreign currency in the regular course of their business. For instance, importers and exporters engaged in foreign trade may have open positions in several foreign currencies. They may therefore be impacted if there is a fluctuation in the value of foreign currency. As a result, to protect themselves against these losses, hedgers take opposite positions in the market. Therefore if there is an unfavorable movement in their original position, it is offset by an opposite movement in their hedged positions. Their profits and losses and therefore nullified and they get stability in the operations of their business.

4. Speculators

Speculators are a class of traders that have no genuine requirement for foreign currency. They only buy and sell these currencies with the hope of making a profit from it. The number of speculators increases a lot when the market sentiment is high and everyone seems to be making money in the Forex markets. Speculators usually do not maintain open positions in any currency for a very long time. Their positions are transient and are only meant to make a short term profit.

5. Arbitrageurs

Arbitrageurs are traders that take advantage of the price discrepancy in different markets to make a profit. Arbitrageurs serve an important function in the foreign exchange market. It is their operations that ensure that a market as large, as decentralized and as diffused as the Forex market functions efficiently and provides uniform price quotations all over the world. Whenever arbitrageurs find a price discrepancy in the market, they start buying in one place and selling in another till the discrepancy disappears.

6. Central Banks

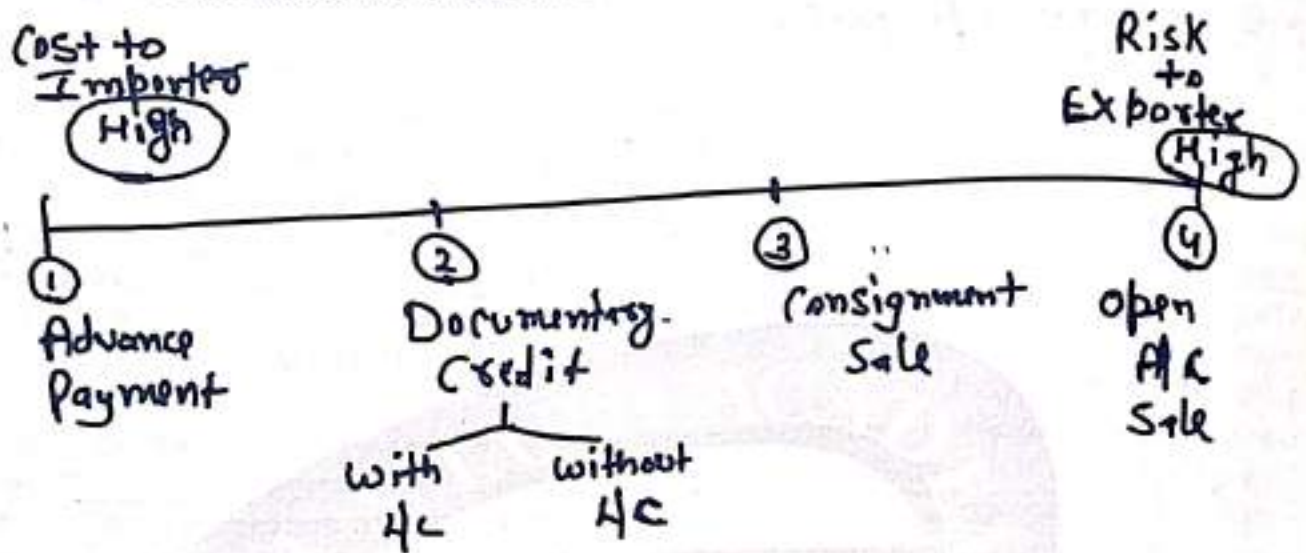
Central Banks of all countries participate in the Forex market to some extent. Most of the times, this participation is official. Although many times Central Banks do participate in the market by covert means. This is because every Central Bank has a target range within which they would like to see their currency fluctuate. If the currency falls out of the given range, Central Banks conduct open market operations to bring it back in range. Also, whenever the currency of a given nation is under speculative attack, Central Banks participate extensively in the market to defend their currency.

Retail Market Participants

Retail market participants include tourists, students and even patients who are travelling abroad. Then there are also a variety of small businesses that indulge in foreign trade. Most of the retail participants participate in the spot market whereas people with long term interests operate in the futures market. This is because these participants only buy/sell currency when they have a personal/professional requirement and dealing with foreign currencies is not a part of their regular business. The participants have been listed in descending order. This means that dealers are the most active traders in the Forex markets, followed by brokers and so on. It would also be fair to say that dealers have the maximum information about the market, followed by brokers and so on.

MODES OF PAYMENT IN INTERNATIONAL TRADE (TRANSFER OF INTERNATIONAL PAYMENTS)

The various modes of payments in international trade include advance payment, documentary credit with letter of credit (L/C), sight and time drafts, consignment sales and open account. The **costs** incurred to the **importer** and **risks** related with the **exporter** vary widely among different payment modes. As a matter of thumb rule, the lower the risk to the exporter, the higher is the cost to the importer.



1. Advance Payment

Under this, the payment is remitted by the buyer in advance, either by a draft mail or telegraphic transfer (TT). Generally, such payments are made on the basis of a **sample receipt** and its approval by the buyer. The clean remittance is made after accepting the order but before the shipment, through banking networks.

It is the simplest and least risky form of payment from the exporter's point of view. Besides, no post-shipment finance is required if the payment is received in advance. There is no payment of interest on the funds and no commission is required to be paid which makes it the cheapest mode of receiving payment.

As it involves the **highest level of risk** for the **buyer (importer)**, advance payment is used only in cases where the exporter is in a position to dictate his/her terms. For example, advance payment is often used if the product supplied is unique or has some sort of monopolistic power. However, such form of payment is common mainly in case of foreign affiliates of the exporting firm.

2. Documentary Credit

In a typical international transaction, an exporter deals with an overseas buyer who is situated in a significantly different regulatory and business environment. The exporter is unwilling to part with his/her goods unless he/she is assured of the receipt of the payment from the importer. On the other hand, the importer is unwilling to part with the money unless assured of receiving the goods. In such a situation, the bank plays the crucial role of an intermediary, providing assurance to both the importer and the exporter in an international transaction.

The payment collection mechanism that allows exporters to retain ownership of the goods or reasonably ensures their receiving payments is called documentary collection. The bank acts as the exporter's agent in a documentary collection and regulates the timing and the sequence of the exchange of goods for value by holding the title of the documents until the importer fulfills his/her obligation as given in the Uniform Customs and Practices of Documentary Credits (UCPDC), brought out by

the International Chamber of Commerce (ICC) in its publication no. 600, widely known as UCPDC 600, implemented on 1st July 2007.

The two principal documents used in documentary collection are the bills of lading (B/L) issued by the shipping company and the draft (bill of exchange) drawn by the exporter. B/L is issued by the shipping company to the shipper for accepting the merchandise for the carriage. As the document of title, it has a unique significance in shipping that only its legitimate holder is entitled to claim ownership of the goods covered therein. The importer simply cannot take possession of the goods unless the B/L is surrendered in original to the shipping company at destination. The procedure involved in documentary credit employing banking networks assures both the exporter and the importer that the exporter gets the payment and the importer receives the goods.

The draft, commonly known as bill of exchange, is used as an instrument to effect payment in international transaction. It is an unconditional order in writing, signed by the seller (exporter), also known as drawer, addressed to the buyer (importer) or importer's agent, known as drawee, ordering the importer to pay on demand or at a fixed or determinable future date, the amount specified on its face.

The draft provides written evidence of a financial obligation in clear and simple terms. Besides, it is a negotiable and unconditional instrument, which means payment must be made to any holder in due course despite any disputes over the underlying commercial transaction. Using a draft enables an exporter to employ its bank as a collection agent. The exporter's bank forwards the draft or bill of exchange to the importer, generally through a correspondent bank, collects the draft, and then remits the proceeds to the exporter. Thus, in the process, the bank has all the necessary documents for control of the merchandise which are handed over to the importer only when the draft has been paid or accepted in strict accordance with the exporter's instructions.

Documentary Credit with Letter of Credit

A documentary credit implies a commitment of a bank to pay the seller of goods or services a certain amount, provided he/she presents stipulated documents evidencing the shipment of goods or performance of services within a specified period. The modus operandi of an L/C is explained as:

1. The exporter gets in touch with the importer and based on mutual communications either by telephone, fax, or electronic messaging and mutually agrees on terms of sale and enters into a **sales contract**
2. The importer, also known as **applicant** applies to the issuing bank located in his/her country for opening an L/C in accordance with the terms already agreed upon between the buyer and seller in the sales contract.
3. The issuing bank opens the L/C and delivers it to the corresponding bank located in the exporter's country which in turn advises it to the exporter also known as beneficiary. The exporter carefully scrutinizes the L/C and ensures that all the terms and conditions agreed upon in the sales contract are mentioned. In case there is any variation or discrepancy, it is brought to the notice of the applicant (i.e. importer) and got rectified.
4. Once the exporter gets satisfied of the terms and conditions contained in the L/C, he/she makes shipment.
5. Soon after delivering goods to the shipping company, the B/L is obtained which serve as the cargo receipt, contract of carriage and the document for the title of the goods. The shipment procedure requires a number of documents both commercial and regulatory to be prepared.
6. The exporter submits the complete set of documents as mentioned in the L/C, including the B/L along with the draft drawn by the exporter to the advising bank which in turn sends it to the issuing bank.

7. The issuing bank scrutinizes the documents and if found in accordance with the terms and conditions contained in the L/C, it accepts the documents and in the case of a sight L/C, releases the payment to the advising bank. The advising bank in turn makes the payment to the exporter. However, in the case of a time L/C, payment is made at a later date as contained in the L/C.
8. The issuing bank presents the draft to the applicant (i.e. importer) who releases the payment, upon which it handovers the B/L along with the other documents to the importer, who in turn hands over the B/L to the shipping company at the destination and takes delivery of the cargo.

Types Of Letters Of Credit

According to methods of payments, the letter of credit may be of the following types:

- 1. Irrevocable:** The issuing bank irrevocably commits itself to make payment if the credit terms as given in the L/C are satisfied under article 9A of UCPDC.
- 2. Revocable:** A revocable L/C is highly risky for the exporters as it can be revoked any time without consent of or notice to the beneficiary.
- 3. Confirmed:** The confirming bank (generally a local bank in the exporter's country) commits itself to irrevocably make payment on presentation of documents under confirmed L/C. The issuing bank asks the corresponding bank to confirm the L/C, consequently, the corresponding bank confirms the L/C by adding a clause, 'the above credit is confirmed by us and we hereby undertake to honour the drafts drawn under this credit on presentation provided that all terms and conditions of the credit are duly satisfied'. A confirmed L/C provides additional protection to the exporter by localizing the risk of payment. Thus, the exporter enjoys two independent recognitions: one by the issuing bank and the other by the confirming bank.
- 4. Unconfirmed:** under such credit, the issuing bank asks the corresponding bank to advise about the L/C without any confirmation on its part. It mentions, "The credit is irrevocable on the part of the issuing bank but is not being confirmed by us".
- 5. Sight:** The beneficiary receives payment upon presentation and examination of documents in a sight L/C. However, the bank is given a reasonable time (generally not more than seven banking days) to examine the documents after its receipt.
- 6. Term credits:** Term credits are used as financing instruments for the importer. During the deferred time period, the importer can often sell the goods and pay the due amount with the sales proceeds.

Documentary Credit Without Letter Of Credit

Documents are routed through banking networks that also act as the seller's agent along with the bill of exchange. The major documents should include a full set of B/L, commercial invoice, marine insurance policy and other stipulated documents. The major types of bills of exchange can either by sight draft or time draft.

1. Sight draft (documents against payment):

Similar to L/C, the exporter and the importer enter into a sales contract on mutually agreed terms. Upon finalization of contract, the exporter (drawer) ships the goods and submits the documents along with the bill of exchange through his/her bank, also known as the remitting bank, to the corresponding bank, also known as collecting bank, in the importer's country. The corresponding bank presents the draft to the importer (drawee) who makes payment at sight and thereafter the documents are handed over. The collecting bank transfers the payment to the remitting bank in exporter's country, which in turn makes payment to the exporter.

Thus, under 'documents against payment' the importer can take physical possession of the goods only when he/she has made the payment before getting the documents from the bank. Sight drafts are considered safer as the exporter has possession and title of the goods till the time payment is made.

2. Usage of Time draft (documents against acceptance):

Once a sales contract is signed between the exporter and the importer, the exporter (drawer) ships the goods and submits the draft along with documents and the collection order to the bank located in his/her country, known as the remitting bank, which in turn sends the draft along with documents to a corresponding bank, also known as the collecting bank, in the importer's country. The collecting bank presents the draft to the importer (drawee) who indicates his/her acceptance of the payment obligations by signing the draft, upon which the B/L along with other documents is handed over to the importer for taking delivery of the goods.

The payment under time draft is usually to be made at a later date after 30, 60, 90 or more days.

3. Consignment sales

Under the consignment sales, the shipment of goods is made to the overseas consignee and the title of goods is retained with the exporter until it is finally sold. As the title of goods lies with the exporter, the funds are blocked and the payment period is uncertain. Consignment sales involve certain additional costs such as warehousing charges, insurance, interest and commission of the agents. Besides, the liability and risks lie with the exporter unless the consignment is sold. The risk of violating the terms of consignment is much higher in consignment sales. Besides, the price realization is also uncertain, over which the exporter has little control. Selling goods on consignment basis in international markets also provide opportunity to the exporter to realize higher prices based on buyer's satisfaction. Export of precious or semiprecious stones and cut flowers is made on consignment basis. However, the exporters are required to declare the expected value of consignment on the guaranteed remittance form.

4. Open Account

The exporter and importer agree upon the sales terms without documents calling for payments. However, the invoice is prepared by the exporter and the importer can take delivery of goods without making the payment first. Subsequently, the exporting and importing firms settle their accounts through periodic remittances.

As the payment is to be released later, it serves as an instrument to finance the importer for the transaction and the importer saves the cost of getting bank finances. It requires sufficient financial strength on the part of the exporter. The operation of open account is hassle free and simple. The major drawback of an open account is the lack of safeguard measures against non-payment by the importer. Therefore, the open account is generally restricted to firms with longstanding dealing and business relationship and intra-company transactions among subsidiaries and affiliates. The statutory provisions related to foreign exchange often restrict using open account for receiving payments in international transactions. Generally, the central banks in most countries permit open account transactions in their country and restrict it for domestic firms.

CHAPTER 11

INTERNATIONAL ARBITRAGE

- Defined as capitalizing on a discrepancy in quoted prices by making a riskless profit Arbitrage will cause prices to realign
- Three forms of arbitrage:
 - Locational arbitrage
 - Triangular arbitrage
 - Covered interest arbitrage

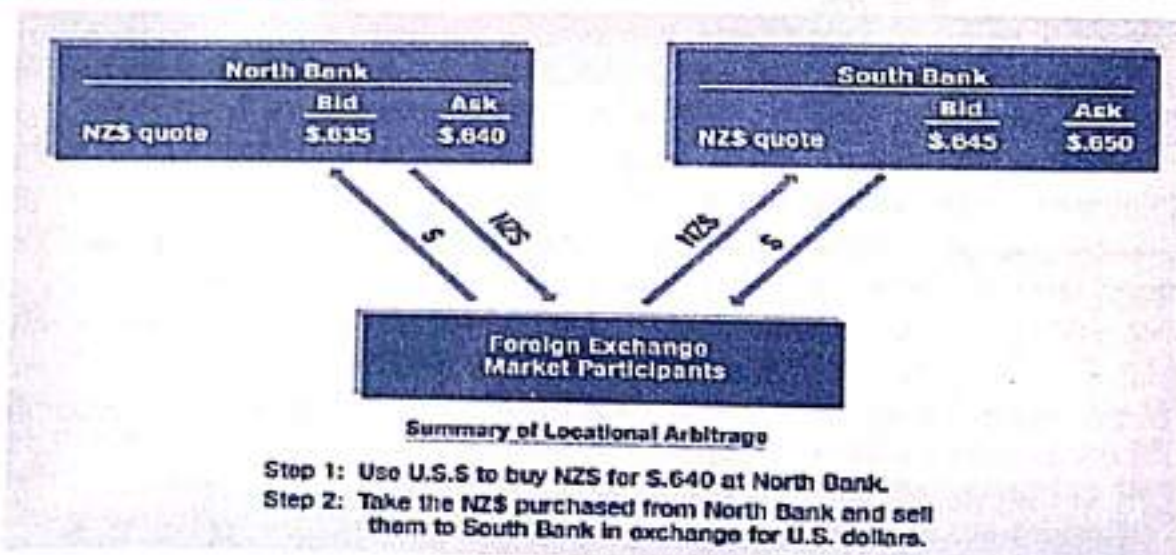
1. Locational Arbitrage

- Defined as the process of buying a currency at the location where it is priced cheap and immediately selling it at another location where it is priced higher. (See Exhibit 7.1)
- Gains from locational arbitrage are based on the amount of money used and the size of the discrepancy. (See Exhibit 7.2)
- Realignment due to locational arbitrage drives prices to adjust in different locations so as to eliminate discrepancies

Exhibit 11.1 Currency quotes for locational arbitrage example ?

	AKRON BANK			ZYN BANK	
	BID	ASK		BID	ASK
British pound	\$ 1.60	\$ 1.61	British pound	\$ 1.61	\$ 1.62

11.2 Locational Arbitrage



EXAMPLE: In the previous example, the high demand for New Zealand dollars at North Bank (resulting from arbitrage activity) will cause a shortage of New Zealand dollars there. As a result of this shortage, North Bank will raise its ask price for New Zealand dollars. The excess supply of New Zealand dollars at South Bank (resulting from sales of New Zealand dollars to South Bank in exchange for U.S. dollars) will force South Bank to lower its bid price. As the currency prices are adjusted, gains from locational arbitrage

will be reduced. Once the ask price of North Bank is not any lower than the bid price of South Bank, locational arbitrage will no longer occur. Prices may adjust in a matter of seconds or minutes from the time when locational arbitrage occurs.

2. Triangular Arbitrage

- Defined as currency transactions in the spot market to capitalize on discrepancies in the cross exchange rates between two currencies. (See Exhibits 7.3, 7.4, & 7.5)
- Gains from triangular arbitrage: Currency transactions are conducted in the spot market to capitalize on the discrepancy in the cross exchange rate between two countries.
- Accounting for the Bid/Ask Spread: Transaction costs (bid/ask spread) can reduce or even eliminate the gains from triangular arbitrage.
- Realignment due to triangular arbitrage forces exchange rates back into equilibrium. (See Exhibit 7.6)

Exhibit 11.3 Example of triangular arbitrage

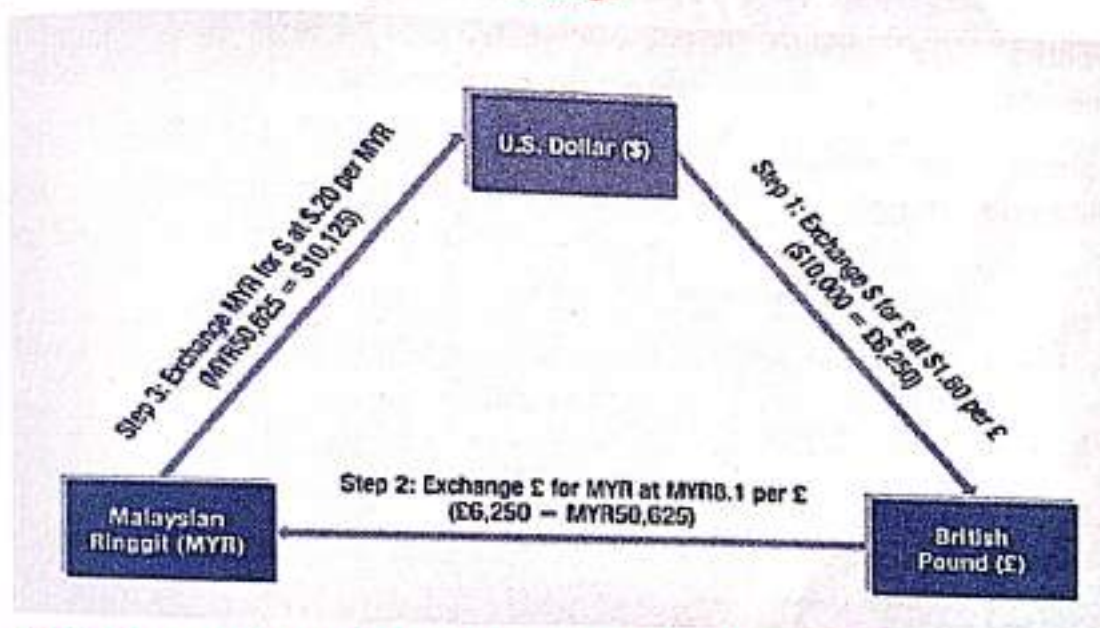


Exhibit 11.4 Currency quotes for a triangular arbitrage example with transaction costs

	QUOTED BID PRICE	QUOTED ASK PRICE
Value of a British pound in U.S. dollars	\$1.60	\$1.61
Value of a Malaysian ringgit (MYR) in U.S. dollars	\$.200	\$.201
Value of a British pound in Malaysian ringgit (MYR)	MYR8.10	MYR8.20

Exhibit 11.5 Example of triangular arbitrage accounting for bid-ask spreads

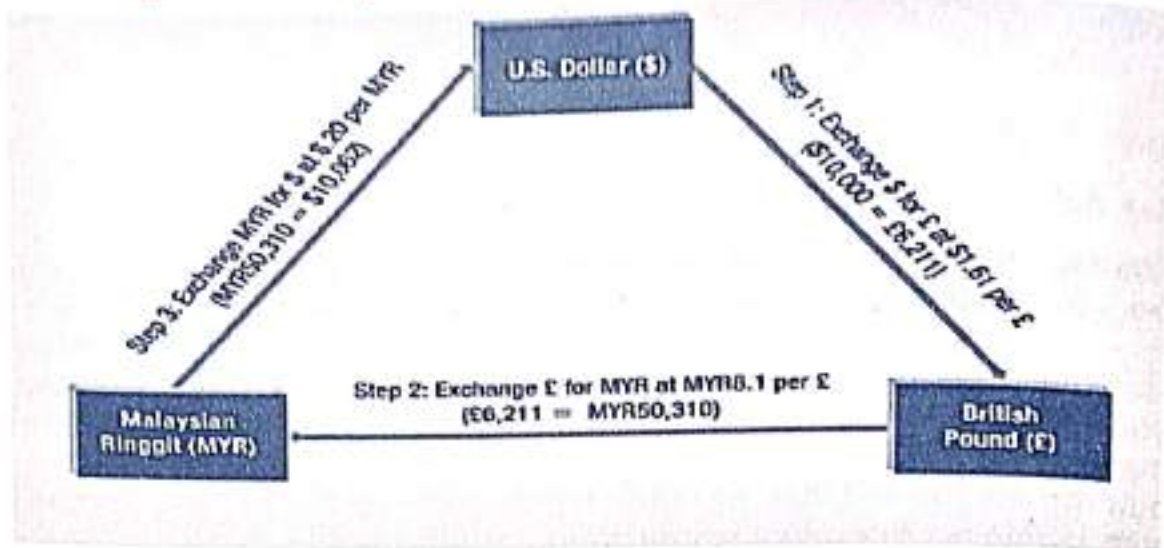


Exhibit 11.6 Impact of triangular arbitrage

ACTIVITY	IMPACT
1. Participants use dollars to purchase pounds.	Bank increases its ask price of pounds with respect to the dollar.
2. Participants use pounds to purchase Malaysian ringgit.	Bank reduces its bid price of the British pound with respect to the ringgit; that is, it reduces the number of ringgit to be exchanged per pound received.
3. Participants use Malaysian ringgit to purchase U.S. dollars.	Bank reduces its bid price of ringgit with respect to the dollar.

3. Covered Interest Arbitrage

- **Steps involved in covered interest arbitrage**
- Defined as the process of capitalizing on the interest rate differential between two countries while covering your exchange rate risk with a forward contract
 - o Consists of two parts: (Exhibit 7.7)
 - Interest arbitrage: the process of capitalizing on the difference between interest rates between two countries
 - Covered: hedging the position against interest rate risk
- **Realignment due to covered interest arbitrage causes market realignment**
- **Timing of realignment may require several transactions before realignment is completed**

EXAMPLE: You desire to capitalize on relatively high rates of interest in the United Kingdom and have funds available for 90 days. The interest rate is certain; only the future exchange rate at which you will exchange pounds back to U.S. dollars is uncertain. You can use a forward sale of pounds to guarantee the rate at which you can exchange pounds for dollars at some future time.

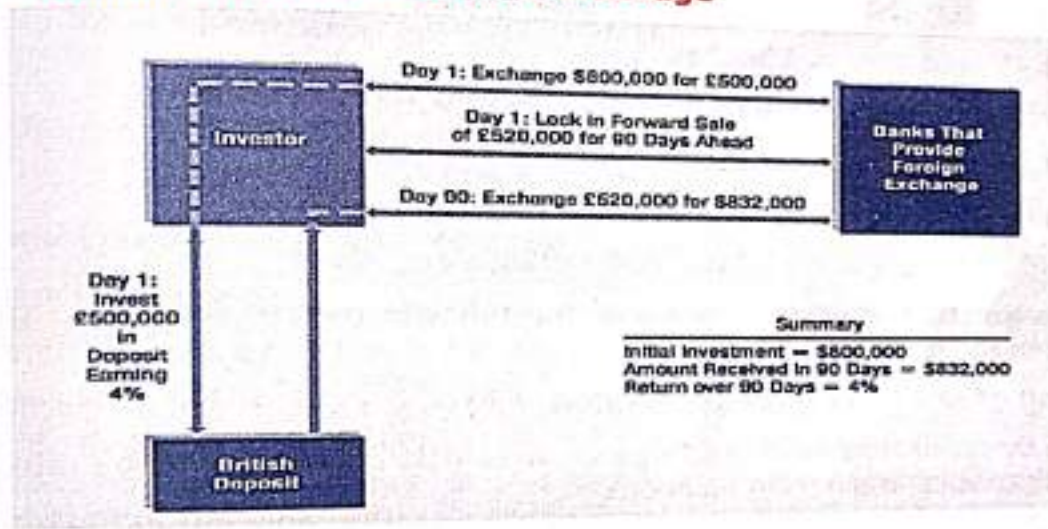
Assume the following information.

- You have \$800,000 to invest
- The current spot rate of the pound is \$1.60.
- The 90-day forward rate of the pound is \$1.60.
- The 90-day interest rate in the United States is 2 percent
- The 90-day interest rate in the United Kingdom is 4 percent

Based on this information, you should proceed as follows:

1. On day 1, convert the \$800,000 to £500,000 and deposit the £500,000 in a British bank.
2. On day 1, sell £520,000 90 days forward. By the time the deposit matures, you will have £520,000 (including interest).
3. In 90 days when the deposit matures, you can fulfill your forward contract obligation by converting your £520,000 into \$832,000 (based on the forward contract rate of \$1.60 per pound).

Exhibit 11.7 Example of covered interest arbitrage



Covered Interest Arbitrage (cont.)

- **Realignment is focused on the forward rate**
 - The forward rate is likely to experience most if not all of the adjustment needed to achieve realignment.
- **Accounting for spreads**
 - Investor must account for the effects of the spread between the bid and ask quotes and of the spread between deposit and loan rates.
- **Covered interest arbitrage by Non-U.S. investors**
 - The concept of covered interest arbitrage applies to any two countries for which there is a spot rate and a forward rate between their currencies as well as risk-free interest rates quoted for both currencies

Accounting for Spreads The following example illustrates the effects of the spread between the bid and ask quotes and of the spread between deposit and loan rates.

EXAMPLE Suppose you are given the following exchange rates and one-year interest rates.

	BID QUOTE	ASK QUOTE
Euro spot	\$1.12	\$1.13
Euro 1-year forward	\$1.12	\$1.13
	DEPOSIT RATE	LOAN RATE
Interest rate on dollars	6.0%	9.0%
Interest rate on euros	6.5%	9.5%

You have \$100,000 to invest for one year. Would you benefit from engaging in covered interest arbitrage?

Observe that the quotes of the euro spot and forward rates are exactly the same whereas the deposit rate on euros is .5 percent higher than the deposit rate on dollars. It may therefore seem that covered interest arbitrage is feasible. However, U.S. investors would be subjected to the ask quote when buying euros (€) in the spot market versus the bid quote when selling those euros via a one-year forward contract.

1. Convert \$100,000 to euros (ask quote):

$$\text{\$100,000} \div \text{\$1.13} = \text{€88,496}$$

2. Calculate accumulated euros over one year at 6.5 percent:

$$\text{€88.4} \times 1.065 = \text{€94,248}$$

3. Sell euros for dollars at the forward rate (bid quote):

$$\text{€94,248} \times \text{\$1.12} = \text{\$105,558}$$

4. Determine the yield earned from covered interest arbitrage:

$$(\text{\$105,558} - \text{\$100,000}) / \text{\$100,000} = 0.05558 \text{ or } 5.558\%$$

The yield is less than if you had invested the funds in the United States. Thus, covered interest arbitrage is not feasible.

Comparison of Arbitrage Effects (Exhibit 7.8)

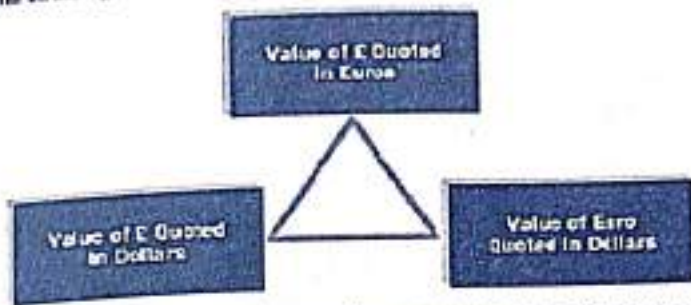
- The threat of locational arbitrage ensures that quoted exchange rates are similar across banks in different locations
- The threat of triangular arbitrage ensures that cross exchange rates are properly set
- The threat of covered interest arbitrage ensures that forward exchange rates are properly set. Any discrepancy will trigger arbitrage, which should eliminate the discrepancy
- Thus, arbitrage tends to allow for a more orderly foreign exchange market

Exhibit 11.8 Comparing arbitrage strategies

Locational Arbitrage: Capitalizes on discrepancies in exchange rates across locations.



Triangular Arbitrage: Capitalizes on discrepancies in cross exchange rates.



Covered Interest Arbitrage: Capitalizes on discrepancies between the forward rate and the interest rate differential.



Interest Rate Parity

- > In equilibrium, the forward rate differs from the spot rate by a sufficient amount to offset the interest rate differential between two currencies.

Derivation of Interest Rate Parity

$$p = \frac{1 + i_h}{1 + i_f} - 1$$

Where:

- p = forward premium
- i_h = home interest rate
- i_f = foreign interest rate

EXAMPLE Assume that the Mexican peso exhibits a six-month interest rate of 6 percent and that the U.S. dollar exhibits a six-month interest rate of 5 percent. From a U.S. investor's perspective, the U.S. dollar is the home currency. According to IRP, the forward rate premium of the peso with respect to the U.S. dollar should be

$$p = \frac{1 + .05}{1 + .06} - 1$$

$$= -.0094 \text{ or } -.94\% \text{ (not annualized)}$$

Thus, the six month forward contract on the peso should exhibit a discount of about .94 percent. This means that U.S. investors would receive .94 percent less when selling pesos six months from now (based on a forward sale) than the price they pay for pesos today at the spot rate. Such a discount would offset the peso's interest rate advantage. If the peso's spot rate is \$.10, then a forward discount of .94 percent results in the following calculation of the six month forward rate:

$$F = S(1 + p)$$

$$= \$10(1 - .0094) = 9.9906$$

Determining the Forward Premium

- **Effect of the interest rate differential:** The relationship between the forward premium (or discount) and the interest rate differential according to IRP is simplified in an approximated form:

$$p = \frac{F - S}{S} \approx i_h - i_f$$

Where:

- o p = forward premium (or discount)
 - o F = forward rate in dollars
 - o S = spot rate in dollars
 - o i_h = home interest rate o i_f = foreign interest rate
- Implications: If the forward premium is equal to the interest rate differential as just described, then covered interest arbitrage will not be feasible

EXAMPLE Use the information on the spot rate, the six-month forward rate of the peso, and Mexico's interest rate from the preceding example to determine a U.S. investor's return from using covered interest arbitrage. Assume the investor begins with \$1,000,000 to invest.

Step 1. On the first day, the U.S. investor converts \$1,000,000 into Mexican pesos (MXP) at \$.10 per peso:

$$\$1,000,000 \times 10 \text{ per peso} = \text{MXP}10,000,000$$

Step 2. On the first day, this investor also sells pesos six months forward. The number of pesos to be sold forward is the anticipated accumulation of pesos over the six-month period, which is estimated as

$$\text{MXP}10,000,000 \times (1 + .06) = \text{MXP}10,600,000$$

Step 3. After six months, the U.S. investor withdraws the initial deposit of pesos along with the accumulated interest, amounting to a total of 10,600,000 pesos. The investor converts the pesos into dollars in accordance with the forward contract agreed upon six months earlier. The forward rate was \$.09906, so the number of U.S. dollars received from the conversion is

$$\text{MXP}10,600,000 \times (\$.09906 \text{ per peso}) = \$1,050,036$$

In this case, the investor's covered interest arbitrage achieves a return of about 5 percent.

Rounding the forward discount to .94 percent causes the slight deviation from the 5 percent return.

Step 3. After six months, the U.S. investor withdraws the initial deposit of pesos along with the accumulated interest, amounting to a total of 10,600,000 pesos. The investor converts the pesos into dollars in accordance with the forward contract agreed upon six months earlier. The forward rate was \$.09906, so the number of U.S. dollars received from the conversion is

$$\text{MXP}10,600,000 \times (\$.09906 \text{ per peso}) = \$1,050,036$$

In this case, the investor's covered interest arbitrage achieves a return of about 5 percent. Rounding the forward discount to .94 percent causes the slight deviation from the 5 percent return. Thus, using covered interest arbitrage under these circumstances generates a return that is about what the investor would receive by investing the funds domestically. This result confirms that covered interest arbitrage is not worthwhile if IRP holds.

Summary

- > Locational arbitrage may occur if foreign exchange quotations differ among banks. The act of locational arbitrage should force the foreign exchange quotations of banks to become realigned, after which locational arbitrage will no longer be possible
- > Triangular arbitrage is related to cross exchange rates. A cross exchange rate between two currencies is determined by the values of these two currencies with respect to a third currency. If the actual cross exchange rate of these two currencies differs from the rate that should exist, triangular arbitrage is possible. The act of triangular arbitrage should force cross exchange rates to become realigned, at which time triangular arbitrage will no longer be possible
- > Covered interest arbitrage is based on the relationship between the forward rate premium and the interest rate differential. The size of the premium or discount exhibited by the forward rate of a currency should be about the same as the differential between the interest rates of the two countries of concern. In general terms, the forward rate of the foreign currency will contain a discount (premium) if its interest rate is higher (lower) than the U.S. interest rate
- > If the forward premium deviates substantially from the interest rate differential, then covered interest arbitrage is possible. In this type of arbitrage, a short term investment in some foreign currency is covered by a forward sale of that foreign currency in the future. In this manner, the investor is not exposed to fluctuation in the foreign currency's value
- > According to the theory of interest rate parity (IRP), the size of the forward premium (or discount) should be equal to the interest rate differential between the two countries of concern. If IRP holds then covered interest arbitrage is not feasible, because any interest rate advantage in the foreign country will be offset by the discount on the forward rate. Thus, covered interest arbitrage would not generate higher returns than would be generated by a domestic investment