Based on Revised Syllabus announced by ICAI

CA Final

STRATEGIC FINANCIAL MANAGEMENT

(Fast Track Course)

(Text Book)

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Financial Policy & Corporate Strategy


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CHAPTER DESIGN

1. STRATEGIC FINANCIAL DECISION MAKING FRAME WORK
2. FUNCTIONS OF STRATEGIC FINANCIAL MANAGEMENT
3. STRATEGY AT DIFFERENT HIERARCHY LEVELS
4. FINANCIAL PLANNING
5. INTERFACE OF FINANCIAL POLICY AND STRATEGIC MANAGEMENT
6. BALANCING FINANCIAL GOALS VIS-À-VIS SUSTAINABLE GROWTH

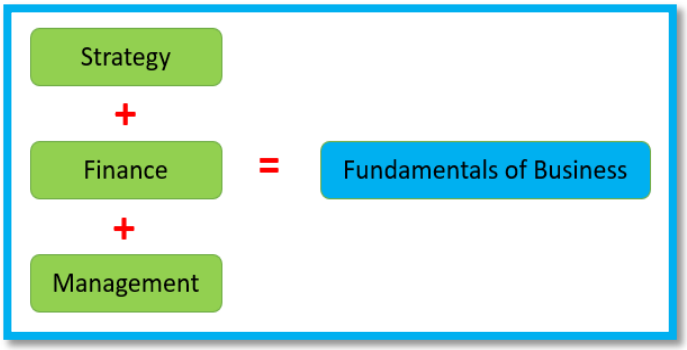
1. STRATEGIC FINACIAL DECISION MAKING FRAME WORK :

Capital investment is the springboard for wealth creation. In a world of economic uncertainty, the investors want to maximize their wealth by selecting optimum investment and financial opportunities that will give them maximum expected returns at minimum risk. Since management is ultimately responsible to the investors, the objective of corporate financial management should implement investment and financing decisions which should satisfy the shareholders by placing them all in an equal, optimum financial position.

The satisfaction of the interests of the shareholders should be perceived as a means to an end, namely maximization of shareholders' wealth. Since capital is the limiting factor, the problem that the management will face is the strategic allocation of limited funds between alternative uses in such a manner, that the companies have the ability to sustain or increase investor returns through a continual search for investment opportunities that generate funds for their business and are more favourable for the investors.

Therefore, all businesses need to have the following three fundamental essential elements:

- A clear and realistic strategy,
- The financial resources, controls and systems to see it through and
- The right management team and processes to make it happen.



2. FUNCTIONS OF STRATEGIC FINANCIAL MANAGEMENT :

The key decisions falling within the scope of financial strategy include the following:

1. **Financing decisions :** These decisions deal with the mode of financing or mix of equity capital and debt capital.

2. **Investment decisions :** These decisions involve the profitable utilization of firm's funds especially in long-term projects (capital projects). Since the future benefits associated with such projects are not known with certainty, investment decisions necessarily involve risk. The projects are therefore evaluated in relation to their expected return and risk.

3. **Dividend decisions :** These decisions determine the division of earnings between payments to shareholders and reinvestment in the company.

4. **Portfolio decisions :** These decisions involve evaluation of investments based on their contribution to the aggregate performance of the entire corporation rather than on the isolated characteristics of the investments themselves.

3. STRATEGY AT DIFFERENT HIERARCHY LEVELS :

A. Corporate Level Strategy :

Corporate level strategy fundamentally is concerned with selection of businesses in which a company should compete and with the development and coordination of that portfolio of businesses.

Corporate level strategy should be able to answer three basic questions:	
Suitability	Whether the strategy would work for the accomplishment of common objective of the company.
Feasibility	Determines the kind and number of resources required to formulate and implement the strategy.
Acceptability	It is concerned with the stakeholders' satisfaction and can be financial and non-financial.

B. Business Unit Level Strategy :

Strategic business unit (SBO) may be any profit centre that can be planned independently from the other business units of a corporation. At the business unit level, the strategic issues are about practical coordination of operating units and developing and sustaining a competitive advantage for the products and services that are produced.

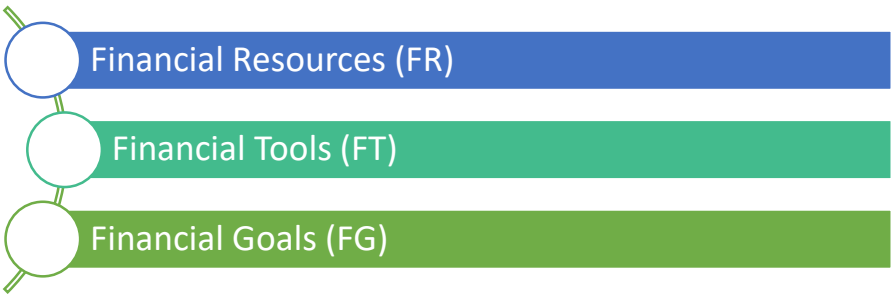
C. Functional Level Strategy :

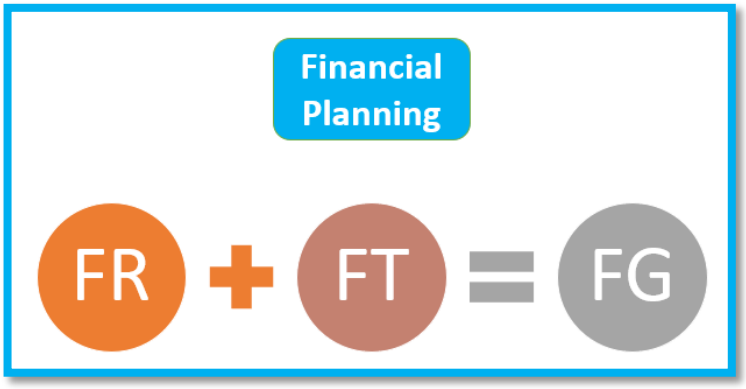
The functional level is the level of the operating divisions and departments. The strategic issues at this level are related to functional business processes and value chain. Functional level strategies in R&D, operations, manufacturing, marketing, finance, and human resources involve the development and coordination of resources through which business unit level strategies can be executed effectively and efficiently.

Among the different functional activities viz production, marketing, finance, human resources and research and development, finance assumes highest importance during the top down and bottom up interaction of planning. Corporate strategy deals with deployment of resources and financial strategy is mainly concerned with mobilization and effective utilization of money, the most critical resource that a business firm likes to have under its command.

4. FINANCIAL PLANNING :

There are 3 major components of Financial planning:





For an individual, financial planning is the process of meeting one's life goals through proper management of the finances. These goals may include buying a house, saving for children's education or planning for retirement. It is a process that consists of specific steps that helps in taking a big-picture look at where you financially are. Using these steps you can work out where you are now, what you may need in the future and what you must do to reach your goals.

Outcomes of the financial planning are the financial objectives, financial decision-making and financial measures for the evaluation of the corporate performance. Financial objectives are to be decided at the very outset so that rest of the decisions can be taken accordingly. The objectives need to be consistent with the corporate mission and corporate objectives. Financial decision making helps in analyzing the financial problems that are being faced by the corporate and accordingly deciding the course of action to be taken by it. The financial measures like ratio analysis, analysis of cash flow statement are used to evaluate the performance of the Company. The selection of these measures again depends upon the Corporate objectives.

5. INTERFACE OF FINANCIAL POLICY AND STRETEGIC MANAGEMENT :

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

Sources of finance and capital structure are the most important dimensions of a strategic plan. The need for fund mobilization to support the expansion activity of firm is very vital for any organization. The generation of funds may arise out of ownership capital and or borrowed capital. A company may issue equity shares and/or preference shares for mobilizing ownership capital

and debentures to raise borrowed capital. Public deposits, for a fixed time period, have also become a major source of short and medium term finance.

Along with the mobilization of funds, policy makers should decide on the capital structure to indicate the desired mix of equity capital and debt capital. There are some norms for debt equity ratio which need to be followed for minimizing the risks of excessive loans. For instance, in case of public sector organizations, the norm is 1:1 ratio and for private sector firms, the norm is 2:1 ratio. However this ratio in its ideal form varies from industry to industry. It also depends on the planning mode of the organization. For capital intensive industries, the proportion of debt to equity is much higher. Similar is the case for high cost projects in priority sectors and for projects in under developed regions.

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

Dividend policy is yet another area for making financial policy decisions affecting the strategic performance of the company. A close interface is needed to frame the policy to be beneficial for all. Dividend policy decision deals with the extent of earnings to be distributed as dividend and the extent of earnings to be retained for future expansion scheme of the firm. From the point of view of long term funding of business growth, dividend can be considered as that part of total earnings, which cannot be profitably utilized by the company. Stability of the dividend payment is a desirable consideration that can have a positive impact on share prices. The alternative policy of paying a constant percentage of the net earnings may be preferable from the point of view of both flexibility of the firm and ability of the firm. It also gives a message of lesser risk for the investors. Yet some other companies follow a different alternative. They pay a minimum dividend per share and additional dividend when earnings are higher than the normal earnings.

Thus, the financial policy of a company cannot be worked out in isolation of other functional policies. It has a wider appeal and closer link with the overall organizational performance and direction of growth.

6. BALANCING FINANCIAL GOALS VIS-À-VIS SUSTAINABLE GRWOTH :

The concept of sustainable growth can be helpful for planning healthy corporate growth. This concept forces managers to consider the financial consequences of sales increases and to set sales growth goals that are consistent with the operating and financial policies of the firm. Often, a conflict can arise if growth objectives are not consistent with the value of the organization's sustainable growth. Question concerning right distribution of resources may take a difficult shape if we take into consideration the rightness not for the current stakeholders but for the future stakeholders also. To take an illustration, let us refer to fuel industry where resources are limited in quantity and a judicial use of resources is needed to cater to the need of the future customers along with the need of the present customers. One may have noticed the save fuel campaign, a demarketing campaign that deviates from the usual approach of sales growth strategy and preaches for conservation of fuel for their use across generation. This is an example of stable growth strategy adopted by the oil industry as a whole under resource constraints and the long run objective of survival over years. Incremental growth strategy, profit strategy and pause strategy are other variants of stable growth strategy.

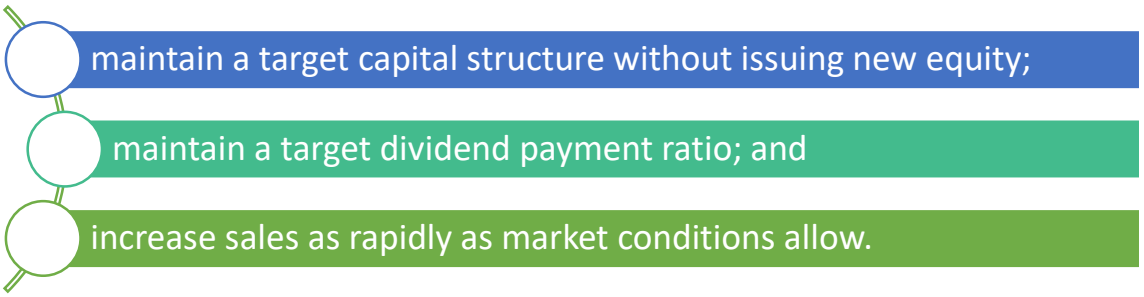
Sustainable growth is important to enterprise long-term development. Too fast or too slow growth will go against enterprise growth and development, so financial should play important role in enterprise development, adopt suitable financial policy initiative to make sure enterprise growth speed close to sustainable growth ratio and have sustainable healthy development.

What makes an organisation financially sustainable?
To be financially sustainable, an organisation must: ✓ have more than one source of income; ✓ have more than one way of generating income; ✓ do strategic, action and financial planning regularly; ✓ have adequate financial systems; ✓ have a good public image; ✓ be clear about its values (value clarity); and ✓ have financial autonomy.

The sustainable growth rate (SGR), concept by Robert C. Higgins, of a firm is the maximum rate of growth in sales that can be achieved, given the firm's profitability, asset utilization, and desired dividend payout and debt (financial leverage) ratios.

SGR = ROE x (1- Dividend payment ratio)

Sustainable growth models assume that the business wants to:



Since the asset to beginning of period equity ratio is constant and the firm's only source of new equity is retained earnings, sales and assets cannot grow any faster than the retained earnings plus the additional debt that the retained earnings can support.

Economists and business researchers contend that achieving sustainable growth is not possible without paying heed to twin cornerstones: growth strategy and growth capability. Companies that pay inadequate attention to one aspect or the other are doomed to fail in their efforts to establish practices of sustainable growth (though short-term gains may be realized). After all, if a company has an excellent growth strategy in place, but has not put the necessary infrastructure in place to execute that strategy, long-term growth is impossible. The reverse is also true.

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

What makes an organisation sustainable?
In order to be sustainable, an organisation must: ✓ have a clear strategic direction; ✓ be able to scan its environment or context to identify opportunities for its work; ✓ be able to attract, manage and retain competent staff; ✓ have an adequate administrative and financial infrastructure; ✓ be able to demonstrate its effectiveness and impact in order to leverage further resources; and ✓ get community support for, and involvement in its work.

The sustainable growth model is particularly helpful in situations in which a borrower requests additional financing. The need for additional loans creates a potentially risky situation of too much debt and too little equity. Either additional equity must be raised or the borrower will have to reduce the rate of expansion to a level that can be sustained without an increase in financial leverage.

Mature firms often have actual growth rates that are less than the sustainable growth rate. In these cases, management's principal objective is finding productive uses for the cash flows that exist in excess of their needs. Options available to business owners and executives in such cases includes returning the money to shareholders through increased dividends or common stock repurchases, reducing the firm's debt load, or increasing possession of lower earning liquid assets. These actions serve to decrease the sustainable growth rate. Alternatively, these firms can attempt to enhance their actual growth rates through the acquisition of rapidly growing companies.

Growth can come from two sources: increased volume and inflation. The inflationary increase in assets must be financed as though it were real growth. Inflation increases the amount of external financing required and increases the debt-to-equity ratio when this ratio is measured on a historical cost basis. Thus, if creditors require that a firm's historical cost debt-to-equity ratio stay constant, inflation lowers the firm's sustainable growth rate.

Thanks ….

Be hope that you will find this helpful. If you would like to discuss any of the points please speak to us through the following channel.

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Security Analysis


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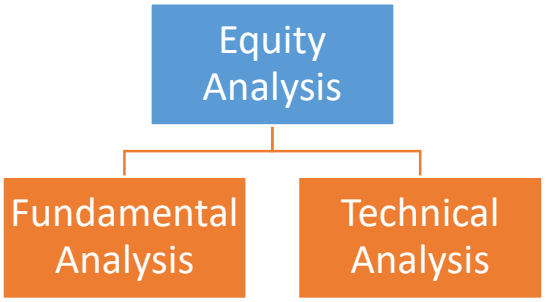
CHAPTER DESIGN

1. INTRODUCTION
2. BASICS OF STOCK MARKETS
3. FUNDAMENTAL ANALYSIS
4. ECONOMIC ANALYSIS
5. INDUSTRY ANALYSIS
6. COMPANY ANALYSIS
7. TECHNICAL ANALYSIS
8. THEORIES OF TECHNICAL ANALYSIS
9. CHARTING TECHNIQUES
10. MARKET INDICATORS
11. PRICE PATTERNS
12. DATA ANALYSIS
13. EFFICIENT MARKET THEORY
14. SUPPORTERS AND DISTRACTORS OF TECHNICAL ANALYSIS

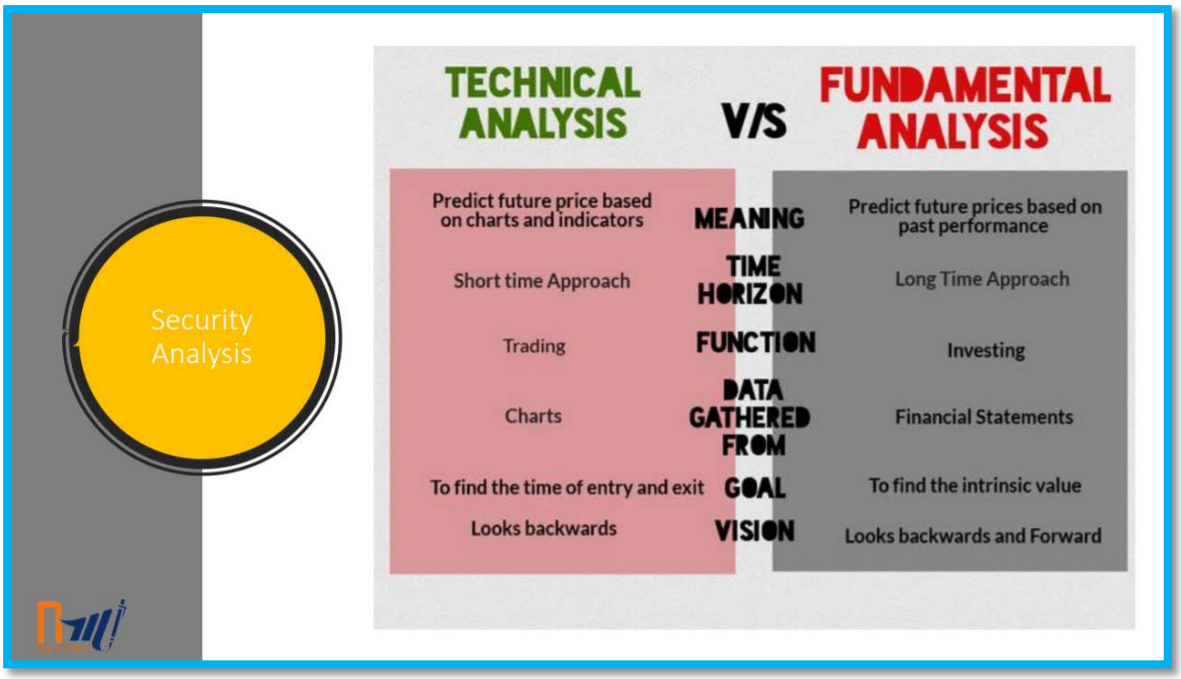


1. INTRODUCTION :

Everyone is interested in making investments. Two major forms of investments are Equity and Bonds. Every investor expects to gain from investing in securities. However, investing is an art and it requires detailed analysis before we can earn out of such investments. In this entire section we shall deal with securities, its analysis and valuations.

2. BASICS OF STOCK MARKETS :

- Two main stock exchanges in India are BSE and NSE
- Both the stock exchanges are located in Mumbai. (Mumbai is known as financial capital of the country)
- People participating in markets are known as Bulls and Bears
- Bulls always expect the market to go up, therefore they buy (Go long) the shares so that when the market rises, they can sell the share at higher price and make a profit.
- Bears always expect market to go down, therefore they sell (Go short) on shares so that when the market falls, they can buy the share at lower price and make a profit.
- Every market has restrictions on shorting. In India only intra-day shorting is allowed.



3. FUNDAMENTAL ANALYSIS

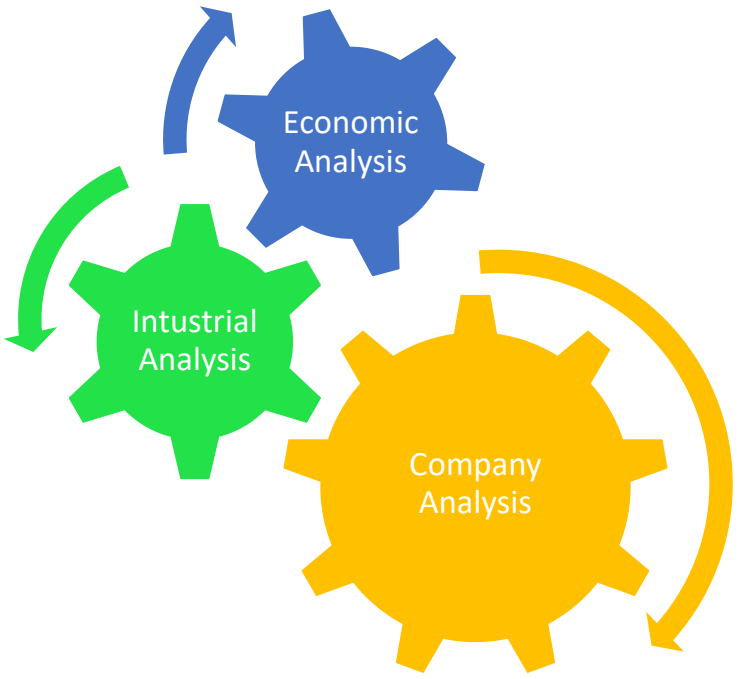
Fundamental analysis is based on the assumption that the share prices depend upon the future dividends expected by the shareholders. The present value of the future dividends can be calculated by discounting the cash flows at an appropriate discount rate and is known as the 'intrinsic value of the share'. The intrinsic value of a share, according to a fundamental analyst, depicts the true value of a share. A share that is priced below the intrinsic value must be bought, while a share quoting above the intrinsic value must be sold.

Thus, it can be said that the price the shareholders are prepared to pay for a share is nothing but the present value of the dividends they expect to receive on the share and this is the price at which they expect to sell it in the future.

The pricing is discussed in detail in the next chapter.

Key Variables of Fundamental Analysis

The key variables that an investor must monitor in order to carry out his fundamental analysis are economy wide factors, industry wide factors and company specific factors. In other words, fundamental analysis encompasses economic, industrial and company analyses. They are depicted by three concentric circles and constitute the different stages in an investment decision making process.



4. ECONOMIC ANALYSIS :

Macro- economic factors e. g. historical performance of the economy in the past/ present and expectations in future, growth of different sectors of the economy in future with signs of stagnation/degradation at present to be assessed while analyzing the overall economy. Trends in peoples' income and expenditure reflect the growth of a particular industry/company in future. Consumption affects corporate profits, dividends and share prices in the market.

Factors Affecting Economic Analysis :

1. Growth Rates of National Income and Related Measures:
2. Growth Rates of Industrial Sector
3. Inflation
4. Monsoon

Techniques used for Economic Analysis :

1. Anticipatory Surveys
2. Barometer/Indicator Approach
    a. Leading Indicators
    b. Roughly Coincidental Indicators
    c. Lagging Indicators
3. Economic Model Building Approach
    a. Hypothesize total economic demand by measuring total income (GNP) based on political stability, rate of inflation, changes in economic levels
    b. Forecasting the GNP by estimating levels of various components viz. consumption expenditure, gross private domestic investment, government purchases of goods/services, net exports
    c. After forecasting individual components of GNP, add them up to obtain the forecasted GNP.
    d. Comparison is made of total GNP thus arrived at with that from an independent agency for the forecast of GNP and then the overall forecast is tested for consistency. This is carried out for ensuring that both the total forecast and the component wise forecast fit together in a reasonable manner.

5. INDUSTRY ANALYSIS :

When an economy grows, it is very unlikely that all industries in the economy would grow at the same rate. So it is necessary to examine industry specific factors, in addition to economy-wide factors.

First of all, an assessment has to be made regarding all the conditions and factors relating to demand of the particular product, cost structure of the industry and other economic and Government constraints on the same. Since the basic profitability of any company depends upon the economic prospects of the industry to which it belongs, an appraisal of the particular industry's prospects is essential.

Factors Affecting Industry Analysis

1. Product Life-Cycle
2. Demand Supply Gap
3. Barriers to Entry
4. Government Attitude
5. State of Competition in the Industry
6. Cost Conditions and Profitability
7. Technology and Research

Techniques Used in Industry Analysis :

1. Regression Analysis
2. Input – Output Analysis

6. COMPANY ANALYSIS :

Economic and industry framework provides the investor with proper background against which shares of a particular company are purchased. This requires careful examination of the company's quantitative and qualitative fundamentals.

1. Net Worth and Book Value
2. Sources and Uses of Funds
3. Cross-Sectional and Time Series Analysis
4. Size and Ranking
5. Growth Record
6. Financial Analysis
7. Competitive Advantage
8. Quality of Management
9. Corporate Governance
10. Regulation
11. Location and Labour-Management Relations:
12. Pattern of Existing Stock Holding
13. Marketability of the Shares

Techniques used for company Analysis :

1. Correlation & Regression Analysis
2. Trend Analysis
3. Decision Tree Analysis

7. TECHNICAL ANALYSIS

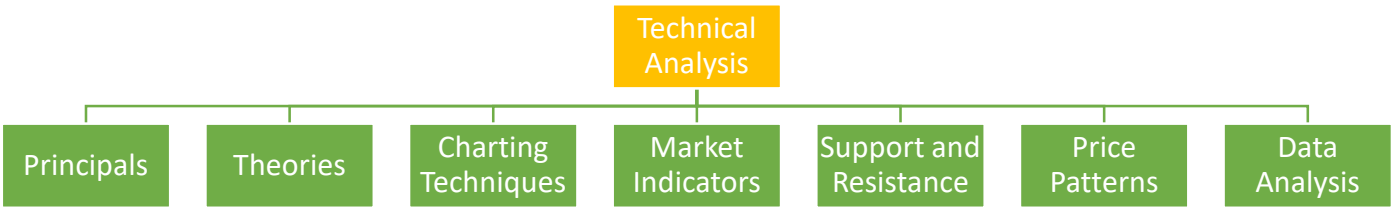
Technical Analysis is a method to predict share price movements based on a study of price graphs or charts on the assumption that share price trends are repetitive, that since investor psychology follows a certain pattern, what is seen to have happened before is likely to be repeated. The technical analyst is n o t concerned with the fundamental strength or weakness of a company or an industry; he only studies investor and price behavior.

A technical analyst attempts precisely that. The two basic questions that he seeks to answer are:

(i) Is there a discernible trend in the prices?

(ii) If there is, then are there indications that the trend would reverse?

The methods used to answer these questions are visual and statistical. The visual methods are based on examination of a variety of charts to make out patterns, while the statistical procedures analyze price and return data to make trading decisions.



Principals :

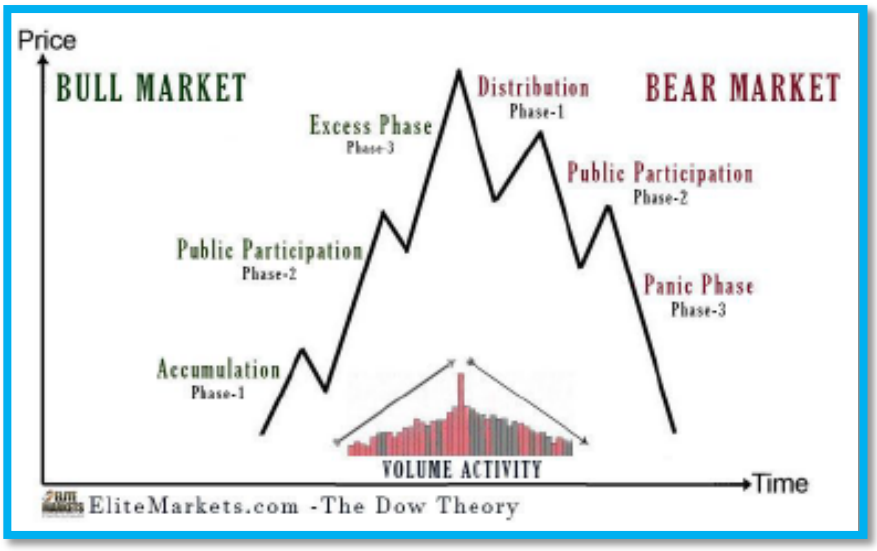
1. The market value of stock is actually depending on the supply and demand for a stock.
2. The demand and the supply is actually governed by several factors.
3. Stock prices move in trend
4. It uses charts and diagrams

8. THEORIES OF TECHNICAL ANALYSIS :

1. THE DOW THEORY
2. ELLIOT WAVE THEORY
3. RAMDOM WALK THEORY

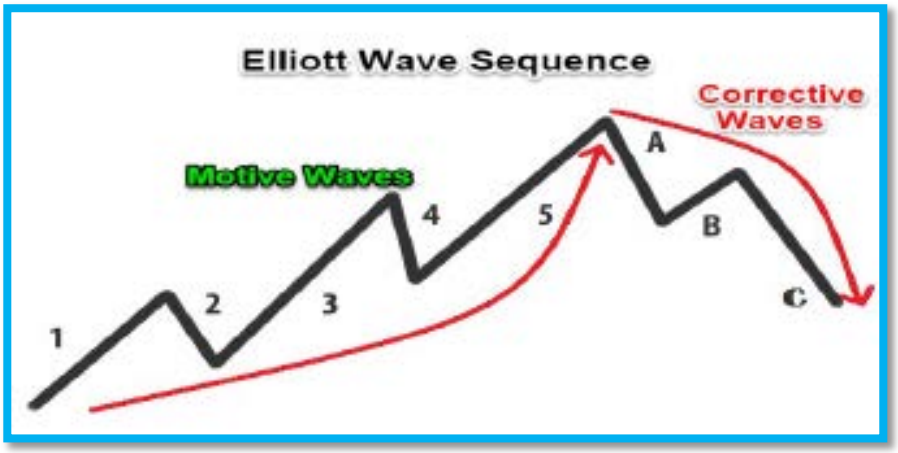
1. THE DOW THEORY :

1. Was invented by Charles Dow
2. It is based on 2 indices
   a. Dow Jones Industrial Average
   b. Dow Jones Transport Average
3. There are 3 movement
   a. Primary Movement
   b. Secondary Movement
   c. Daily movement
4. Primary Movement
   a. From 1 year to 3 years
   b. Bull or bear
5. Secondary Movement
   a. From 2 weeks to month or more
   b. Movement opposite to primary movement



2. THE ELLIOT WAVE THEORY :

1. Created by Ralph Elliot in 1934
2. Based on Research on share price movement for 75 years
3. There are 2 types of movement
   a. Impulsive movement
   b. Corrective movement
4. Impulsive movement – Towards basic movement – 5 cycles
5. Corrective Movement – Opposite to basic movement – 3 cycles
6. The complete cycle is the 8 wave cycle

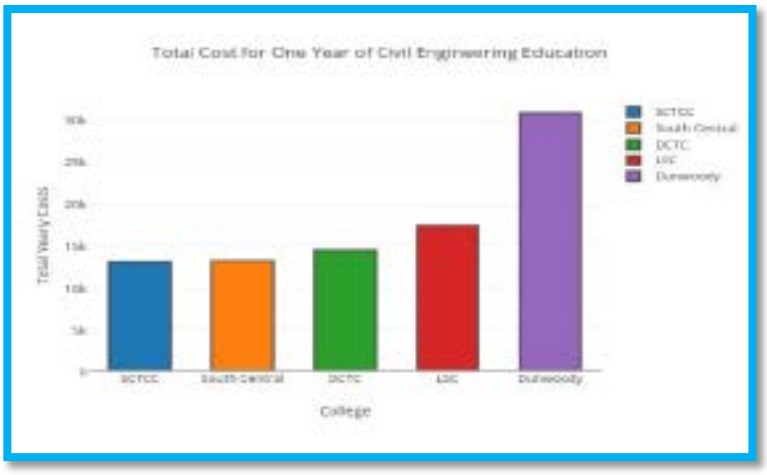


3. THE RANDOM WALK THEORY :

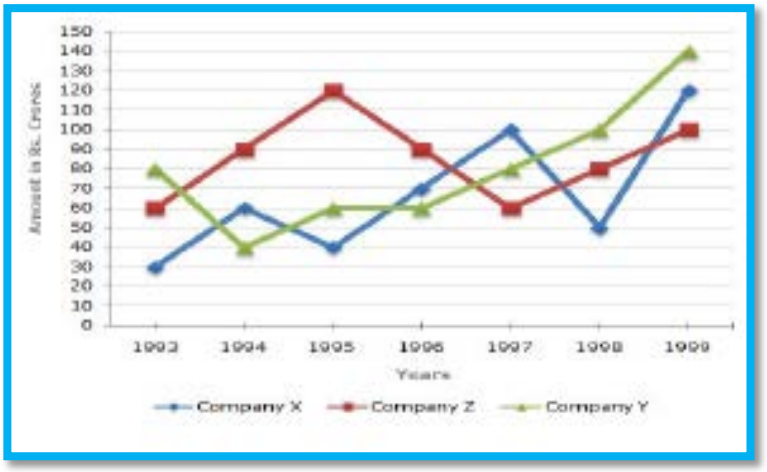
1. Share price cannot be predicted
2. No underlying factor
3. There are ups and downs, but no relation can be drawn

9. CHARTING TECHNIQUES :

1. Bar Chart :

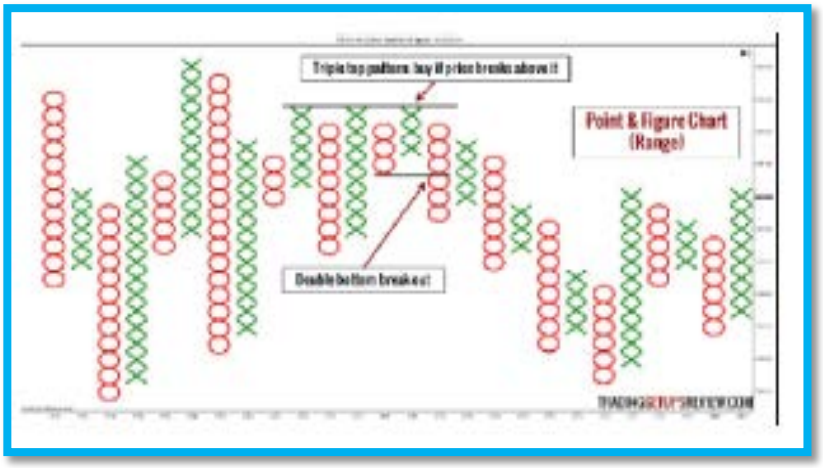


2. Line Chart :



3. Candle Stick Chart

4. Point and Figure Chart



10. MARKET INDICATORS :

1. Breath index :

- By dividing net Advances/Declines by no of issues traded
- Supports or contradicts
- Supports – Technical Strength
  – Move along with Dow Average
- Contradicts – Technical Weakness
  – Move in opposite direction to Dow Average

2. Volume of transactions :

- Higher prices with higher volume – Bull Market
- Higher prices with lower volumes – Correction / End of Bull
- Lower Prices with higher volumes – Bear Market
- Lower Prices with lower volumes – Correction /End of Bear

3. Confidence Index :

- Ratio of high grade bond yields to low grade bond yields
- Rising confidence index – Bull Phase
- Falling confidence index – Bear Phase

4. Relative strength Index :

- Stock which exhibits relative strength – ones which rises faster in bull market and one which falls less in bear market – should be purchased.

5. ODD – Lot theory :

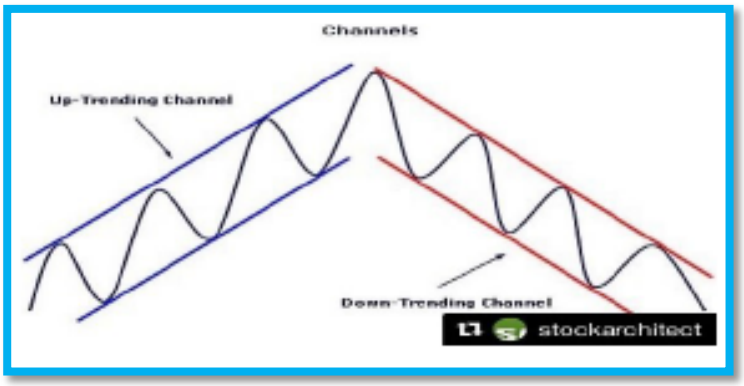
- Assumes that Average person is always wrong.
- We should buy when he sells
- We should sell when he buys

Support and Resistance :

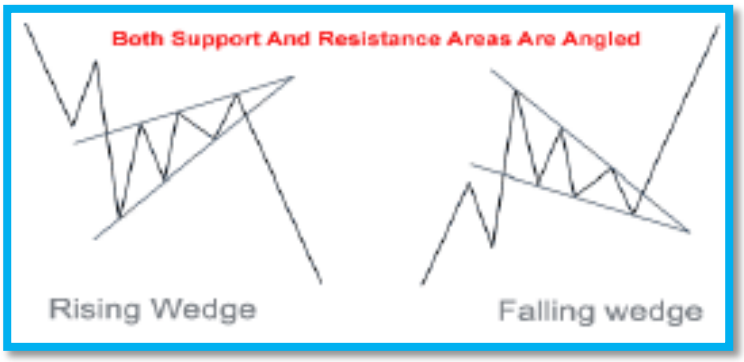
When the index/price goes down from a peak, the peak becomes the resistance level. When the index/price rebounds after reaching a trough subsequently, the lowest value reached becomes the support level. The price is then expected to move between these two levels. Whenever the price approaches the resistance level, there is a selling pressure because all investors who failed to sell at the high would be keen to liquidate, while whenever the price approaches the support level, there is a buying pressure as all those investors who failed to buy at the lowest price would like to purchase the share. A breach of these levels indicates a distinct departure from status quo, and an attempt to set newer levels.

11. PRICE PATTERNS :

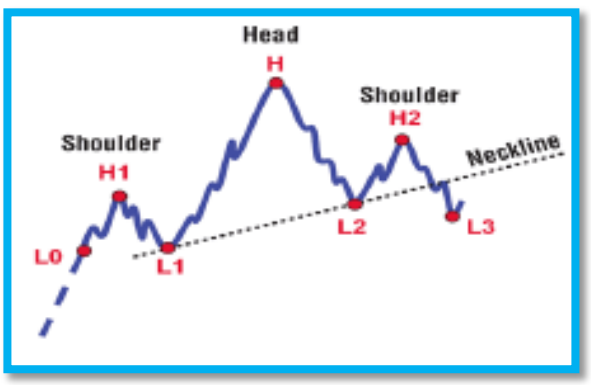
1. Channel :



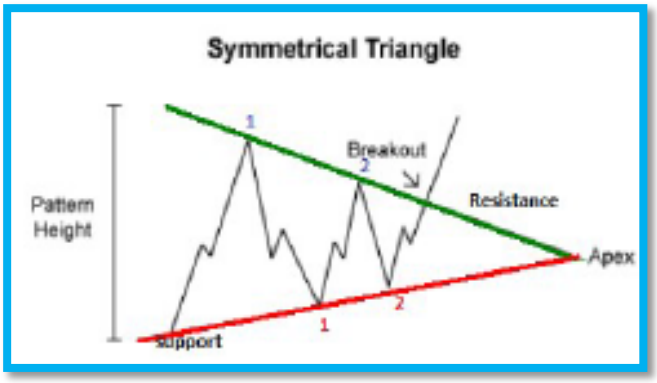
2. Wedge :



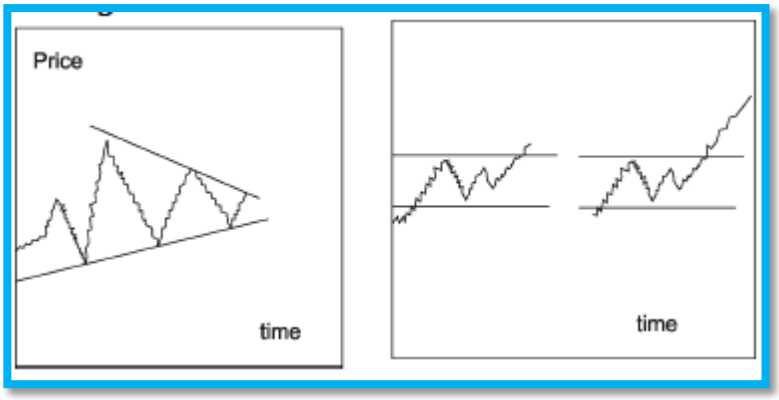
3. Head and Shoulders :



4. Triangle or Coil Formation :



5. Flags and Pennats Form :



6. Double Top Form :

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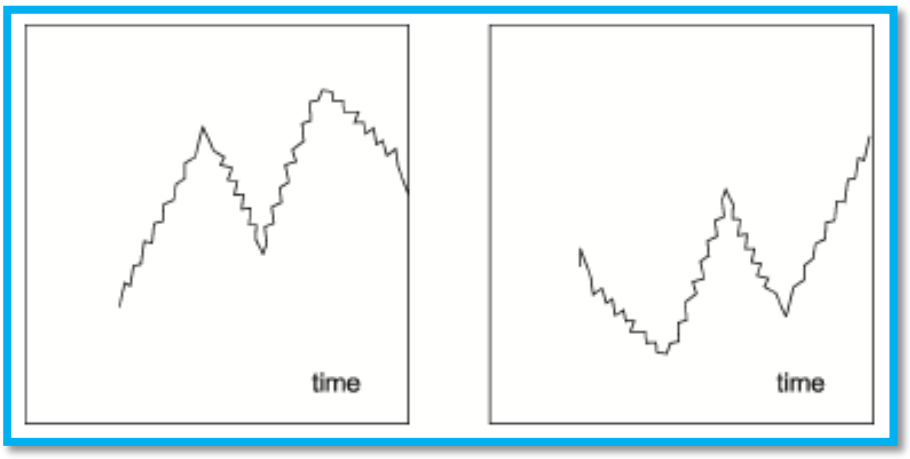

8. GAP :

12. DATA ANALYSIS :

Technical Analyst have developed rules based on simple statistical analysis of price data.

Moving Averages is one of the most popular method of data analysis used for decision making in technical analysis to determine buy and sell calls. The 2 most common used Averages are

- Arithmetic Moving Average (AMA)
- Exponential Moving Average (EMA)

1. Arithmetic Moving Average :

The technical Analyst use the following moving averages

1. 200 day Moving Average – for long term Analysis
2. 60 day moving Average – for intermediate term Analysis
3. 10 day moving Average – for short term Analysis
4. 5 day moving Average – for short term Analysis

Question 1 :

Calculate 5 day / 10 day moving average from the following information.

The closing share price at the end of each day is as follows

Day	Closing Price	Day	Closing Price
1	25	6	26
2	26	7	26.5
3	25.5	8	26.5
4	24.5	9	26
5	26	10	27

2. Exponential Moving Average :

Unlike Arithmetic moving average which assigns equal importance to each price, exponential moving average, gives highest weight to the latest price. The weights decrease exponentially, as we increase the days for taking the average

Exponent = $\frac{2}{n+1}$

Question 2 : Exponential Moving Average

Closing values of BSE Sensex from 6th to 17th day of the month of January of the year 2019 were as follows:

Days	Date	Day	Sensex
1	6	THR	14522
2	7	Friday	14925
3	8	SAT	No Trading
4	9	SUN	No Trading
5	10	MON	15222
6	11	TUE	16000
7	12	WED	16400
8	13	THR	17000
9	14	FRI	No Trading
10	15	SAT	No Trading
11	16	SUN	No Trading
12	17	MON	18000

Calculate Exponential Moving Average (EMA) of Sensex during the above period. The previous day exponential moving average of Sensex can be assumed as 15,000. The value of exponent for 31 days EMA is 0.062.

13. EFFICIENT MARKET THEORY :

1. This theory was developed by Eugen Fama, professor at university of Chicago
2. This theory supports "Random Walk Theory"
3. Theory states that "No one can predict the market"
4. The market is said to be efficient if we cannot predict the market.
5. The market is said to inefficient if we can predict the market.
6. There are 3 levels of market efficiency
   - Weak form of efficiency
   - semi Strong form of efficiency
   - Strong form of efficiency
7. Weak Form of Efficiency refer to the market were market knows all past data on prices and volumes
8. Semi Strong form of efficiency exists when market has already absorbed past data on prices and volume and also all publicly available information.
9. Strong form of efficiency exists when markets has absorbed all past data on prices and volumes and all public and private information.

Three type tests have been employed to verify the weak form of efficiency

1. Serial Correlation Test
2. Run Test
3. Filter Rule Test

Information and Formulae :

1. N1 = No of "+" Signs
2. N2 = No of "-" Signs
3. r = No of runs
4. μ (Average) = $\frac{2n1n2}{n1+n2} + 1$
5. σ (SD) = $\sqrt{\frac{(\mu-1)x(\mu-2)}{n1+n2-1}}$
6. Lower limit = $\mu - t(\sigma)$
7. Upper Limit = $\mu + t(\sigma)$

Question 3 :

The closing value of Sensex for the month of October, 2019 is given below:

Date	Closing Sensex
1	2800
3	2780
4	2795
5	2830
8	2760
9	2790
10	2880
11	2960
12	2990
15	3200
16	3300
17	3450
19	3360
22	3290
23	3360
24	3340
25	3290
29	3240
30	3140
31	3260

You are required to test the weak form of efficient market hypothesis by applying the run test at 5% and 10% level of significance.

Following value can be used :

Value of t at 5% is 2.101 at 18 degrees of freedom

Value of t at 10% is 1.734 at 18 degrees of freedom

Value of t at 5% is 2.086 at 20 degrees of freedom.

Value of t at 10% is 1.725 at 20 degrees of freedom.

14. SUPPORTERS AND DISTRACTORS OF TECHNICAL ANALYSIS :

Supporters :

1. Under influence of crowd psychology trend persist for some time. Tools of technical analysis help in identifying these trends early and help in investment decision making.
2. Shift in demand and supply are gradual rather than instantaneous. Technical analysis helps in detecting this shift rather early and hence provides clues to future price movements.
3. Fundamental information about a company is observed and assimilated by the market over a period of time. Hence price movement tends to continue more or less in same direction till the information is fully assimilated in the stock price.

Distractors :

1. Most technical analysts are not able to offer a convincing explanation for the tools employed by them.
2. Empirical evidence in support of random walk hypothesis cast its shadow over the usefulness of technical analysis.
3. By the time an uptrend and downtrend may have been signal led by technical analysis it may already have taken place.

Ultimately technical analysis must be self-defeating proposition. With more and more people employing it, the value of such analysis tends to decline.

Thanks ….

Be hope that you will find this helpful. If you would like to discuss any of the points please speak to us through the following channel.

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CHP - 3

Equity and Corporate Valuations

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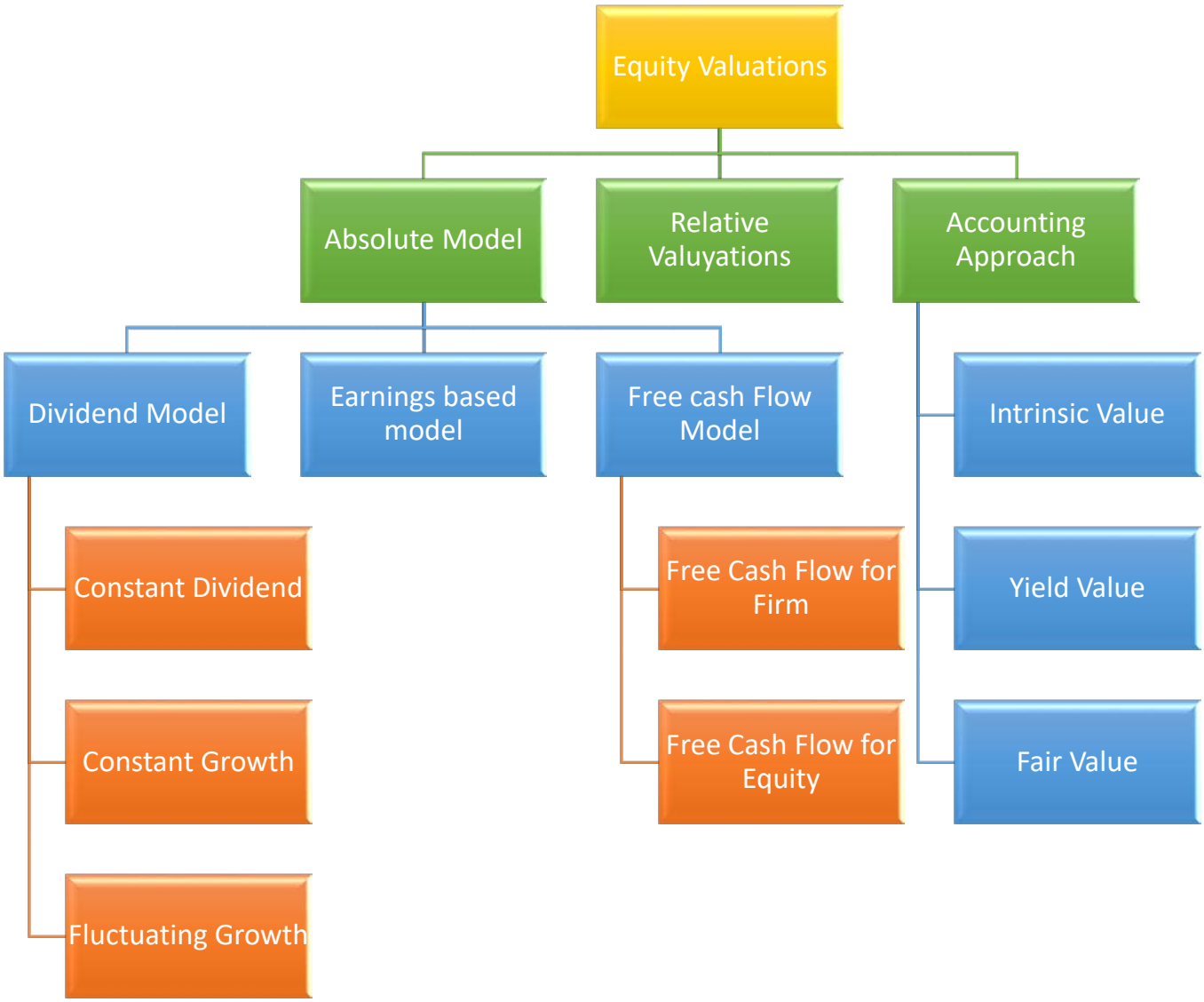
CHAPTER DESIGN

1. PREVIEW
2. INTRODUCTION
3. VALUATION MODEL
   - A. ABSOLUTE VALUATIONS MODEL
     - I. DIVIDEND DISCOUNT MODEL (GORDON'S MODEL)
       1. CONSTANT DIVIDEND MODEL
       2. CONSTANT GROWTH MODEL
       3. FLUCTUATING GROWTH MODEL
     - II WALTERS APPROACH
     - III PE MODEL
     - IV FREE CASH FLOW MODEL
       1. FREE CASH FLOW FOR FIRM (FCFF)
       2. FREE CASH FLOW FOR EQUITY (FCFE)
       3. ALCAR MODEL
   - B. RELATIVE VALUATION MODEL
4. OTHER RELATED CONCEPTS
   - A. ECONOMIC VALUE ADDED
   - B. MARKET VALUE ADDED
   - C. VALUATION OF RIGHTS
5. ACCOUNTING APPROACHES
   - A. INTRINSIC VALUE
   - B. YIELD VALUE
   - C. FAIR VALUE

1. CHAPTER PREVIEW :



2. INTRODUCTION :

Knowing what asset is worth and what determines its value is pre-requisite for making intelligent decisions while choosing investments. Valuation is key, as it will form to base for investor to may Buy (Long) or sell (Short) calls. While some assets are easier to value than others, the variable and its associated uncertainty is the base for calculating any asset. However, the core principal for valuations always remains the same.

For Equity

"IV = PV of Future Dividends/Earnings/Cash Flow"

3. VALUATIONS MODELS :

Equity is the most researched instrument as far as valuation models are concerned. Due to risk and uncertainty associated with it, the valuations models are based on various factors. Valuations models can be classified as

A. Absolute Valuation models
B. Relative valuations Models

A. Absolute Valuation Models :

Share valuation are based on data of the entity. As the name suggest such valuation models does not consider the valuations of related entity. Present value models are very dominant in this class.

Some of the models under this approach are

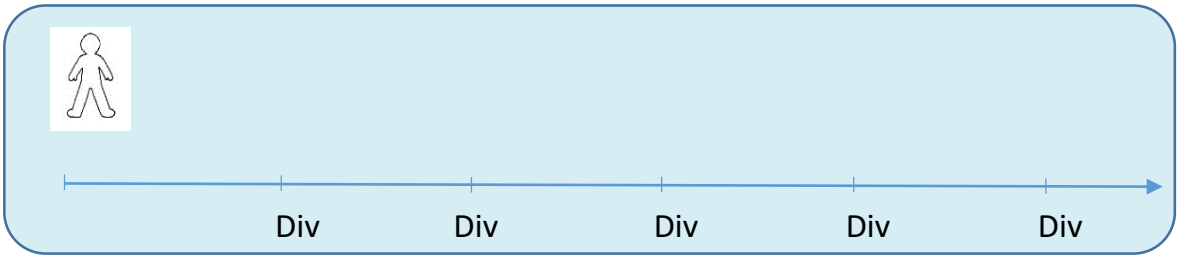
1. Dividend Based Models
2. Earnings based models
3. Cash Flow based models

1. Dividend Based Models :

Dividend is the reward for the provider of equity capital. As per this approach, value of share is present value of all future dividends.

Valuation of equity based on Dividend is based on following assumptions

1. Dividend are paid annually
2. Payment of dividend shall occur at the end of first year.
3. Dividend are paid regularly by the entity.



PV of Perpetual Cash Flow = $\frac{Cash\ Flow}{Rate} = \frac{CF}{R}$

Question 1 : RM's mom

Suppose RM's mom is going to give him Rs. 500 every year perpetually. How much she should invest today ? The bank rate today = 10%.

The company can follow any of the following dividends models

1. Constant Dividend Approach
2. Constant Growth Approach
3. Fluctuating Growth Approach

1. Constant Dividend Approach :

This model is based on the assumption that company pays constant dividend year after year. There is no growth or fluctuations in dividend. With this approach, the value of share can be calculated by the following formula

$$IV = \frac{Dividend}{Re}$$

Re = Expected rate of return (what will we earn) (Kitna Kamayenge)

Question 2 : Mr X

Mr X is interested in buying share of GOT pharma Ltd. He collected previous data of the company's dividend and found that the company pays constant dividend of Rs.3 every year. If he expects to earn 10% from his investment, calculate IV if Share?

Discount rate :

Discount rate is the rate at which present value of future cash flow is determined. While valuing equity, the discount rate should be Re. i.e expected rate of return on equity. An investor would provide equity capital based on his expected return and that's the value he is ready to pay for share.

Re can be calculated by using capital asset pricing model (CAPM)

$Re = Rf + \beta (RM - Rf)$

Rf = Risk free rate
β = Sensitivity index (Sensitivity of Stock with that of Market)
Rm = Return from Market (Stock Market)
Rm – Rf = Market Risk Premium.

Question 3 : RM Ltd.

The Beta of RM Ltd. is 2. Return from govt securities = 10%. Return on Market portfolio = 15%. Calculate Re.

Components of Re :

There are 3 components of Re

1. Rf = Risk Free Rate
2. β = Beta
3. RM – Rf = Market Risk Premium

1. Risk free rate (Rf) :

The **risk-free rate of return** is the theoretical **rate of return** of an investment with zero **risk**. The **risk-free rate** represents the interest an investor would expect from an absolutely **risk-free** investment over a specified period of time. It can be calculated by using the following formula

$$Rf = \frac{FV-P}{P} \times 100 \times \frac{12}{n}$$

Question 4 : Rm

Rm purchase 91 day T – bill for 97. Calculate Rf ?

2. β (Beta) :

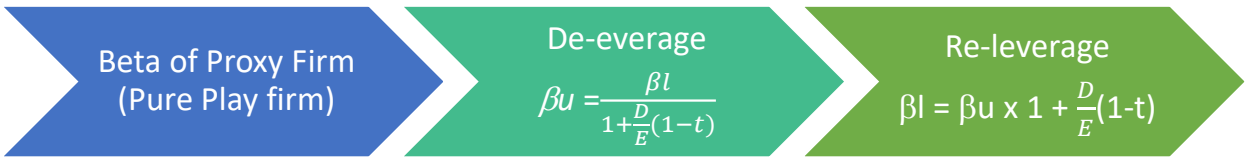
Beta is a measure of a **stock's** volatility in relation to the overall market. ... If a **stock** moves less than the market, the **stock's beta** is less than 1.0. High-**beta stocks** are supposed to be riskier but provide higher return potential; low-**beta stocks** pose less risk but also lower returns.

Beta can be calculated for

a. Listed company
b. Unlisted company

A. Listed Company = $\beta = \frac{COVxm}{\sigma^2 m}$ (Portfolio)

B. Unlisted Company = Step 1, Step 2 and Step 3



Note

1. βu = Beta of Unlevered Firm
2. βl = Beta of Levered Firm
3. βa = Beta of Assets
4. βe = Beta of Equity
5. $\beta l = \beta e$
6. $\beta u = \beta a$

Question 5 : RM Ltd's

Calculate β of RM Ltd's stock which is not listed in the market from the following information.

βe of proxy firm	= 2.5
D/E ratio of proxy firm	= 0.9
Tax rate of proxy firm	= 40%
D/E ratio of RM Ltd.	= 1
Tax rate of RM Ltd.	= 35%

3. Market Risk Premium (Rm-Rf) :

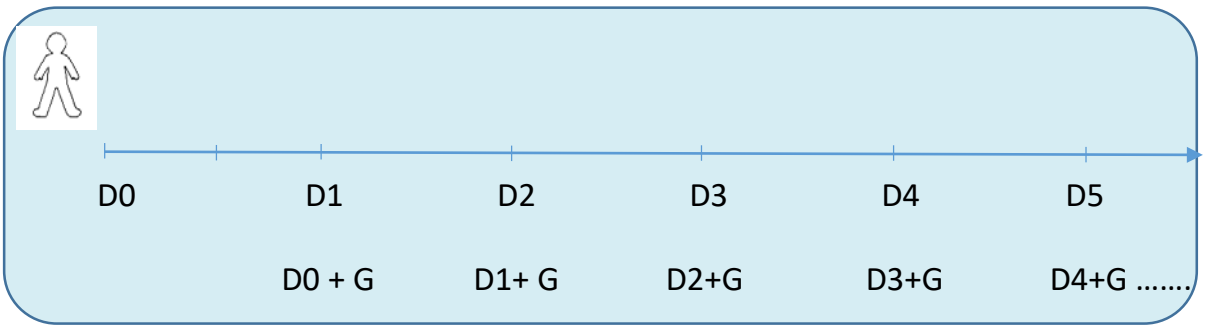
It's the premium that an investor expects earn from his investment in market over Rf. He expects a premium because of Risk associated with investment in Market. RM i.e Market Return is sum of Dividend yield + growth Yield.

2. Constant Growth Model :

This model is based on the assumption that company pays dividends which grows at constant rate year after year. With this approach, the value of share can be calculated by the following formula

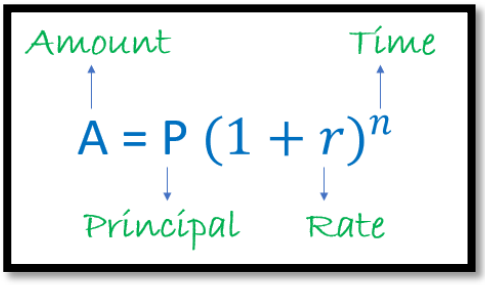
IV = $\frac{D1}{Re-g}$ (Gordon's Model)

IV = Intrinsic Value
D1 = Expected Dividend (Next Dividend)
Re = Expected return
G = Growth



Growth

Growth rates refer to the percentage change of a specific variable within a specific time period. It can be calculated by the following formula



Question 6 : RM

Find the growth rate of the share of RM using SAGR and CAGR based on the following information. Also calculate expected EPS for next year.

Year	1	2	3	4	5
EPS	10	11.5	10	11.25	14

Growth for any particular entity can also be calculated by using the following formula

G = br

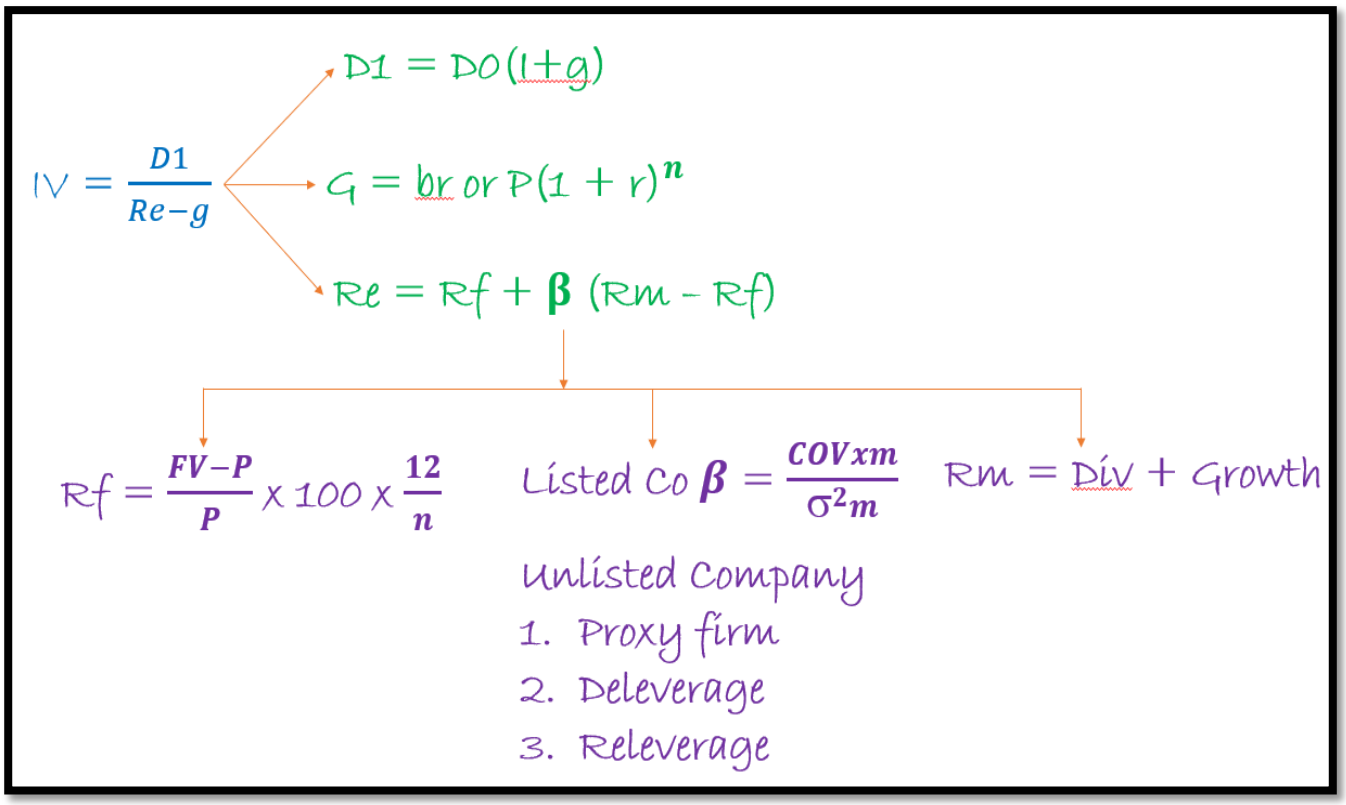
b = retention

r = ROE (Return on Equity)

Question 7 : RM Ltd

RM Ltd has a ROE of 20% and has a pay-out ratio of 40%. Calculate Growth rate of RM Ltd.

Summary



Question 8 : A company

A company pays the dividend of Rs 2 per share with growth rate of 7%. The risk free rate i.e. 9% and the market rate of return is 13%. The company has a beta of 1.50. However, due to the decision of the finance manager, beta is likely to increase to 1.75. Find out the present value as well as the likely value of the share before and after the decision.

Question 9 : Target Ltd

The Beta co-efficient of Target Ltd is 1.4. The company has been maintaining 8% rate of growth in dividends and earnings. The last dividend paid was Rs 4 per share. Return on Government securities is 10%. Return on Market portfolio is 15%. The current market price of one share of Target Ltd. is Rs 36. (i) What will be the equilibrium price per share of Target Ltd.? (ii) Would you advice purchasing the share?

Question 10 : Amal Ltd.

Amal Ltd. has been maintaining a growth rate of 12% in dividends. The company has paid dividend @ 3 per share. The rate of return on market portfolio is 15% and the risk free rate of return in the market has been observed as 10%. The beta of the company's share is 1.2 You are required to calculate the expected rate to return on the company's shares as per CAPM model and the equilibrium price per share by dividend growth model.

Question 11 : X Ltd.

An investor is holding 2000 shares of X Ltd. Current year dividend rate is Rs.2 per share. Market price of the share is Rs.30 each. The investor is concerned about several factors are likely to change during the next financial year as indicated below :

	Current Year	Next Year
Dividend paid / anticipated per share (Rs.)	2	1.8
Risk free rate	12%	10%
Market Risk Premium	5%	4%
Beta Value	1.3	1.4
Expected growth	9%	7%

In view of the above, advise whether the inves tor should buy, hold or sell the shares

Analysis of Gordon's Formulae

$$IV = \frac{D1}{Re-g}$$

- IV --- D1 = Direct Relation i.e D1 increases IV increases and vice versa
- IV --- G = Direct Relation i.e D1 increases IV increases and vice versa
- IV --- Re = Inverse Relation i.e Re increases IV decreases and vice versa

Question 12 : Voyage Ltd.

Shares of Voyage Ltd. are being quoted at a price earning ratio of 8 times. The company retains 45% of its earnings which are Rs 5 per share You are required to compute 1) The cost of equity to company if the market expects a growth rate of 15% p.a 2) If the anticipated growth rate is 16% per annum, calculate the indicative market price with the same cost of capital 3) If the company's cost of capital is 20% p.a and the anticipated growth rate is 19% p.a, calculate the market price per share.

Question 13 : A Ltd. and B Ltd.

Two companies A Ltd. and B Ltd. paid a dividend of Rs 3.50 per share. Both are anticipating that dividend shall grow @ 8%. The beta of A Ltd. and B Ltd. are 0.95 and 1.42 respectively. The yield on GOI Bond is 7% and it is expected that stock market index shall increase at annual rate of 13%.

You are required to determine:

(a) Value of share of both companies.

(b) Why there is a difference in the value of shares of two companies.

(c) If current market price of share of A Ltd. and B Ltd. are Rs 74 and Rs 55 respectively. As an investor what course of action should be followed?

Question 14 :

The Rf is 9%. The expected return on market is 13%. Growth is 7%. The last dividend paid to the equity shareholder of the firm was Rs. 2.00. Beta of stock is1.2

1. What is the equilibrium price of the equity stock of platinum Ltd.?
2. How would the equilibrium price change when
   - The inflation premium increases by 2 %?
   - The expected growth rate increases by 3%?
   - The Beta of Platinum Ltd. Equity rises to 1.3?

3. <u>Fluctuating Growth Approach :</u>

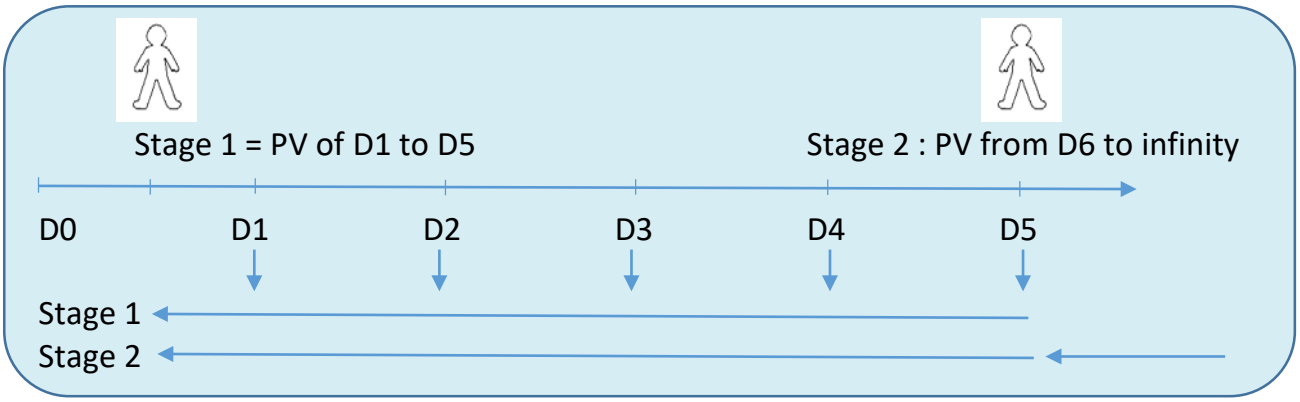
This approach is useful if dividend grows at fluctuating rate for certain number of years and then the growth rate becomes constant. In such cases to arrive at IV, we are required to calculate the answers in 2 different phases.

Consider the growth rate of dividend fluctuates for 5 years and then it becomes constant

Stage 1: We will calculate dividend for first 5 years and calculate PV of each cash flow discounting it by Re

Stage 2: We will calculate IV at the end of year 5 by using constant growth model and then calculate the discount the same to calculate IV at the point of purchase

IV of the share = Stage 1 + stage 2



Question 15 : RM

RM is expected to pay Rs.2 dividend in the next year. The dividends are expected to grow at the rate of 30% in the 2nd and 3rd year and then by 10% in 4th and 5th year and then by 5% per annum. If the required rate of return is 15%, what is the value per share?

Question 16 : MNP Ltd.

MNP Ltd. has declared and paid annual dividend of Rs 4 per share. It is expected to grow @ 20% for the next two years and 10% thereafter. The required rate of return of equity investors is 15%.

Compute the current price at which equity shares should sell.

Note: Present Value Interest Factor (PVIF) @ 15%:

For year 1 = 0.8696;

For year 2 = 0.7561

Question 17 : EC Limited

EC Limited, a manufacturer of electronic cards, is a listed company. The current stock price of the company's stock is Rs 160 per share. The earnings and dividend growth prospectus of the company are disputed by analysis. Mr. R Ramamurthy is forecasting a growth of 7.5% forever. However, Mr. S. Prabhu is predicting a 25% growth in dividends for the next three years after which the growth is to decline to a level of 5% p.a forever. The current dividend per share is Rs 11 and stocks of company's of similar risk are currently priced to provide 14% expected return.

You are required to calculate

1. It intrinsic value of EC Limited's share based on the projections of Mr. R. Ramamurthy
2. It intrinsic value of EC Limited's share based on the projections of Mr. S. Prabhu
3. The implied perpetual growth rate assuming that the stock is correctly price

Question 18 :

XYZ Ltd. paid a Dividend of Rs. 2 for the current year. Dividend is expected to grow at 40% for the next 5 years and at 15% per annum thereafter. The Return on 182 days T–Bills is 11% per annum and the Market Return is expected to be around 18% with a Variance of 24%. The Co–Variance of XYZ's Return with that of the Market is 30%. You are required to calculate the required Rate of Return and Intrinsic Value of the Stock.

2. Earnings Based Model :

The above-mentioned models are based on Dividends. However, nowadays an investor might be willing to forego cash dividend in lieu of higher earnings on retained earning ultimately leading to higher growth in dividend.

Hence, these investors may be interested in determination of value of equity shares based on earnings rather than Dividend. The different models based on earnings are as follows

A. Gordons Model = $\frac{E\ (1-retension\ ratio)}{Re-g}$

B. Walters Model = $\frac{D}{ke} + \frac{r\ (E-D)/Ke}{ke}$

Where

D = Dividend per share

Ke = Cost of Equity Capital

r = International Rate of Return

E = Earnings per share

C. Price Earnings Ratio

Value of share = EPS X PE Ratio

3. Cash Flow Based Model :

Free cash flow valuation model discounts the cash flow available to a firm and equity shareholders after meeting its long term and short term capital requirements.

"The Value of the firm/equity is the present value of all future cash flows."

Within Free cash Flow approach, we have

A. Free Cash Flow for Firm

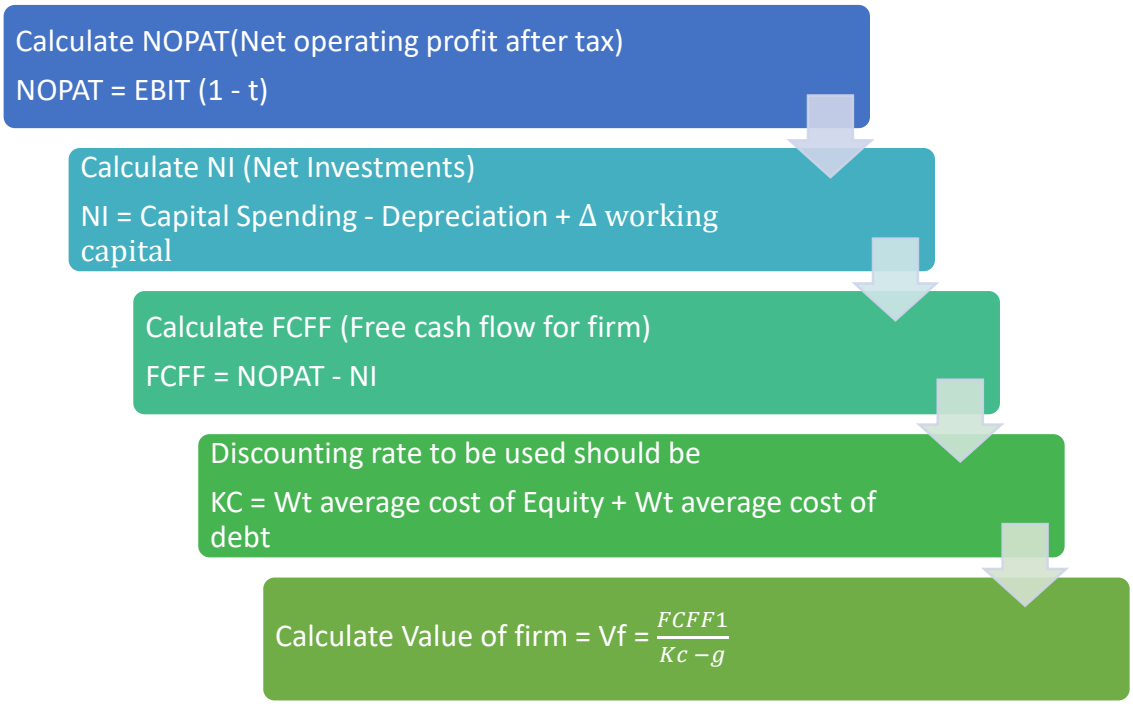
B. Free Cash Flow for Equity

Free cash Flow should be used if the investor

1. Wants to buy controlling interest in the company
2. The company does not have track record of paying track records.
3. Dividends paid buy the company does not reflect the true earnings power of the company.

A. Free cash flow for firm (FCFF Model)

This method is helps for calculation of overall value of firm



Cost of Capital
Kc = WtKe + Wtkd

Ke(Re) = Rf + β(RM – Rf)
Kd = I (1 – t)

Weights (Wt)
The weight to be used for calculation of cost of capital should be in following order of preference

1. Target debt equity
2. Market Value of debt equity
3. Book Value of Debt equity

Question 19 :

Suppose you are verifying a valuation done on an established company by a wellknown analyst has estimated a value of Rs. 750 lakhs, based upon the expected free cash flow next year, of Rs. 30 lakhs, and with an expected growth rate of 5%. You found that, he has made the mistake of using the book values of debt and equity in his calculation. While you do not know the book value weights he used, you have been provided following information:

(a) Company has a cost of equity of 12%.
(b) After-tax cost of debt of 6%.
(c) The market value of equity is three times the book value of equity, while the market value of debt is equal to the book value of debt.

You are required to estimate the correct value of company.

Question 20 :

Calculate FCFF from the following information. The firm has sales of Rs 4,200 with operating cost of Rs 2200. Capital spending in the next year is expected to be Rs 800, depreciation will be 380 and working capital will increase by 50. Assume tax rate of 30%.

Question 21 : RM Ltd.

Fundamentals of RM Ltd. for the year ended are as follows

Particulars	Amount
Sales	2,400
Operating Cost	800
Capital Spending	600
Depreciation	360
Change in Working Capital	50
14% perpetual debt	500
Ke	20%
Target Debt Equity	1
G	5% p.a forever

The market value of debt is 500 and the current share price is Rs 100/-. The firm has 10 lakhs share outstanding. Tax rate is 40%. Find the IV of the share as per FCFF Approach.

Question 22 : WXY Ltd.

Following information is given in respect of WXY Ltd., which is expected to grow at a rate of 20% p.a. for the next three years, after which the growth rate will stabilize at 8% p.a. normal level, in perpetuity.

For the year ended March 31, 2014

Revenues	Rs.7,500 Crores
Cost of Goods Sold (COGS)	Rs.3,000 Crores
Operating Expenses	Rs.2,250 Crores
Capital Expenditure	Rs.750 Crores
Depreciation (included in COGS & Operating Expenses)	Rs.600 Crores

During high growth period, revenues & Earnings before Interest & Tax (EBIT) will grow at 20% p.a. and capital expenditure net of depreciation will grow at 15% p.a. From year 4 onwards, i.e. normal growth period revenues and EBIT will grow at 8% p.a. and incremental capital expenditure will be offset by the depreciation. During both high growth & normal growth period, net working capital requirement will be 25% of revenues.

The Weighted Average Cost of Capital (WACC) of WXY Ltd. is 15%.

Corporate Income Tax rate will be 30%.

Required: Estimate the value of WXY Ltd. using Free Cash Flows to Firm (FCFF) & WACC methodology.

The PVIF @ 15 % for the three years are as below:

Year	T1	T2	T3

PVIF	0.8696	0.7561	0.6575

Question 23 : XYZ Ltd.

Following informations are available in respect of XYZ Ltd. which is expected to grow at a higher rate for 4 years after which growth rate will stabilize at a lower level:

Base year information:

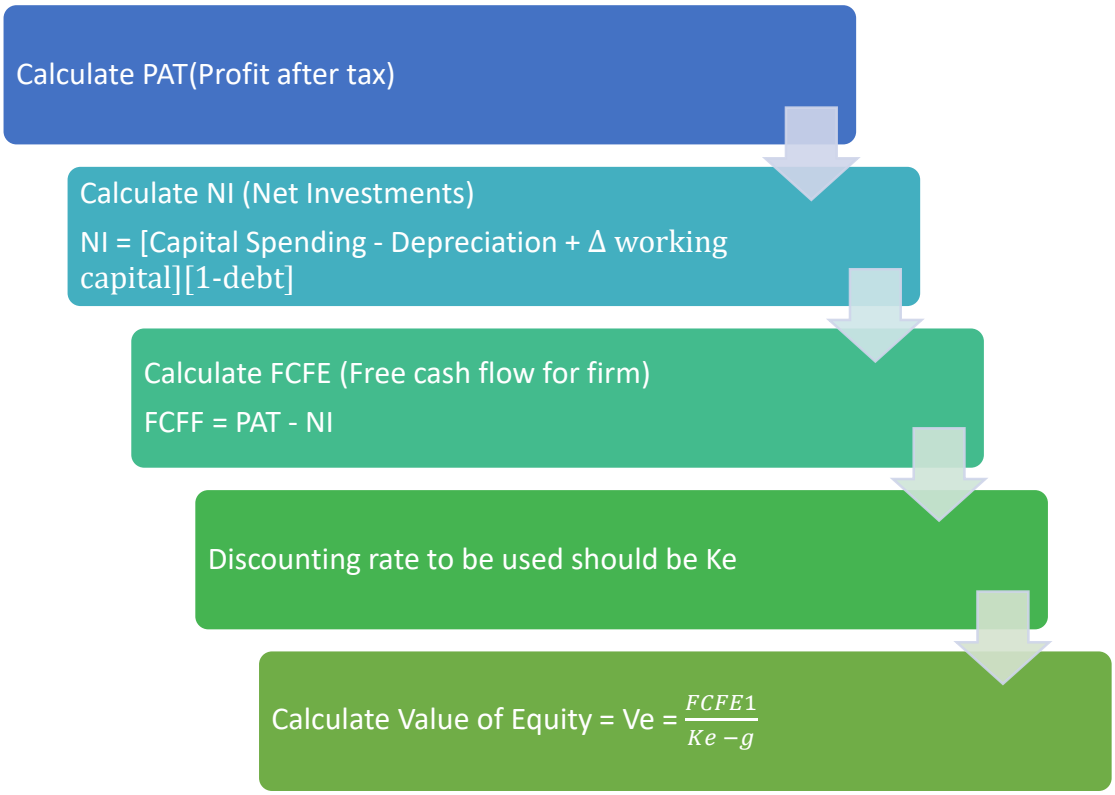
Revenue - Rs.2,000 crores
EBIT - Rs.300 crores
Capital expenditure - Rs.280 crores
Depreciation - Rs.200 crores

Information for high growth and stable growth period are as follows:

	High Growth	Stable Growth
Growth in Revenue & EBIT	20%	10%
Growth in capital expenditure and depreciation	20%	Capital expenditure are offset by depreciation
Risk free rate	10%	9%
Equity beta	1.15	1
Market risk premium	6%	5%
Pre tax cost of debt	13%	12.86%
Debt equity ratio	1:01	2:03

For all time, working capital is 25% of revenue and corporate tax rate is 30% What is the value of the firm?

B. Free cash flow for Equity (FCFE Model)



Question 24 :

Calculate the value of share from the following information:

Profit of the company	Rs. 290 crores
Equity capital of company	Rs. 1,300 crores
Par value of share	Rs. 40 each
Debt ratio of company	27
Long run growth rate of the company	8%
Beta	0.1
Risk free interest rate	8.7%
Market returns	10.3%
Capital expenditure per share	Rs. 47
Depreciation per share	Rs. 39
Change in Working capital	Rs. 3.45 per share

Summary for FCFF and FCFE :

Free Cash Flow for Firm (FCFF)	Free cash Flow for Equity(FCFE)
Vf = $\frac{FCFF1}{Kc-g}$ Vf = Value of Firm FCFF = Free cash flow for firm Kc = Cost of capital G = Growth 1. FCFF = NOPAT – NI NOPAT = Net operating profit after tax = EBIT (1 – tax) NI = Net Investments = CS – Dep + Δ wc 2. Since we are calculating value of firm the discounting rate should be Kc 3. Kc = Wtke + Wtkd 4. Kd = I (1-t) 5. Ve = Vf – Vd Ve = Value of Equity Vf = Value of Firm	Ve = $\frac{FCFE1}{Ke-g}$ Ve = Value of Equity FCFE = Free cash flow for equity Ke = Cost of Equity = Re G = Growth 1. FCFE = PAT – NI PAT = Profit after tax NI = Net Investments = [(CS – Dep) + Δ wc] (1-debt) Since we are calculating value of equity the discounting rate should be Ke 3. Ke (Re) = Rf + β (RM – Rf) 4. IV = $\frac{Ve}{No\ of\ shares}$ 5. Vf = Ve + Vd

Vd = Value of Debt 6. IV = $\frac{Ve}{No\ of\ shares}$	

ALCAR MODEL :

ALCAR model works along with FCFF and FCFE model to calculate the value of share.

Charactertics of ALCAR model

1. The firm is currently a no growth firm
2. The firm plans to introduce a strategy that will bring growth to the firm for few years and then once again the firm will become no growth firm.
3. The question will provide "All turnover ratios shall remain constant"
4. The question will require us to find Value of Strategy.

Points to remember while solving question on Alcar model

1. Value of Strategy = Value of Firm after strategy – Value of Firm before Strategy
2. Since the firm is currently no growth firm FCFF / FCFE = NOPAT / PAT (NI = Nil)
3. Value of firm before strategy = $\frac{FCFF/FCFE}{Kc/Ke}$
4. Value of firm after strategy = Stage 1 + Stage 2
5. While calculating NI in stage 1, we can use the following short cut
   NI = CS – DEP + ΔWC
   NI = ΔFA + ΔWC
   NI = Δ Capital Employed
6. IF the value of strategy is positive we should go ahead with strategy and if the value of firm is negative we should not employ the strategy.

Question 25 : X Ltd.

The income statement and balance sheet of X Ltd. for the year just ended is shown below.

Balance Sheet

Liabilities	Rs (in Lakhs)	Assets	Rs (in Lakhs)
Equity	300	Fixed Assets	800
15% Long Term Debt	600	Current Assets	200
Current Liabilities	100		
	1,000		**1,000**

Income Statement

Particulars	Rs (in Lakhs)
Sales	900
Gross Profit (40%)	360
Selling, General and Administration expenses	80

EBIT	280
Interest	90
PBT	190
PAT	133

If the firm maintains "status quo", capital spending will be offset by depreciation and there will be no change in working capital. The firm would be a no growth firm.

The firm is evaluating a new growth strategy:

- Sales will grow @ 40% p.a. For 3 years.
- Operating margin will remain the same.
- All the turnover ratios will remain constant.
- Beyond 3 years the firm will once again become a no growth firm.
- Depreciation will be half of capital spending for the first 3 years and beyond 3 years capital spending will be offset by depreciation.

If equity capitalization rate is 18%, find out the value of the strategy. Tax rate = 30%.

Question 26 : Helium Ltd.

Helium Ltd. has evolved a new sales strategy for the next 4 years. The following information is given:

Income Statement	**Rs in thousands**
Sales	40,000
Gross Margin at 30%	12,000
Accounting, administration and distribution expense at 15%	6,000
Profit before tax	6,000
Tax at 30%	1,800
Profit after tax	4,200
Balance sheet information	
Fixed Assets	10,000
Current Assets	5,000
Equity	15,000

As per the new strategy, sales will grow at 30 percent per year for the next four years. The Assets turnover ratio and income tax rate will remain unchanged.

Depreciation is to be at 15 percent on the value of the net fixed assets at the beginning of the year. Company's target rate of return is 14%.

Determine if the strategy is financially viable giving detailed workings.

B. Relative Valuation Approach :

In this approach the value of company is calculated based on data of related company. The calculations are done based on certain "Base"

Very common bases are

1. Price to earnings model
2. Price to Book Value
3. Price to Asset
4. Price to sales
5. Price to EBIDAT and so on

For example

RM Ltd a private limited firm in the business of retail chain stores across India. To calculate its value, its find the proxy firm Fmart Ltd. Following information is available to your calculations

Assets of RM Ltd	3000 crores
Assets of FMart Ltd	4500 crores
Value of firm of FMart	45,000 crores

Calculate value of firm for RM Ltd.

	Assets	Value of firm
FMart	4,500	45,000
RM Ltd	3,000	30,000

Question 27 : Cranberry Ltd.

Using the chop shop approach (or break up value approach) assign a value for Cranberry Ltd. Whose stock is currently trading at a total market price of €4 million. For Cranberry Ltd. The accounting data set forth three business segments consumer wholesale, retail and general centers. Data for the firms three segments are as follows :

Business Segment	Segment sales	Segment assets	Segment operating income
Whole sale	€ 225,000	€ 600,000	€ 75,000
Retail	€ 720,000	€ 500,000	€ 150,000
General	€ 2,500,000	€ 4,000,000	€ 700,000

Industry data for pure play firms have been compiled and are summarized as follows :-

Business Segment	Capitalization / Sales	Capitalization Assets	Capitalization / Operating Income
Wholesale	0.85	0.7	9
Retail	1.2	0.7	8
General	0.8	0.7	4

4. OTHER RELATED CONCEPTS :

1. Economic Value Added (EVA)
2. Market Value Added (MVA)
3. Value of Right

1. **Economic Value Added (EVA) :**

This concept explains us as to how much excess does the firm earn over and above its cost of capital.

EVA = NOPAT – Kc

Note : If EVA is positive, then it indicates that shareholders wealth is increasing. If EVA is negative, it indicates that shareholders wealth is decreasing.

2. **Market Value added (MVA) :**

This concept tells us as to how much wealth has been created for shareholders since the inception of the company.

MVA = Market Value of Capital - Book Value of Capital

Question 28 : XYZ Inc.

The following data pertains to XYZ Inc. engaged in software consultancy business as on 31StDecember, 2010.

	Rs. In Lakhs
Income from Consultancy	935.00
EBIT	180.00
Less : Interest on Loan	18.00
EBT	162.00
Tax @ 35%	56.70
	105.30

Balance Sheet

Liabilities	**In lakhs**	**Assets**	**In lakhs**
Equity Stock (1 million shares of Rs.10 each)	100	Land and Building	200
Reserves and Surplus	325	Computers & Softwares	295
Loans	180	Debtors	150
Current Liabilities	180	Bank	100
		Cash	40
	785		**785**

With the above information and following assumption you are required to compute

(a) Economic Value Added® (b) Market Value Added.

Assuming that:

(i) WACCis12%

(ii) The share of company currently quoted at $ 50 each.

Question 29 : Delta Ltd's.

Delta Ltd's current financial year's income statement reports its net income as 15,00,000. Delta's marginal tax rate is 40% and its interest expense for the year was 15,00,000. The company has 1,00,00,000 of invested capital, of which 60% is debt. In addition, Delta Ltd. tries to maintain a Weighted Average Cost of Capital (NACC) of 12.6%.

(i) Compute the operating income or EBIT earned by Delta Ltd. in the current year.

(ii) What is Delta Ltd's Economic Value Added (EVA) for the current year?

(iii) Delta Ltd. has 2,50,000 equity shares outstanding According to the EVA you computed in (ii), how much can Delta pay in dividend per share before the value of the company would start to decrease? if Delta does not pay any dividends, what would you expect to happen to the value of the company?

Question 30 :

Calculate economic value added (EVA) with the help of the following Information

Financial leverage	:	1.4 times
Capital structure	:	Equity Capital Rs.170 lakh
		Reserves and surplus Rs.130 lakh
		10% Debentures Rs.400 lakh
Cost of Equity	:	17.5%
Income Tax Rate	:	30%

5. ACCOUNTING BASED APPROACHES :

1. Intrinsic Value / Net Asset Value / Balance sheet approach
2. Yield value / Earnings approach / profitability approach
3. Fair Value

1. Intrinsic Value :

It is also known as net asset value or balance sheet approach.

Steps

1. Calculate Net assets (Assets – Liability)
2. Calculate number of shares
3. IV = $\frac{Net\ Assets}{No\ of\ shares}$

2. Yield Value :

The share is valued on the basis of expected profitability of the company It is also known as capitalization of profits method

Steps

1. Calculate the future maintainable profits (FMP)
2. Calculate the value of business by capitalising the profits
3. Yield = $\frac{total\ capitalisation}{No\ of\ shares}$

3. Fair Value = $\frac{IV+Yield}{2}$

Question 31 : S. Ltd.

Given below is the Balance Sheet of S. Ltd. as on 31.3.2008

Liabilities	Rs in lakhs	Assets	Rs in lakhs
Share Capital (Rs.10)	100	Land and Building	40
Reserves and Surplus	40	Plant and Machinery	80
Creditors	30	Investments	10
		Stock	20
		Debtors	15
		Cash and Bank	5
	170		**170**

You are required to work out the value of the Company's shares on the basis of Net Assets method and Profit-earning capacity (capitalisation) method and arrive at the fair price of the shares, by considering the following information:

(i) Profit for the current year Rs.64 lakhs includes Rs.4 lakhs extraordinary income and Rs.1 lakh income for investments of surplus funds; such surplus funds are unlike to recur.

(ii) In subsequent years, additional advertisement expenses of Rs.5 lakhs are expected to be incurred each year.

(iii) Market value of Land and Building and Plant and Machinery have been ascertained at Rs.96 lakhs and Rs.100 lakhs respectively. This will entail additional depreciation of Rs.6 lakhs each year.

(iv) Effective Income-tax rate is 30%.

(v) The capitalization rate applicable to similar business is 15%.

Question 32 : X Ltd.

X Ltd. reported a profit of Rs.65 lakhs after 35% tax for the financial year 2007-08. An analysis of the accounts revealed that the income included extraordinary items Rs.10 lakhs and an extraordinary loss Rs.3 lakhs. The existing operations, except for the extraordinary items, are expected to continue in the future; in addition, the results of the launch of a new product are expected to be as follows:

	Rs in lakhs
Sales	60
Material Cost	15
Labour Costs	10
Fixed Cost	8

You are required to:

(a) Compute the value of the business, given that the capitazatlon rate is 15%.

(b) Determine the market price per equity share, with X Ltd.'s share capital being comprised of 1,00,000 11% preference shares of As. 100 each and 40,00,000 equity shares of As. 10 each and the P/E ratio being 8 times.

Question 33 : PQR

Following Financial data are available for PQR for the year 2008 :

	Rs. In lakhs
8%debentures	125
10% bonds (2007)	50
Equity shares (Rs.10 each)	100
Reserves and Surplus	300
Total Assets	600
Assets Turnovers ratio	1 .1
Effective interest rate	8%
Effective tax rate	40%
Operating margin	10%
Dividend payout ratio	16.67%
Current market Price of Share	14
Required rate of return of investors	15%

You are required to:

(i) Draw income statement for the year

(ii) Calculate its sustainable growth rate

(iii) Calculate the fair price of the company's share using dividend discount model, and

(iv) What is your opinion on investment in the company's share at current price?

CHP - 4

Bond Analysis and Valuations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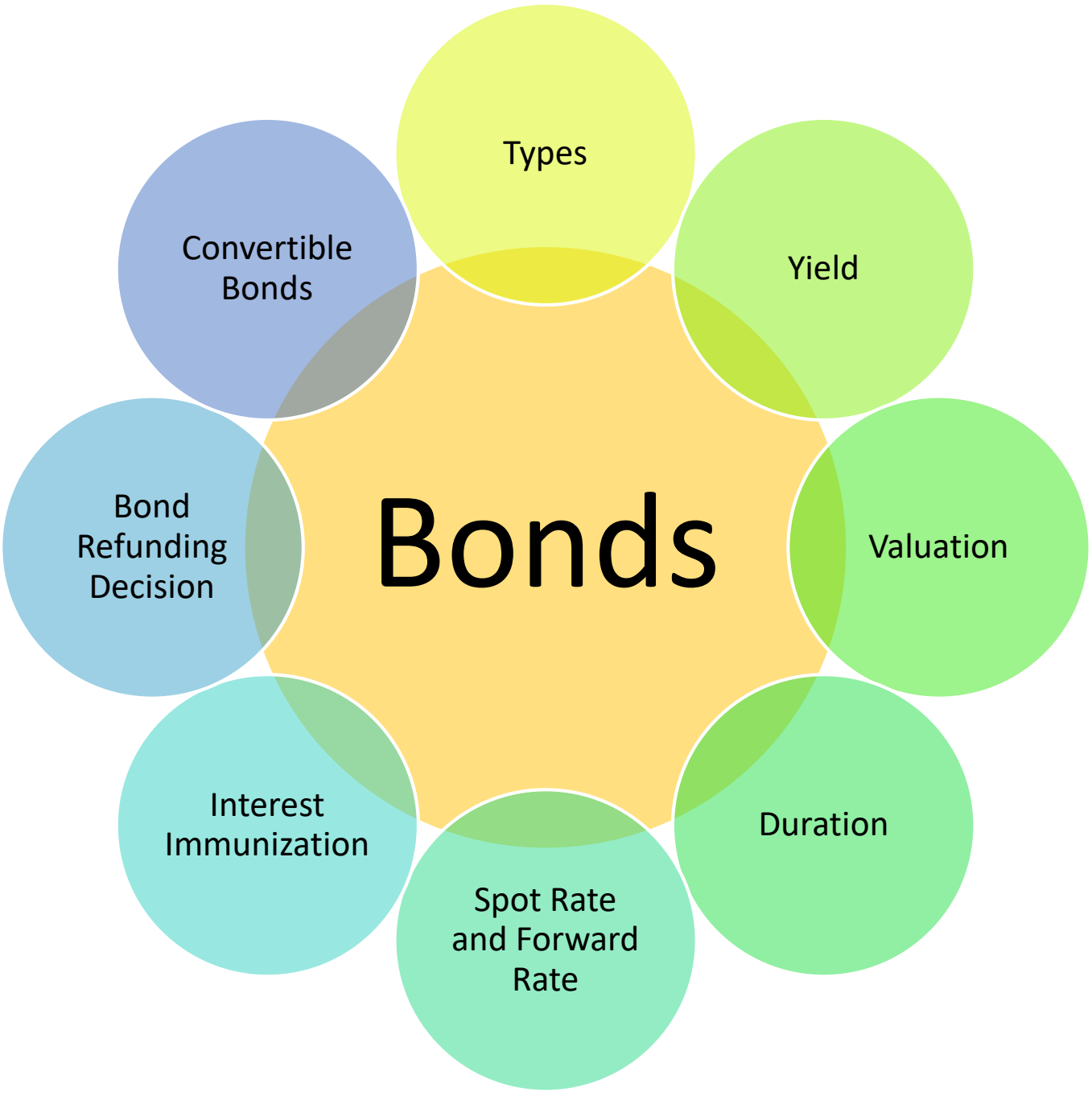
CHAPTER DESIGN

1. PREVIEW
2. INTRODUCTION
3. TYPES OF BONDS
4. YIELD ON BONDS
   - (A) CURRENT YIELD
   - (B) YIELD TO MATURITY
5. VALUATION OF BONDS
6. DURATION OF BONDS
7. VOLATILITY OF BONDS
   - (A) MODIFIED DURATION
   - (B) EFFECTIVE DURATION
8. INTEREST IMMUNIZATION
9. SPOT RATE / FORWARD RATE AND TERM STRUCTURE
10. BOND REFUNDING DECISIONS
11. CONVERTIBLE BONDS

1. CHAPTER PREVIEW :



2. INTRODUCTION:

A bond is a debt investment in which an investor loans money to an entity (typically corporate or governmental) which borrows the funds for a defined period of time at a variable or fixed interest rate. Bonds are used by companies, municipalities, states and sovereign governments to raise money and finance a variety of projects and activities.

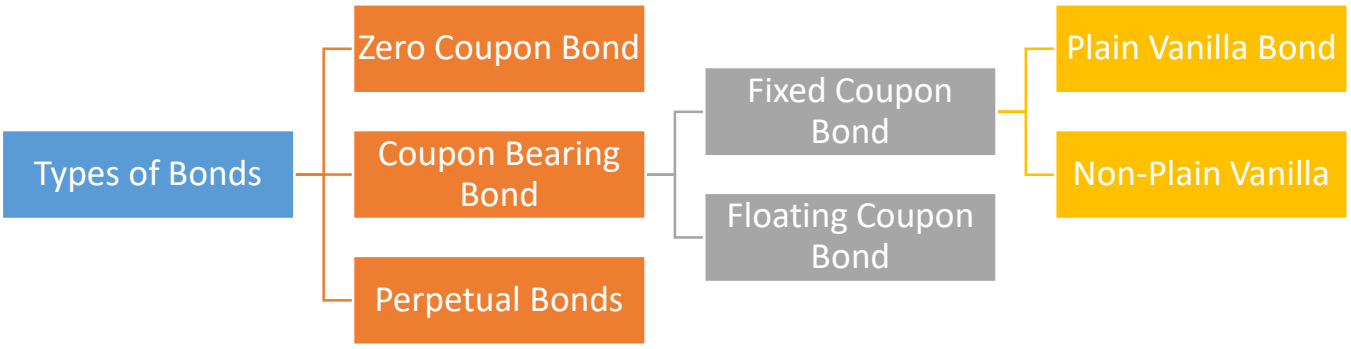
Bonds are commonly referred to as fixed-income securities and are one of the three main generic asset classes, along with stocks (equities) and cash equivalents.

The issue price of a bond is typically set at par, usually Rs 100 face value per individual bond. The actual market price of a bond depends on a number of factors including the credit quality of the issuer, the length of time until expiration, and the coupon rate compared to the general interest rate environment at the time.

Characteristics of Bonds :

- Most bonds share some common basic characteristics including:
- Face value is the money amount the bond will be worth at its maturity, and is also the reference amount the bond issuer uses when calculating interest payments.
- Coupon rate is the rate of interest the bond issuer will pay on the face value of the bond, expressed as a percentage.
- Coupon dates are the dates on which the bond issuer will make interest payments. Typical intervals are annual or semi-annual coupon payments.
- Maturity date is the date on which the bond will mature and the bond issuer will pay the bond holder the face value of the bond.
- Issue price is the price at which the bond issuer originally sells the bonds.

3. TYPES OF BONDS :



1. Zero coupon bond / Deep Discount bond (ZCB / DDB) :

They are the bonds which does not provide any coupons. The are issued at discount and are redeemable at par. The investor earns the difference between the issue price and the redemption price.

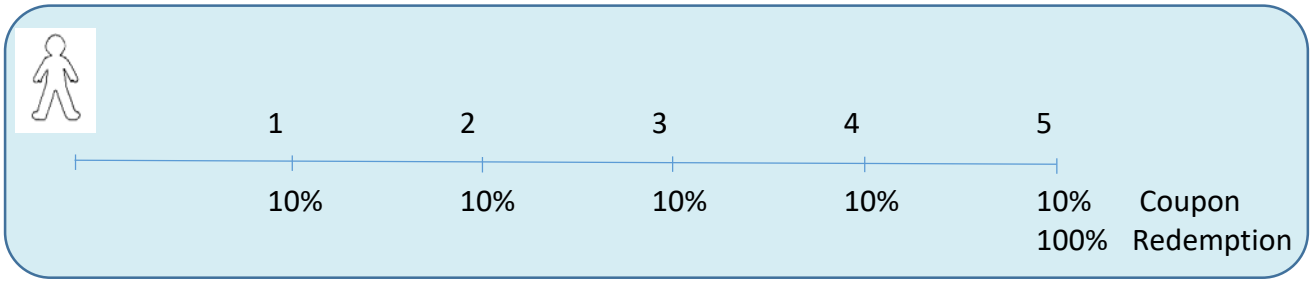
For eg : X Ltd issues 5 year bond at 65 redeemable at 100.

2. Coupon Bearing Bonds :

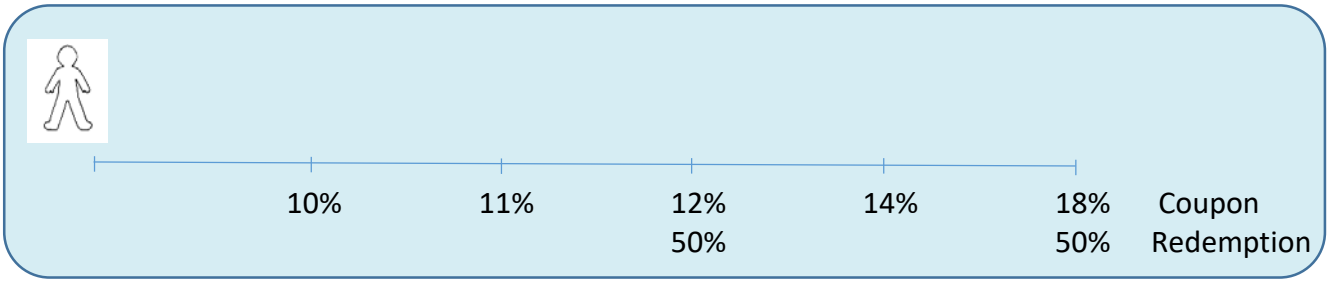
As the name indicates, such bonds provides regular periodic payments known as coupons. There are 2 types of bonds in this category

A. **Fixed coupon bonds :** In this bonds the rate of coupon is pre-decided at the time of issue. Investor is clear that he shall __ % coupon periodically. Fixed coupon bonds can be of following types

a. **Plain vanilla bonds :** Such bonds provides coupon at constant rate through out the like of bond and are redeemable in lumpsum at maturity.



b. **Non Plain Vanilla Bond :** In such bonds also the coupon rate is pre-decided, however the rate may differ over the year and even redemption can be done in parts.



Note : Even if the rates at which coupon are paid varies, still they are referred as fixed coupon bearing bond because the rates are pre-decided at the time of issue

B. **Floating Coupon bonds :** In such bonds the rate at which coupon shall be paid is not pre-decided. They are decided at the end of every period based on the market rates.

For eg : A Ltd issues 5 year bond where entity will pay coupon @ 2% + market rates announced by RBI.

3. Perpetual Bonds :

As the name indicates, such bonds are not redeemed. They pay regular coupon perpetually. The are very similar to equity in terms of life, however their return is more or less fixed.

Apart from the above, we are also required to remember the following 2 charactertics of the bonds.

1. **Callable bonds :** The issuers can call for early redemption. Generally, they are called at premium.
2. **Puttable bonds :** The holder can call for early redemption. Generally, they are redeemed at discount.

4. YIELD ON BONDS :

Every investor's first question while investing is what will be the yield on the investment. Yield means return. Return should always be calculated as percentage per annum.

A layman would always associate return with periodic coupon (the so called % interest) to be received from bonds. However, bonds are issued at premium or discount, such discount and premium will also affect the yield on the bonds. Moreover, if the bond is ZCB, there are no coupon, but it does have a yield. So we should remember that

"YIELD IS NOT EQUAL TO COUPON"

There are 2 types of yield that an investor can calculate

1. Current yield (CY) and
2. Yield to Maturity (YTM)

1. Current yield:

Current yield is a bond's annual return based on its annual coupon payments and current price (as opposed to its original price or face).

$$\text{Current yield} = \frac{Coupon}{Market\ Price}$$

Question 1 :
Face value of the 8%, bond is Rs 1000 and is currently trading at Rs 900. Calculate CY of Bond.

Question 2 :
10% Rs. 1000 bond is currently trading at Rs. 950. Calculate CY of bond if coupon is paid semi-annually.

Question 3 :
Face value of the 8%, bond is Rs 1000 and is currently trading at Rs 900. Calculate CY of Bond. Coupon is paid semi – annually. Calculate BEY and EAY.

2. Yield to Maturity (YTM) :

It refers to yield that an investor shall earn if he holds the bond till maturity. Its ex-ante return (Kitna kamayenge). In simple language if I buy a bond today how much will be my return if I hold the bond till maturity.

To calculate YTM, we shall classify the bonds in 2 categories

1. Plain vanilla bond
2. Others (ZCB / Non plain vanilla / Perpetual)

Note: We cannot calculate yield for Floating Coupon Bond.

1. YTM of Plain Vanilla Bond = $\frac{C+(FV-P)/n}{(FV+P)/2}$

Question 4 : Plain Vanilla Bond

A 5 year debenture with 10% coupon rate, maturity value of Rs 1000, is currently trading at 900, Calculate its YTM?

Question 5 : Plain Vanilla Bond

10%, 1000 FV , 5 yrs bond presently trading at 900 and is redeemable at a premium of 10% at the end of 5 yrs. Calculate YTM.

Question 6 : Plain Vanilla (Semi-Annual Coupon Bond)

A bond with FV of Rs. 1000 having a coupon of 10% (paid semi annually), matures in 4 years and has current price of Rs. 1,040. What is the bonds yield to maturity?

Question 7 :

Consider a Rs. 1000 face value, 5 year bond presently trading at Rs. 962. The bond has a coupon rate of 14% payable semi-annually. Compute its YTM?

Question 8 :

10%, 1000 FV, 5 yrs bond presently trading at 900 and is redeemable at a premium of 10% at the end of 5 yrs. Income tax rate is 30% and Capital Gain tax is 10%. Calculate YTM.

2. YTM of Other bonds :

To calculate YTM of other bonds, we shall use the concept of IRR i.e outflow = Inflow

Other bonds shall include

A. ZCB / DDB
B. Non – Plain Vanilla Bond
C. Perpetual Bond

A. <u>ZCB / DDB :</u>

ZCB does not give any intermediate coupons. The return is the difference between the issue price and redemption price. Yield is IRR at which outflow = Inflow

Question 9 :

5 yr Zero Coupon Bonds of FV Rs 500 is presently trading @ 300. What is its YTM?

B. Non-Plain Vanilla Bond :

This bond does give coupon, but they are not at constant rate, even redemption can be in parts. To calculate YTM for such bonds, we are required to calculate IRR.

Question 10 : HDFC

HDFC in its issue of Flexibonds, offered growing interest bond. The interest will be paid to the investors every year at the rates given below and the minimum deposits is Rs 10,000/-

Years	**1**	**2**	**3**	**4**	**5**
Interest (P.A)	10.5%	11.0%	12.5%	12.75%	18.0%

Calculate the yield to Maturity (YTM)

C. Perpetual Bonds :

Such bonds provide regular constant coupon through out the life of the company. They are similar to equity which provides constant dividend.

$$IV = \frac{D}{Re} = \frac{C}{YTM}$$

Question 11 :

10% GOVT of India Bond is currently selling at Rs 95. Calculate YTM?

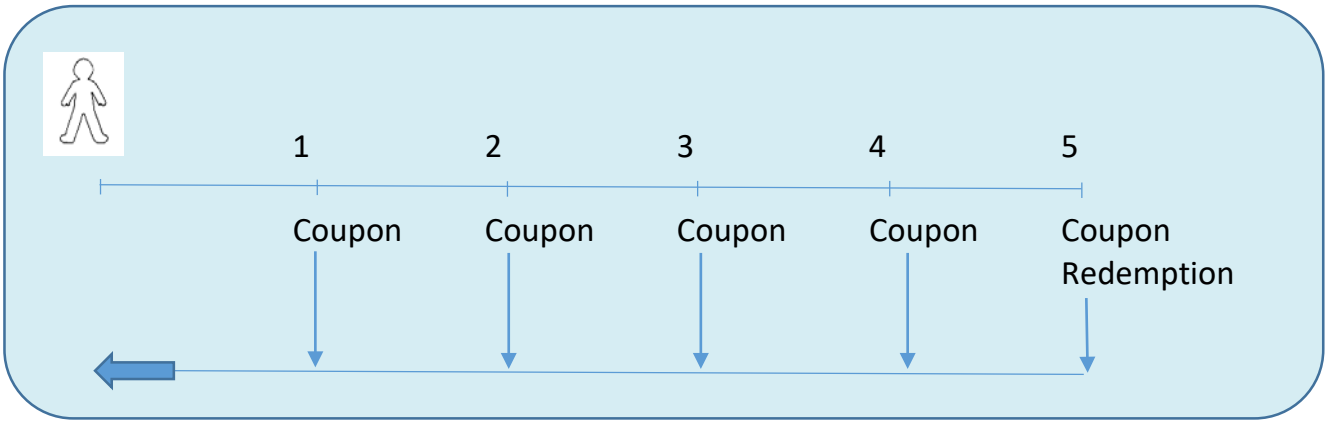
Summary for YTM :

YTM	
	Plain Vanilla Bond = $\frac{C+(FV-P)/n}{(FV+P)/2}$
	ZCB = Outflow $(1+r)^n$ = Inflow
	Non-Plain Vanilla Bond = Prepare table and calculate IRR
	Perpetual Bond = IV = $\frac{Coupon}{YTM}$

5. VALUATION OF BONDS :

Every investor would like to calculate the IV of the instruments, on which his buy and sell calls are based. As discussed in equity valuation, valuation of most of the instruments are based on its cash flow.

IV of Bond = PV of coupon + PV of redemption



NOTE: DISCOUNTING RATE SHOULD BE YTM AND NOT COUPON RATE

Points to Remember :

1. If the bond is trading at PAR and redeemable at PAR, the IV of the bond is equal to its face value.
2. Yield and Valuation are inversely related. i.e higher the yield lower the value and vice versa
3. If the yield of bond is higher than coupon than the bond should be trading at less than the face value
4. If the yield of the bond is lower than coupon than the bond should be trading at more than the face value

Question 12 :

The RMS bond has a 10% coupon rate, with interest payable annually, matures at Rs. 1000 in 5 years. If the bond is priced to yield 8%, what is the current price of the bond?

Question 13 :

A Bond with FV of Rs. 1000, coupon rate of 6% (paid semi Annually) and matures in 5 years. If the bond is priced to yield 10%, what is the bonds value today?

Question 14 :

Consider a 2 year Rs. 1000 FV, 10% coupon bearing bond. Coupon is paid semiannually. Find out the intrinsic value of the bond if the required rate of return is 14%. Should the bond be purchased at the current market price of Rs. 960?

Question 15 :

Consider the following information related to a bond

FV	= 1000
CR (payable annually)	= 8%
Maturity	= 10 yrs
Market Price	= 942

Yield on similar Bonds = 15%

Calculate the price of the bond. Also find the change in the value of the bond, if it starts paying semi-annual interest.

Question 16 :

An investor is considering the purchase of the following Bond:

Face Value	Rs. 100
Coupon	12%
Maturity	4 years.

Calculate :

1. The maximum price that you shall willing to pay, if you want the yield of 14%?
2. If the bond is selling for Rs. 87.60, what would be his yield?

Question 17 :

Find out the IV of the Bond from the following information and give investment advice.

FV	= 1000
CR	= 12%
Maturity	= 5 yrs
Credit rating	= A
Market Price	= 92.3%

Presently the yield available in market are shown below.

AAA	Spread off 2% over treasury
AA	Spread off 1% over AAA
A	Spread off 3% over AA
BBB	Spread off 2% over A

5 year treasuries are presently yielding 9%.

Question 18 :

Find out the IV of the Bond from the following information and give investment advice.

FV	= 5000
CR	= 14%
Maturity	= 10 yrs
Market Price	= 920
Yield on similar Bonds	= 15%

Redemption in 4 equal annual instalments at the end of 7, 8, 9 and 10th year @ premium of 10%.

Question 19 :

A Deep Discount Bond (DDB) was issued by a financial institution for a maturity period of 10 years and having a par value of Rs. 25,000. Find out the value of the Bond given that the required rate of return is 16%.

Question 20 : ABC Ltd.

ABC Ltd. has the following outstanding Bonds.

Bond	Coupon	Maturity
Series X	8%	10 Years
Series Y	Variable changes annually comparable to prevailing rate	10 Years

Initially these bonds were issued at face value of Rs. 10,000 with yield to maturity of 8%. Assuming that:

(i) After 2 years from the date of issue, interest on comparable bonds is 10%, then what should be the price of each bond?

(ii) If after two additional years, the interest rate on comparable bond is 7%, then what should be the price of each bond?

(iii) What conclusions you can draw from the prices of Bonds, computed above.

Special Case of Bond Valuations :

Until now, we calculated the value of bond, assuming that we are purchasing the bond on issue date or on first day of the period.

Special case of bond valuation refers to the scenario, when we are purchasing the bond at any other date than the date of coupon, i.e in between 2 coupon dates.

Step 1 : Calculate clean price of the bond on the next coupon date

IV = PV of coupon + PV of Redemption

Step 2 : Calculate dirty price of the bond on the next coupon date

Dirty price = Step 1 + coupon for the entire period

Step 3 : Calculate dirty price on the date of Purchase

Dirty price = PV of Dirty price at step 2

Step 4 : Clean price on the date of purchase

Clean price = Dirty price (step3) – Accrued coupon

Question 21 :

Find out the intrinsic value, and split that into bond basic value and accrued interest. Also give investment advice from the following information

Face Value	Rs. 10,000
Coupon Rate	12% payable annually in December
Required Rate	15%
Valuation date	1st April, 2009
Redemption Date	31.12.2015
Current Market Price	93.65%
Redemption Value	At Par.

Question 22 : MP Ltd.

MP Ltd. issued a new series of bonds on January 1, 2000. The bonds were sold at par (Rs. 1,000), having a coupon rate 10% p.a. and mature on 31 St December, 2015. Coupon payments are made semi-annually on June 30th and December 31st each year. Assume that you purchased an outstanding MP Ltd. Bond on 1st March, 2008 when the going interest rate was 12%.

Required:

(I) What was the YTM of MP Ltd. Bonds as on January 1, 2000?

(II) What amount you should pay to complete the transaction? Of that amount how much should be accrued interest and how much would represent bonds basic value.

Summary for Valuation :

IV of Bond	
	Plain Vanilla Bond = PV of coupon + PV of Redemtion
	ZCB = Outflow $(1+r)^n$= Inflow
	Non-Plain Vanilla Bond = Prepare table and calculate PV of all cash flows
	Perpetual Bond = IV = $\frac{Coupon}{YTM}$
	Note: While calculating PV discounting rate should be YTM

6. DURATION OF BOND :

Duration refers to the weighted average time to receive the present value of bond. A bond's duration is easily confused with its term or time to maturity because they are both measured in years. However, a bond's term is a linear measure of the years until repayment of principal is due

Duration is also known Macaulay Duration. It is calculated by using the following formula:

D = $\frac{\Sigma wx}{\Sigma w}$

Question 23 : RM

RM lends Rs 1,00,000 to his friend for 3 years. Being a friend RM does not charge any interest from his friend. His friend returns Rs 20,000 in year 1, Rs 30,000 in year 2 and Rs 50,000 in 3rd year. What is the average period of the loan?

Question 24 :

Face value - Rs 1000, Coupon Rate 8%. Years to maturity 8 years. Redemption at par YTM = 17%. Find the current price and duration of the bond

Question 25 :

Consider a 12% Rs. 1000 FV, 5 year bond presently trading at Rs. 970

Calculate :

1. Compute YTM
2. Duration of Bond

Duration Logics	
	For ZCB duration is equal to its maturity and for coupon bearing bond duration is always less than maturity
	Lower the YTM higher the duration
	Lower the coupon, higher the duration and vice versa
	As maturuty increases duration increases with decreasing rate such that it reaches limiting value known as duration of pepectual bond.
	Higher the frequency of coupon lower the duration

7. BOND RISK :

Investment in Bonds is not risk Free. The risk faced by the investor from investing in bonds can be classified into systematic risk and unsystematic risk.

1. **Unsystematic Risk :** It refers to default risk, i.e the issuer may default in the payment of interest and principal amount. This will further lead to downgrade in credit rating.

2. **Systematic Risk:** Systematic risk in bond investment refers to interest risk. The investors faces the risk due to the change in interest risk during the holding period. Interest risk may be plain interest risk as well as reinvestment risk.

    a. **Interest Risk:** It refers to change in interest risk. It will lead to change in value of bonds. Bond Price and interest rates are inversely related. It means that if the market interest rates go up, then the market price of bond will go down and vide versa. However the relation is not a straight line, its convex like an demand curve, which means price rise will be greater than the price fall. This is known as positive convexity.

    b. **Re – investment Risk:** In a coupon bearing bond, there are intermediate coupons, which are re invested at the market rate. For eg a five year 12% coupon, FV 1000 bond

Volatility :

Volatility is a measure of risk. It refers to the sensitivity of the bond price to change in interest rate. Duration is the base to measure the sensitivity of the bond price to the change interest rate. It can be calculated by Effective Duration and Modified Duration

1. Modified duration = $\frac{D}{1+YTM}$

2. Effective Duration = $\frac{P2-P1}{2\ x\ P0\ x\ \Delta y}$

Question 26 :

A 5 yr, Rs 1000 FV, 12% coupon bond presently yielding 14%. Compute price volatility using interest rate shock of 50 basis point. Use Effective duration and Modified duration.

Question 27 :

The following data are available for a bond:

Face Value	= Rs 1000
Coupon Rate	= 16%
Years to Maturity	= 6
Redemption Value	= Rs 1000
Yield to Maturity	= 17%

What is the current market price, duration and volatility of this bond ? Calculate the expected market price, if increase in required yield by 75 basis points.

Question 28 :

A 14%, 20 year bond trading at Rs. 960. It is callable at a premium of 10% at the end of 5 years. If not called it is redeemable on maturity at par. Find the duration if the bond is not called and also calculate its volatility.

Question 29 :

The following data is available for a Bond

Face Value	Rs. 1000
Coupon Rate	11%
Years to Maturity	6
Redemption Value	Rs. 1000
Yield to maturity	15%

Calculate the following with respect to the bond

1. Current Price
2. Duration of Bond
3. Volatility of Bond
4. Expected Market Price if increase in required yield is by 100 basis points
5. Expected Market Price if decrease in required yield is by 75 basis points.

Question 30 : XL Ispat Ltd.

XL Ispat Ltd. Has made an issue of 14 % non – convertible debentures on Jan 1, 2007. These debentures have a face value of Rs 100 and is currently traded in the market at a price of Rs. 90.

Interest on these NCDs will be paid through post-dated cheques dated June 30 and December 31. Interest payments for the first 3 years will be paid in advance through post-dated cheques while for the last 2 years post-dated cheques will be issued at the third year. The bond is redeemable at par on December 31, 2011 at the end of 5 years.

Required :

(i) Estimate the current yield at the YTM of the Bond.

(ii) Calculate the duration of the NCD

(iii) Assuming that intermediate coupon payments are, not available for reinvestment calculate the realized yield on the NCD.

8. INTEREST IMMUNIZATION :

As studied above, investment in bonds is not risk free. The price of the bond is inversely related to YTM.

In this concept, we shall study how immunize our self from such interest rate risk.

We are provided with the stream of liabilities, which are required to be paid at different point of time in future. We would make investment in such a way, that even if interest rate (YTM) changes we shall in position to pay all our liabilities.

Steps

1. Calculate Duration of Liabilities (DL)
2. DA = DL
3. Calculate Duration of 2 bonds given to us
4. Calculate the proportion of Funds to be invested in above 2 bonds
5. Calculate the amount to be invested in above 2 bonds

Question 31 :

A pension fund has a following liability structure

Years	Liability
1	1000 cr
2	2600 cr
3	2400 cr

Opportunity cost = 10 % p.a The following 2 bonds are shortlisted for investment

Bond R ---- 2 yrs ZCB ---- Presently yielding 10%

Bond M ---- 7 yrs ZCB ---- Presently yielding 10%

Find out the proportion of funds to be invested in 2 bonds, to immunize the portfolio against interest rate changes.

Question 32 : Mr. Rohit Sharma

Mr. Rohit Sharma is required to make the following payments at the end of each year for the next 6 years.

Years	**1**	**2**	**3**	**4**	**5**	**6**
Payments (lakhs)	25.50	19.25	18.25	17.50	19.50	17.50

He is planning to immunize his liability by investing in the following into bonds.

Bond X: 11 % Coupon bond of face value 1.000 maturing after 5 years, redeemable at 5% premium and currently traded at 966.38

Bond Y: 13% Coupon bond of face value 1.000 maturing after 3 years, redeemable at 5% discount and currently traded at 988.66 Required: a. If the interest rate is 12%, calculate the proportions of funds to be invested in bonds X and V. so that Mr. Sharma's payments are immunized.

9. SPOT RATE / FORWARD RATE AND TERM STRUCTURE :

1. **Term structure :** It refers to a table having 2 columns
   1. Maturity
   2. Spot rate

2. **Spot Rate :** It refers to YTM of ZCB. For coupon bearing bond we should use the concept of boot strapping. It is denoted by "Ron"

   R01 = Rate of 1 year from today
   R05 = Rate for 5 years from today
   R07 = Rate for 7 years from today

3. **Forward rate:** It's a rate to invest/borrow certain sum of money at a certain rate for a certain period in future. It is denoted by word "F"

   F12 = Rate for one year after one year.
   = one year forward at T = 1
   = one year forward for second year

   F34 = Rate for one year after 3 years
   = One year forward at T = 3

= One year forward for 4th year

F25 = Rate for 3 years after 2 years
= 3 year forward at T = 2

Formula to calculate forward rate = $\frac{Larger\ period}{Smaller\ Period}$

Question 33 : GOI Zero

The following GOI Zero coupon securities each of FV 1000.

Bonds	Maturity	Price
A	1	900
B	2	805
C	3	700
D	4	620
E	5	530

Calculate Spot Rate, derive term structure and calculate F12, F13 and F23.

Question 34 :

The following treasury securities

Bonds	Face Value	Maturity	CR	Price
A	1000	1	10%	972
B	1000	2	12%	985
C	1000	3	15%	1012

Derive Term Structure

10. BOND REFUNDING DECISIONS :

We have discussed about callable bonds in section 1: Types of bonds. Call refers to the right with the issuer to call for early redemption. In this section, we are required to decide if the entity should call for early redemption. An entity has to Cost / benefit analysis and calculate NPV to arrive at the decision. The benefits are reduction in future coupons and costs can be overlapping interest, POR and so on. Finally, if NPV is positive, then we should go ahead with refunding decisions.

To calculate NPV, we shall classify cash flows in 2 parts

1. Initial Cash Flows
2. Future Cash Flows

1. Initial Cash Flows :

A.	Redemption of Old Bonds	Outflow
B.	Tax shield on Premium on Redemption	Inflow
C.	Issue of New bonds (Net of floatation cost)	Inflow
D.	Tax shield Amortization of Unamortized portion of discount and floatation cost of old bonds	Inflow
E.	Post-tax overlapping Interest	Outflow
	Net	XXX

2. Future cash Flows

	Old Bonds	**New Bonds**
Post-tax interest - Tax shield on Amortization of Discount / Floatation cost	XXX XXX	XXX XXX
	XXX	XXX
Savings in cost X PVIFA (__%,n)	XXX XXX	
Net Savings	XXX	

Note : Discount rate should the one which is given to us in the question and if discount rate is not given then we should calculate Kd.

3. NPV = Part 1 + Part 2

Question 35 : M/s. Transindia Ltd.

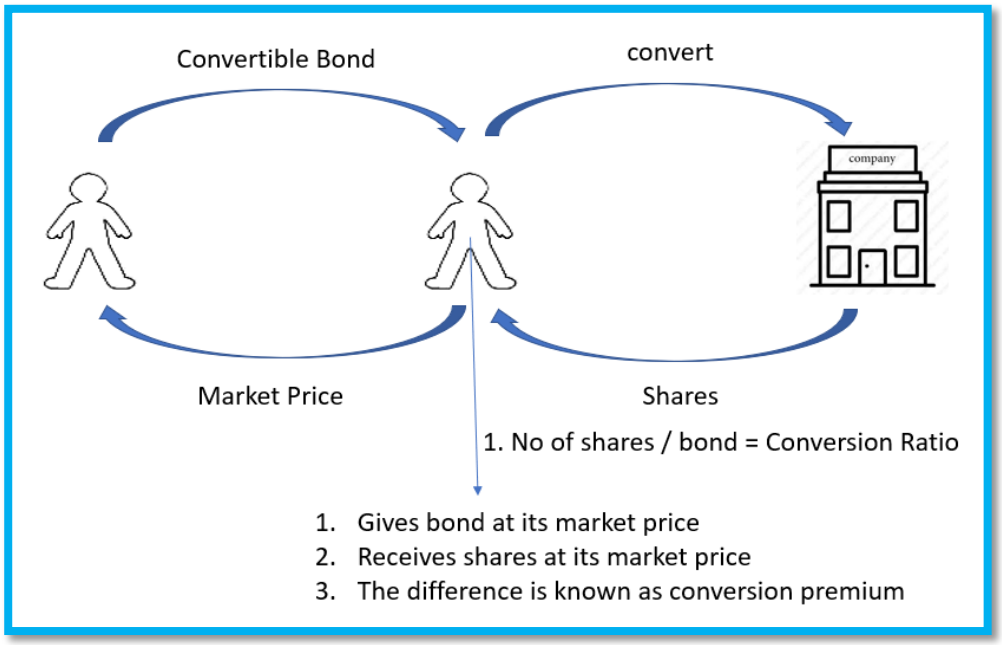
M/s. Transindia Ltd. is contemplating calling As. 3 crores of 30 years, 1,000 bond issued 5 years ago with a coupon interest rate of 14 percent. The bonds have a call price of 1,140 and had initially collected proceeds of 2.91 crores due to a discount of 30 per bond. The initial floating cost was 3,60,000. The Company intends to sell 3 crores of 12 per cent coupon rate, 25 years bonds to raise funds for retiring the old bonds. It proposes to sell the new bonds at their par value of 1,000. The estimated floatation cost is 4,00,000. The company is paying 40% tax and its after cost of debt is 8 per cent. As the new bonds must first be sold and their proceeds, then used to retire old bonds, the company expects a two months period of overlapping interest during which interest must be paid on both the old and new bonds.

What is the feasibility of refunding bonds?

Question 36 : ABC Ltd.

ABC Ltd. has Rs. 300 million, 12 per cent bonds outstanding with six years remaining to maturity. Since interest rates are falling, ABC Ltd. is contemplating of refunding these bonds with a Rs. 300 million issue of 6-year bonds carrying a coupon rate of 10 per cent. Issue cost of the new bond will be As. 6 million and the call premium is 4 per cent. As. 9 million being the unamortized portion of issue cost of old bonds can be written off no sooner the old bonds are called off. Marginal tax rate of ABC Ltd. is 30 per cent. You are required to analyze the bond refunding decision.

11. CONVERTIBLE DEBENTURES :



1. Conversion Ratio :

The number of shares that each bond is converted into is known as conversion ratio.

2. Conversion price :

It's the price at which investor converts its share into Bond. Its based on the Face Value of the bond.

$$\text{Conversion price} = \frac{Par\ Value\ of\ the\ Bond}{Convsersion\ Ratio}$$

3. Conversion Parity Price :

It's the price at which the investor will break even. It is based on the Market Price of the Bond.

Conversion Parity Price = $\frac{Market\ Value\ of\ the\ Bond}{Convsersion\ Ratio}$

4. Stock Value of the bond :

It is also known as conversion value of the bond

Stock Value = Conversion ratio x MP of share

5. Conversion Premium:

A. MV of the bond – Stock Value of the bond

B. (MV of the bond – CPP) x conversion ratio

6. Straight Value of Bond :

It refers to IV of Bond. IV = PV of coupon + PV of Redemption

7. Downside Risk :

It's the maximum risk that investor takes. It refers to the loss that the investor would bear if he does not convert the bond

Downside Risk = Market Value of Bond – Straight Value of Bond

Question 37 : JAC Ltd.

The following data is related to 8.5% Fully convertible (into Equity shares) Debentures issued by JAC Ltd. at Rs. 1000

Market price of the convertible bond	= Rs 900
Conversion ratio	= Rs 30
Estimated straight value of the bond	= Rs 700
Price of common stock	= Rs 25

Calculate each of the following:

A. Conversion value.
B. Market conversion price.
C. Conversion premium per share.
D. Conversion premium ratio.
E. Premium over straight value.

Question 38 : GHI Ltd.

GHI Ltd., AAA rated company has fully convertible bonds on the following terms, a year ago

Face Value of Bond	: Rs. 1000
Coupon Rate	: 8.5%

Time of Maturity	: 3 years.
Interest Payment	: Annual, at the end of year
Principle Repayment	: At the end of bond Maturity
Conversion Ratio	: Number of shares per bond : 25
Current Market Price Per Share	: Rs. 45
Market Price of Convertible Bond	: Rs. 1175

AAA rated company can issue plain vanilla bonds without conversion option at an interest rate of 9.5%

Calculate as of today

1) Straight value of Bond
2) Conversion value of Bond
3) Conversion Premium
4) Percentage of Downside Risk
5) Conversion Parity Price.

Thanks ….

Be hope that you will find this helpful. If you would like to discuss any of the points please speak to us through the following channel.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Mergers And Acquisitions


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CHAPTER DESIGN

1. INTRODUCTION
2. RATIONAL BEHIND MERGERS AND ACQUISITONS
3. FORMS OF MERGERS
4. TAKEOVER STRATEGIES
5. DEFENSIVE TECHNIQUES
6. RANGE OF VALUATIONS

1. INTRODUCTION :

The most talked about subject of the day is Mergers & Acquisitions (M&A). In developed economies, corporate Mergers and Acquisition is a regular feature. In Japan, the US and Europe, hundreds of mergers and acquisition take place every year. In India, too, mergers and acquisition have become part of corporate strategy today.

The terms 'mergers; 'acquisitions' and 'takeovers' are often used interchangeably in common parlance. However, there are differences. While merger means unification of two entities into one, acquisition involves one entity buying out another and absorbing the same. In India, in legal sense merger is known as 'Amalgamation'.

An acquisition is when both the acquiring and acquired companies are still left standing as separate entities at the end of the transaction. A merger results in the legal dissolution of one of the companies, and a consolidation dissolves both of the parties and creates a new one, into which the previous entities are merged.

Many new companies are being incorporated as a result of the fast growing industrialisation of the country which is mainly dependent on agriculture. With the new trends of globalisation, not only in this country but also worldwide, there has been increasing interaction of companies and persons of one country with those of other countries. Today, corporate restructuring has gained momentum and undertakings and companies are merging, demerging, divesting and taking in or taking over companies and undertakings, both unregistered and registered, in India and outside.

Against this corporate backdrop, mergers and acquisitions have to be encouraged in the interest of the general public and for the promotion of industry and trade. At the same time the government has to safeguard the interest of the citizens, the consumers and the investors on the one hand and the shareholders, creditors and employees/workers on the other.

2. RATIONAL BEHIND MERGERS AND ACQUISITIONS :

1. Synergistic operating economics
2. Diversification
3. Taxation
4. Growth
5. Consolidation of Production Capacities and increasing market power

Examples :

Rational	Examples
Instantaneous growth, Snuffing out competition, Increased market share.	Airtel – Loop Mobile (2014) (Airtel bags top spot in Mumbai Telecom Circle)
Acquisition of a competence or a capability	Google – Motorola (2011) (Google got access to Motorola's 17,000 issued patents and 7500 applications)
Entry into new markets/product segments	Airtel – Zain Telecom (2010) (Airtel enters 15 nations of African Continent in one shot)

Access to funds	Ranbaxy – Sun Pharma (2014) (Daiichi Sankyo sold Ranbaxy to generate funds)
Tax benefits	Burger King (US) – Tim Hortons(Canada) (2014) (Burger King could save taxes in future)
Instantaneous growth, Snuffing out competition, Increased market share.	Facebook – Whatsapp (2014) (Facebook acquired its biggest threat in chat space)
Acquisition of a competence or a capability	Flipkart – Myntra (2014) (Flipkart poised to strengthen its competency in apparel e-commerce market)
Entry into new markets/product segments	Cargill – Wipro (2013) (Cargill acquired Sunflower Vanaspati oil business to enter Western India Market)
Access to funds	Jaypee – Ultratech (2014) (Jaypee sold its cement unit to raise funds for cutting off its debt)
Tax benefits	Durga Projects Limited (DPL) – WBPDCL (2014) (DPL's loss could be carry forward and setoff)

3. FORMS OF MERGERS :

(i) **Horizontal Merger:** The two companies which have merged are in the same industry, normally the market share of the new consolidated company would be larger and it is possible that it may move closer to being a monopoly or a near monopoly to avoid competition.

(ii) **Vertical Merger:** This merger happens when two companies that have 'buyer-seller' relationship (or potential buyer-seller relationship) come together.

(iii) **Conglomerate Mergers:** Such mergers involve firms engaged in unrelated type of business operations. In other words, the business activities of acquirer and the target are neither related to each other horizontally (i.e., producing the same or competiting products) nor vertically (having relationship of buyer and supplier).In a pure conglomerate merger, there are no important common factors between the companies in production, marketing, research and development and technology. There may however be some degree of overlapping in one or more of these common factors. Such mergers are in fact, unification of different kinds of businesses under one flagship company. The purpose of merger remains utilization of financial resources, enlarged debt capacity and also synergy of managerial functions.

(iv) **Congeneric Merger:** In these mergers, the acquirer and the target companies are related through basic technologies, production processes or markets. The acquired company represents an extension of product-line, market participants or technologies of the acquirer. These mergers represent an outward movement by the acquirer from its current business scenario to other related business activities within the overarching industry structure.

(v) **Reverse Merger:** Such mergers involve acquisition of a public (Shell Company) by a private company, as it helps private company to by-pass lengthy and complex process required to be followed in case it is interested in going public.

(vi) **Acquisition:** This refers to the purchase of controlling interest by one company in the share capital of an existing company. This may be by:

(b) an agreement with majority holder of Interest.
(b) Purchase of new shares by private agreement.
(c) Purchase of shares in open market (open offer)
(d) Acquisition of share capital of a company by means of cash, issuance of shares.
(e) Making a buyout offer to general body of shareholders

4. TAKEOVER STRATEGIES :

Normally acquisitions are made friendly, however when the process of acquisition is unfriendly (i.e., hostile) such acquisition is referred to as 'takeover'). Hostile takeover arises when the Board of Directors of the acquiring company decide to approach the shareholders of the target company directly through a Public Announcement (Tender Offer) to buy their shares consequent to the rejection of the offer made to the Board of Directors of the target company.

Other than Tender Offer the acquiring company can also use the following techniques:

- **Street Sweep :** This refers to the technique where the acquiring company accumulates larger number of shares in a target before making an open offer. The advantage is that the target company is left with no choice but to agree to the proposal of acquirer for takeover.
- **Bear Hug :** When the acquirer threatens the target company to make an open offer, the board of target company agrees to a settlement with the acquirer for change of control.
- **Strategic Alliance :** This involves disarming the acquirer by offering a partnership rather than a buyout. The acquirer should assert control from within and takeover the target company.
- **Brand Power :** This refers to entering into an alliance with powerful brands to displace the target's brands and as a result, buyout the weakened company

5. DEFENSIVE TECHNIQUES :

A target company can adopt a number of tactics to defend itself from hostile takeover through a tender offer.

- **Divestiture :** In a divestiture the target company divests or spins off some of its businesses in the form of an independent, subsidiary company. Thus, reducing the attractiveness of the existing business to the acquirer.
- **Crown jewels :** When a target company uses the tactic of divestiture it is said to sell the crown jewels. In some countries such as the UK, such tactic is not allowed once the deal becomes known and is unavoidable.
- **Poison pill :** Sometimes an acquiring company itself becomes a target when it is bidding for another company. The tactics used by the acquiring company to make itself unattractive to a potential bidder is called poison pills. For instance, the acquiring company may issue substantial amount of convertible debentures to its existing shareholders to be converted at a future date when it faces a takeover threat. The task of the bidder would become difficult since the number of shares to having voting control of the company increases substantially.

- **Poison Put :** In this case the target company issue bonds that encourage holder to cash in at higher prices. The resultant cash drainage would make the target unattractive.
- **Greenmail :** Greenmail refers to an incentive offered by management of the target company to the potential bidder for not pursuing the takeover. The management of the target company may offer the acquirer for its shares a price higher than the market price.
- **White knight :** In this a target company offers to be acquired by a friendly company to escape from a hostile takeover. The possible motive for the management of the target company to do so is not to lose the management of the company. The hostile acquirer may change the management.
- **White squire :** This strategy is essentially the same as white knight and involves sell out of shares to a company that is not interested in the takeover. As a consequence, the management of the target company retains its control over the company.
- **Golden parachutes :** When a company offers hefty compensations to its managers if they get ousted due to takeover, the company is said to offer golden parachutes. This reduces their resistance to takeover.
- **Pac-man defence :** This strategy aims at the target company making a counter bid for the acquirer company. This would force the acquirer to defend itself and consequently may call off its proposal for takeover.

Case study on JLR acquisition by Tata motors and How JLR was turned around by Tata's

Tata’s growth strategy was to consolidate position in domestic market & expand international footprint through development of new products by:

- Leveraging in house capabilities
- Acquisitions & collaborations to gain complementary capabilities

Why Tata Motors want to acquire Jaguar Land Rover (JLR)?

There are several reasons why Tata Motors want to acquire Jaguar Land Rover (JLR)

(i) Long term strategic commitment to Automotive sector.
(ii) Build comprehensive product portfolio with a global footprint immediately.
(iii) Diversify across markets & products segments.
(iv) Unique opportunity to move into premium segment.
(v) Sharing the best practices between Jaguar, Land rover and Tata Motors in the future.

Introduction of JLR

(i) Global sales of around 300,000 units, across 169 countries
(ii) Global revenue of $15 Billion
(iii) Nine Car lines, designed, engineered and manufactured in the UK.
(iv) 16000 employees

TATA Motor's position after acquiring JLR :

How Tata Motors turned JLR around

(i) Favorable Currency Movements
- Significant export in dollars- North America
- Net importers of Euros in terms of material

(ii) Improved market sentiments.
- Retail volumes in America, Europe and China improved

(iii) Introduction of newer, more fuel-efficient and stylish models
- Launch of XK & New XZ Jaguar models

(iv) Refreshing the existing ones

(v) Revival of demand in the firm's key markets such as the UK, the US and Europe

(vi) Costs reductions at various levels and the formation of 10-11 cross-functional teams

(vii) A number of management changes, including new heads at JLR, were made

(viii) Workforce being trimmed since July 2008 by around 11,000

There were five key issues that persuaded Tata Motors to go ahead

- Firstly, Ford had pumped in a great deal of cash to improve quality and it was just a matter of time before this made a difference.
- Secondly, JLR had very good automobile plants.
- Thirdly, the steadfastness of the dealers despite losses over the past four-five years.
- Fourthly, Jaguar cars had already started moving up the ranks of the annual JD Power customer satisfaction rankings. And,
- lastly, besides that, there was a crop of great new models in the pipeline, among them the Jaguar XJ and XF and the upcoming Land Rover, which convinced Tata Motors that JLR was on the verge of change.

Swap Ratio: When mergers happens with exchange of shares, an exchange ratio is agreed upon. It is also referred as swap ratio. It refers to the number of shares that acquiring company is ready to give to the target company.

$$\text{Swap Ratio} = \frac{Target\ Company}{Acquiring\ Company}$$

Question 1 : MK Ltd.

MK Ltd. is considering acquiring NN Ltd. The following information is available:

Company	Earning after Tax (Rs.)	No. of Equity shares	Market value per share (Rs.)
MK Ltd.	60,00,000	12,00,000	200.00
NN Ltd.	18,00,000	3,00,000	160.00

Exchange of equity shares for acquisition is based on current market value as above. There is no synergy advantage available.

1) Find the earning per shares for company MK Ltd. after merger, and
2) Find the exchange ratio so that shareholder for NN Ltd. would not be at a loss.

Question 2 : R Ltd.

R Ltd. is considering taking over S Ltd for better synergy in marketing the products. The Particulars of the companies are give :

	R Ltd.	S Ltd.
EAT (Rs. Lakhs)	30	12
Equity Shares (Rs. Lakhs)	10	6
EPS	3	2
P/E ratio	10	5

Required :

(i) What is the market value of each Company before merger?
(ii) Management of R Ltd. assumes that Shareholders of S Ltd. will accept offer of one share of R Ltd. for 3 shares of S Ltd. What will be port Merger Market Value of R Ltd..
(iii) Assuming that the merged company will be in a position to elevate its position in the share market so as to maintain the same P/E ratio, what is Port –Merger EPS and price per share?
(iv) What is the gain from the merger in terms of market value of the merged company?
(v) What will be the gain of shareholders of R Ltd in terms of share price?

Question 3 : Mark Limited

The following information is provided related to the acquiring firm Mark Limited and the target Firm Mask Limited:

	Firm Mark Limited	Firm Mask Limited
Earning after tax (Rs)	2,000 lakhs	400 lakhs
Number of shares outstanding	200 lakhs	100 lakhs
P/E ratio (times)	10	5

Required :

1) What is the Swap Ratio based on current market Price ?
2) What is the EPS of Mark Limited after acquisition?
3) What is the expected market price per share of Mark Limited after acquisition, assuming P/E ratio of Mark Limited remains unchanged?
4) Determine the market value of the merged firm.
5) Calculate gain/loss for shareholder of the two independent companies after acquisition.

Question 4 : A Ltd.

A Ltd. wants to acquire T Ltd. and has offered a swap ratio of 1:2 (0.5 shares for every one share of T Ltd.) following information is provided.

	A Ltd	T Ltd
Profit after tax	Rs 18,00,000	Rs 3,60,000
Equity shares outstanding (Nos)	6,00,000	1,80,000
EPS	Rs 3	Rs 2
PE Ratio	10 times	7 times
Market price per share	Rs 30	Rs 14

Required:

1) The number of equity shares to be issued by A Ltd. for acquisition of T Ltd.
2) What is the EPS of A Ltd. after the acquisition?
3) Determine the equivalent earnings per shares of T Ltd
4) What is the expected market price per shares of A Ltd after the acquisition, assuming its PE multiple remains unchanged?
5) Determine the market value of the merged firm.

Question 5 : XYZ Ltd.

XYZ Ltd., is considering merger with ABC Ltd. XYZ Ltd.'s share are currently traded at Rs 20. It has 2,50,000 shares outstanding and its earnings after taxes (EAT) amount to Rs 5,00,000. ABC Ltd ., has 1,25,000 shares outstanding :its current market price is RS 10 and its EAT are Rs 1,25,000 the merger will be effected by means of a stock swap (exchange). ABC Ltd., has agreed to a plan under which XYZ Ltd., will offer the current market value of ABC Ltd.'s shares:

(i) What is the pre – merger earning per share (EPs) and P/E ratio of both the companies?
(ii) If ABC Ltd.' P/E ratio 6.4, what is the current market price? What is the exchange ratio ?what will XYZ Ltd.'s post – merger EPS be?

(iii) What should be the exchange ratio; if XYZ Ltd.'s pre – merger and post merger EPS are to be the same ?

Question 6 : Company X

Company X is contemplating the purchase of company Y. Company X has 3,00,000 shares having a market price of Rs 30 per share , while company Y has 2,00,000 shares selling Rs 20 per share. The EPS are Rs 4.00 and Rs 2.25 for company X and Y respectively. Managements of both companies are discussing two alternative proposals for exchanges of shares as indicated below:

1) In proportion to the relative earning per share of two companies.
2) 0.5 share of company X for one share of company Y(0.5 : 1).

You are required:

a) To calculate the Earning per share (EPS) after merger under two alternatives; and
b) To show the impact on EPS for the shareholders of two companies under both the alternatives.

Question 7 : X Ltd.

X Ltd. made an attempt to acquire Y Ltd. Following information is available for both the Companies:

	X Ltd.	Y Ltd.
Price for Share (Rs)	30	20
P/E ratio	5	4
No. of Shares (lakhs) (FV of Rs 10)	3.0	2.0
Reserve & Surplus (Rs lakhs)	30	20
Promoters' holding (lakh shares)	1.2	0.75

Board of Directors of both the Companies have decided that a workable swap ratio is to be based on weights of 30%, 30% and 40% respectively for Earning, Book Value and Market Price of share of each company. Find out the following

(i) Swap ratio
(ii) After merger, Promoter's holding %
(iii) Post merger EPS
(iv) Gain in Capital market Value of merged company , assuming Price Earning ratio will remain same.

Question 8 : Efficient Ltd.

The following information is provided relating to the acquiring company Efficient Ltd. and the target Company Healthy Ltd.

	Efficient Ltd.	Healthy Ltd.
No. of shares (F.V. Rs 10 each)	10.00 lakhs	7.5 lakhs
Market capitalization	500.00 lakhs	750.00 lakhs
P/E ratio (times)	10.00	5.00

Reserves and surplus)	300.00 lakhs	165.00 lakhs
Promoter's Holding (No. of share)	4.75 lakhs	5.00 lakhs

Board of Directors of both the companies have decided to give a fair deal to the shareholders and accordingly for swap ratio the weights are decided as 40%, 25% and 35% respectively for Earning , Book value and market Price of share of each Company:

1) Calculate the swap ratio and also calculate Promoter's holding % after acquisition.
2) What is the EPS of Efficient Ltd. after acquisition of Healthy Ltd.?
3) What is the expected market price per share and market capitalization of Efficient Ltd. after acquisition, assuming P/E of firm Efficient Ltd. remains unchanged.
4) Calculate free float market capitalization of the merged firm.

Question 9 : T Ltd. and E Ltd.

T Ltd. and E Ltd. are in the same industry. The former is in negotiation for acquisition of the latter. Important information about the two companies as per their latest financial statement is given below:

	T Ltd	**E Ltd.**
Rs.10 Equity share outstanding	12 Lakhs	6 lakhs
Debt:		
10% Debentures (Rs. Lakhs)	580	--
12.5% institutional Loan(Rs. Lakhs)	--	240
Earning before interest, depreciation and tax (EBIDAT) (Rs. Lakhs)	400.86	115.71
Market Price / share(Rs.)	220	110

T Ltd. plans to offer a price for E Ltd., business as whole which will be 7 times EBIDATE reduced by outstanding debt, to be discharged by own shares at market price.

E Ltd. planning to seek one share in T Ltd. For every 2 shares in E Ltd .based on the market price. Tax rate for the two companies may be assumed as 30%

Calculate and show the following under both alternatives – T Ltd offer and E Ltd.' plan:

1) Net consideration payable.
2) No. of share to be issued by T Ltd.
3) EPS of T Ltd. after acquisition.
4) Expected market price per share of T Ltd. after acquisition.
5) State briefly the advantage to T Ltd. from the acquisition.

Calculation (except EPS) may be rounded off to 2 decimals lakhs.

Question 10 : Reliable Industries Ltd. (RIL)

Reliable Industries Ltd. (RIL) is considering a takeover of Sunflower Industries Ltd. (SIL) the Particulars of 2 companies are given below:

Particulars	**Reliable Industries Ltd**	**Sunflower Industries Ltd**
Earning After Tax (EAT)	Rs.20,00,000	Rs.10,00,000
Equity share o/s	10,00,000	10,00,000
Earning per share (EPS)	2	1
P E Ratio (Times)	10	5

Required:

1) What is the market value of each Company before merger?
2) Assume that the management of RIL estimates that the shareholder of SIL will accept an offer of one share of RIL for four shares are no synergic effects, what is the market value of the Post- merger RIL? What is the price per share? Are the shareholder of RIL better or worse off than they were before the merger?
3) Due to synergic effects, the management of RIL estimates that the earning will increase by 20% what are the new post – merger EPS and price per share ? will the shareholder better off than be for the merger?

6. RANGE OF VALUATIONS :

It means we are required to calculate the minimum and the maximum share price for the purpose of the takeover.

1. Minimum share price at which the selling company will agree to sell its business is market price of the share. However, if the market price is quoting lower than Book value of share then the minimum price shall be book value of share.

2. Maximum depends upon various conditions. One of the major factors is that the acquiring company would like to maintain (if not increase) its MPS after merger. Another can be the gain that acquiring company gets from the merger can be passed to the shareholders of the target company. There can be various other factors for we should solve it on case to case basis.

Question 11 : ABC Company

ABC Company is considering acquisition of XYZ Ltd. This has 1.5 Cores shares outstanding and issued. The Market price per share is Rs 400 at present. ABC's average cost of capital is 12% . Available information from XYZ indicates its expected cash accruals for the next 3 years as follows:

Year	Rs. Cr
1	250
2	300
3	400

Calculate the range of valuation that ABC has to consider. (PV factors at 12% for years 1 to 3 respectively: 0.893, 0.797 and 0.712).

Question 12 : XYZ Ltd.

The equity shares of XYZ Ltd. are currently being traded at Rs 24 per share in the market. XYZ Ltd. has total 10,00,000 equity shares outstanding in number; and promoters' equity

holding in the company is 40%. PQR Ltd. wishes to acquire XYZ Ltd. because of likely synergies. The estimated present value of these synergies is Rs 80,00,000. Further PQR feels that management of XYZ Ltd. has been over paid. With better motivation, lower salaries and fewer perks for the top management, will lead to savings of Rs 4,00,000 p.a. Top management with their families are promoters of XYZ Ltd. Present value of these savings would add Rs 30,00,000 in value to the acquisition.

Following additional information is available regarding PQR Ltd.:

Earnings per share	: Rs 4
Total number of equity shares outstanding	: 15,00,000
Market price of equity share	: Rs 40

Required :

(i) What is the maximum price per equity share which PQR Ltd. can offer to pay for XYZ Ltd.?

(ii) What is the minimum price per equity share at which the management of XYZ Ltd. will be willing to offer their controlling interest?

Question 13 : AXE Ltd.

AXE Ltd. is interested to acquire PB Ltd. AXE has 50,00,000 shares of Rs 10 each, which are presently being quoted at Rs 25 per share. On the other hand PB has 20,00,000 share of Rs 10 each currently selling at Rs 17. AXE and PB have EPS of Rs 3.20 and Rs 2.40 respectively.

You are required to:

(a) Show the impact of merger on EPS, in case if exchange ratio is based on relative proportion of EPS.

(b) Suppose, if AXE quote an offer of share exchange ratio of 1:1, then should PB accept the offer or not, assuming that there will be no change in PE ratio of AXE after the merger.

(c) The maximum ratio likely to acceptable to management of AXE.

Question 14 : BA Ltd and DA Ltd

BA Ltd and DA Ltd both the companies operate in the same industry. The financial statements of both the companies for the Current financial year are as follows :

Balance sheet

Particulars	**BA Ltd (Rs.)**	**DA Ltd (Rs.)**
Current Assets	14,00,000	10,00,000
Fixed Assets (Net)	10,00,000	5,00,000

Total	24,00,000	15,00,000
Equity Capital (Rs.10 each)	10,00,000	8,00,000
Retained earnings	2,00,000	
14% long term debts	5,00,000	3,00,000
Current liabilities	7,00,000	4,00,000
Total	**24,00,000**	**15,00,000**

Income statement

	BA Ltd (Rs.)	**DA Ltd (Rs.)**
Net sales	34,50,000	17,00,000
Cost of goods sold	27,60,000	13,60,000
Gross profit	6,90,000	3,40,000
Operating expenses	2,00,000	1,00,000
Interest	70,000	42,000
Earnings before taxes	4,20,000	1,98,000
Taxes @ 50%	2,10,000	99,000
Earnings after taxes (EAT)	2,10,000	99,000
Additional Information : No. of Equity shares	1,00,000	80,000
Dividend payment ratios (D/P)	40%	60%
Market price per share	Rs 40	Rs15

Assume that both companies are in the process of negotiating a merger through an exchange of equity shares. You have been asked to assist in establishing equitable exchange terms and are require to :

1) Decompose the share price of both the companies into EPS & P/E components : and also segregate their EPS figures into Return on Equity (ROE) and book value/intrinsic value per share components.
2) Estimate future EPS growth rate for each company.
3) Based on expected operating synergises BA Ltd estimates that the intrinsic value of DA's equity share would be Rs.20 per share on its acquisition.you are required to develop a range of justifiable equity share exchange ratios that can be offered by BA Ltd to the shareholders of DA Ltd . Based on your analysis an part (1) and (2) would you expect the neghotiated terms to be closer to the upper or the lower exchange ratio limits and why ?
4) Calculate the post merger EPS based on an exchange ratio 0.4 : 1 being offered by BA Ltd and indicate the immediate EPS accretion or dilution if any that will occur for each group of shareholders.

5) Based on 0.4:1 exchange ratio and assuming that BA's Ltd pre merger P?E Ratio will continue after the merger estimate the post merger market price.Also show the resulting accretion or dilution in pre merger market prices.

Question 15 : Trupti Co. Ltd.

Trupti Co. Ltd. promoted by a Multinational group "INTERNATIONAL INC" is listed on stock exchange holding 84% i.e. 63 lakhs shares.

Profit after Tax is Rs 4.80 crores.

Free Float Market Capitalization is Rs 19.20 crores.

As per the SEBI guidelines promoters have to restrict their holding to 75% to avoid delisting from the stock exchange. Board of Directors has decided not to delist the share but to comply with the SEBI guidelines by issuing Bonus shares to minority shareholders while maintaining the same P/E ratio.

Calculate :

(i) P/E Ratio

(ii) Bonus Ratio

(iii) Market price of share before and after the issue of bonus shares

(iv) Free Float Market capitalization of the company after the bonus shares.

Question 16 : Fortune India Ltd.

The following information is relating to Fortune India Ltd. having two division , viz Pharma Dividion and fast Moving Consumer Goods Division (FMCG Division). Paid up share capital of Fortune India Ltd. is Consisting of 3,000 Lakhs equity shares of Re 1 each. Fortune India Ltd. Decided to de-merger Pharma Division as fortune Pharma Ltd w.e.f. 1.4.2009. Details of fortune India Ltd. as on 31.3.2009 and of fortune Ltd. as on 1.4.2009 are given below:

Particulars	**Fortune Pharma Ltd**	**Fortune India Ltd**
	Rs	**Rs**
Outside Liabilities		
Secured Loans	400 lakh	3,000 lakh
Unsecured Loans	2,400 lakh	800 lakh
Currents Liabilities & Provision	1,300 lakh	21,200 lakh
Assets		
Fixed Assets	7,740lakh	20,400 lakh
Investment	7,600 lakh	12,300 lakh
Current Assets	8,800 lakh	30,200 lakh
Loans & Advances	900 lakh	7,300 lakh

Deferred tax/ Misc. Expenses	60 lakh	(200lakh)

Board of Directors of the company have decided to issue necessary equity shares of fortune Pharma Ltd. of Re. 1 each, without any consideration to the shareholders of fortune India Ltd. For that purpose following points is to be considered.

1) Transfer of Liabilities &Assets at Book value.
2) Estimated Profit for the year 2009-10 is Rs.11,400 lakh for Fortune India Ltd. & Rs.1,470 lakhs for Fortune Pharma Ltd .
3) Estimated Market Price of Fortune Pharma Ltd. is Rs 24,50 per share.
4) Average P/E Ratio of FMCG sector id 42 & Pharma sector is 25, which is to be expected for both the companies.

Calculate:

1) The Ratio in which share of Fortune Pharma are to be issued to the shareholder of Fortune India Ltd.
2) Expected Market Price of Fortune India Ltd.
3) Book value per share of both the Companies immediately after Demerger.

Question 17 : Simple Ltd. and Dimple Ltd

Simple Ltd. and Dimple Ltd. are planning to merge. The total value of the companies are dependent on the fluctuating business condition. The following information is given for the total value (debt + equity) structure of each of the two companies.

Business Condition	Probability	Simple Ltd. Rs Lacs	Dimple Ltd Rs Lacs
High Growth	0.2	820	1050
Medium Growth	0.6	550	825
Slow Growth	0.2	410	590

The current debt of Dimple Ltd. is Rs 65 lacs and of simple Ltd. is Rs 460 lacs. Calculate the expected value of debt and equity separately for the merged entity.

Question 18 : Yes Ltd.

Yes Ltd. wants to acquire No Ltd. and the cash flows of Yes Ltd. and the merged entity are given below:

					Rs in lakhs
Year	**1**	**2**	**3**	**4**	**5**
Yes Ltd	175	200	320	340	350
Merged Entity	400	450	525	590	620

Earnings would have witnessed 5% constant growth rate without merger and 6% with merger on account of economies of operations after 5 years in each case. The cost of capital is 15%.

The number of shares outstanding in both the companies before the merger is the same and the companies agree to an exchange ratio of 0.5 shares of Yes Ltd. for each share of No Ltd.

PV factor at 15% for years 1-5 are 0.870, 0.756; 0.658, 0.572, 0.497 respectively.

You are required to:

(i) Compute the Value of Yes Ltd. before and after merger.

(ii) Value of Acquisition and

(iii) (iii) Gain to shareholders of Yes Ltd.

CHP - 6

Mutual Funds


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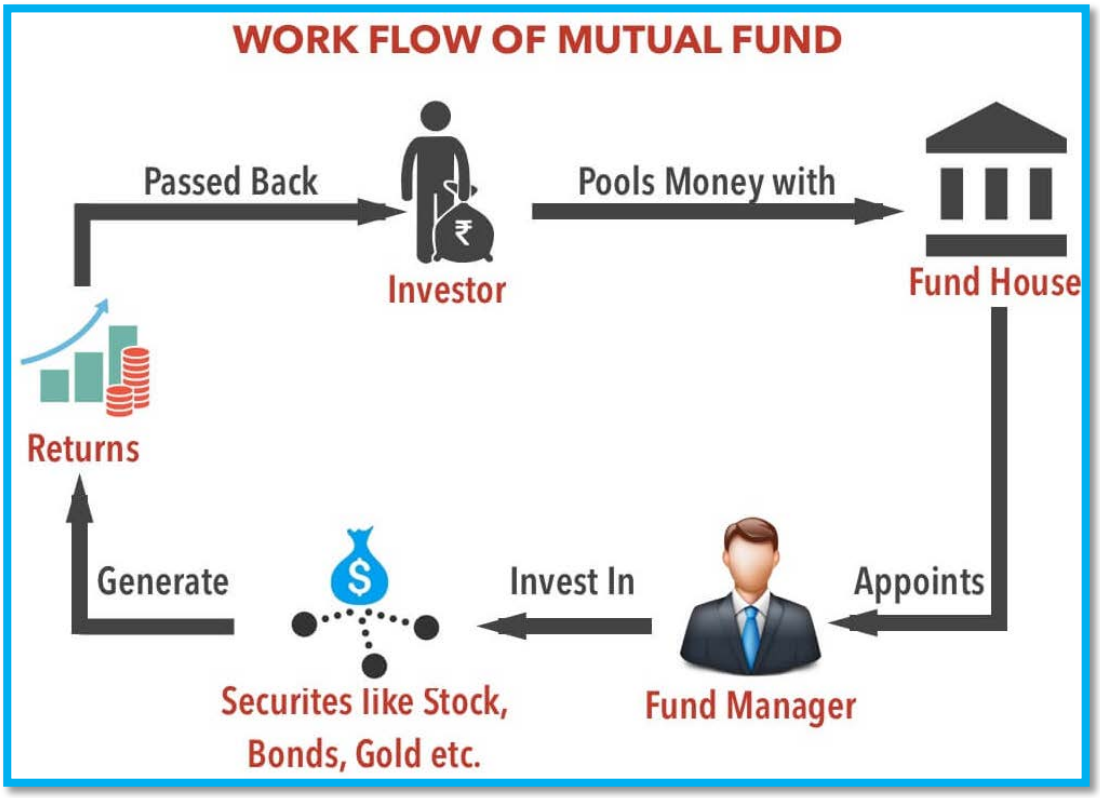
CHAPTER DESIGN

1. INTRODUCTION
2. BASICS OF MUTUAL FUNDS
3. CLASSIFICATION OF MUTUAL FUNDS
4. ADVANTAGES OF MUTUAL FUNDS
5. DISADVANTAGES OF MUTUAL FUNDS
6. NET ASSET VALUE
7. HOLDING PERIOD YIELD

1. INTRODUCTION :

Mutual Fund is a trust that pools together the resources of investors to make a foray into investments in the capital market thereby making the investor to be a part owner of the assets of the mutual fund. The fund is managed by a professional money manager who invests the money collected from different investors in various stocks, bonds or other securities according to specific investment objectives as established by the fund. If the value of the mutual fund investments goes up, the return on them increases and vice versa.



2. BASICS ON MUTUAL FUNDS :

Mutual Benefits :

Investing in mutual funds is an expert's job in the present market scenario. A systematic investment in this instrument is bound to give rich dividends in the long-term. That is why over 2 crore investors have faith in mutual funds.

What is a Mutual Fund?

A mutual fund is a trust that pools the savings of a number of investors who share a common financial goal. A mutual fund is the most suitable investment for the cautious investor as it offers an opportunity to invest in a diversified professionally managed basket of securities at a relatively low cost.

Who can invest in Mutual Funds?

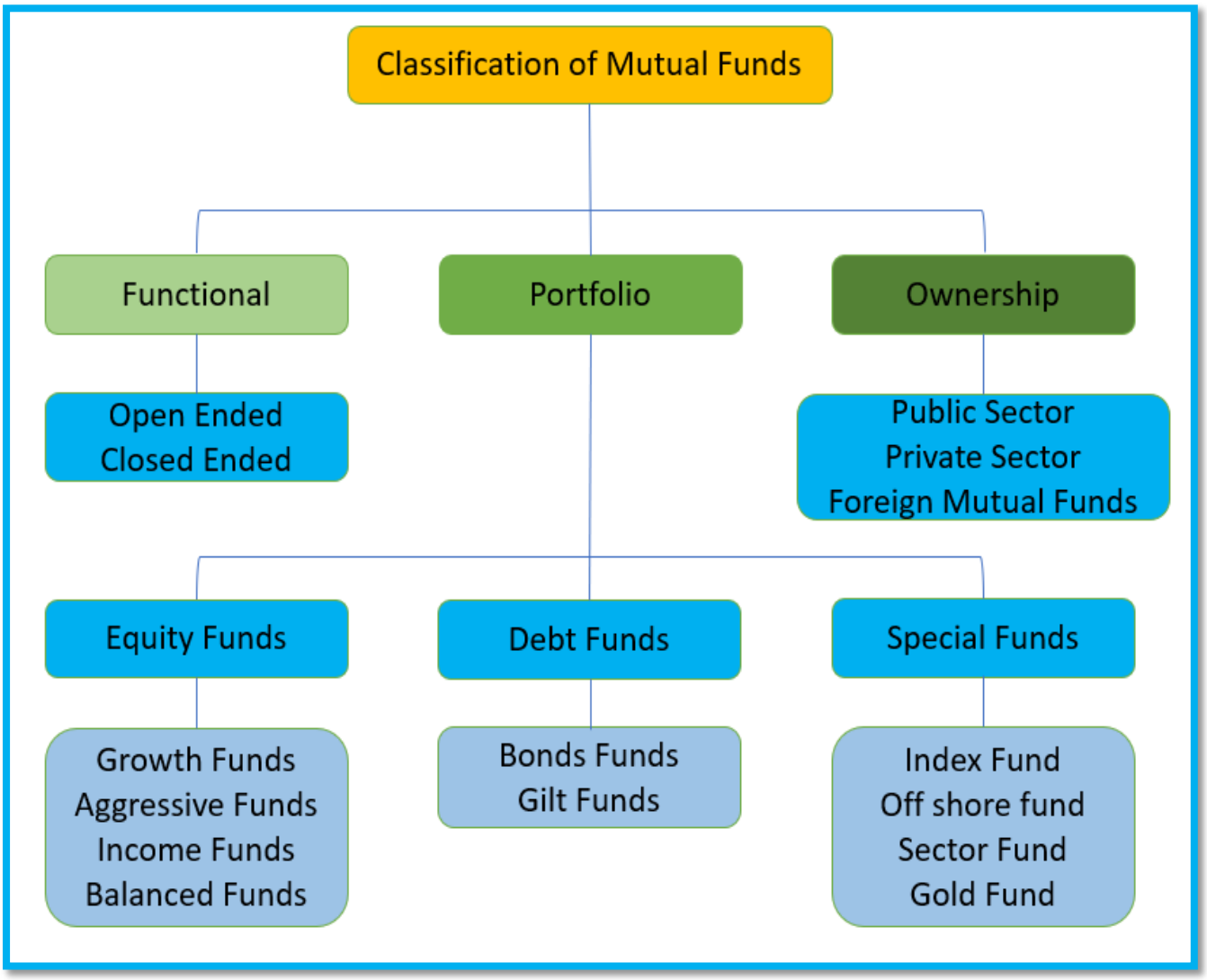
Anybody with an investible surplus of as little as a few thousand rupees can invest in mutual funds by buying units of a particular mutual fund scheme that has a defined investment objective and strategy.

How Mutual Funds work for you ?

The money collected from the investors is invested by a fund manager in different types of securities. These could range from shares and debentures to money market instruments depending upon the scheme's stated objectives. The income earned through these investments and capital appreciation realized by the scheme is shared by its unit holders in proportion to the units owned by them. (please refer the diagram above)

Should we invest in Stocks or Mutual Funds? –
Yes (Subject to Risk appetite)

3. CLASSIFICATION OF MUTUAL FUNDS :



4. ADVANTAGES OF MUTUAL FUNDS :

(a) **Professional Management :** The funds are managed by skilled and professionally experienced managers with a back up of a Research team.

(b) **Diversification :** Mutual Funds offer diversification in portfolio which reduces the risk.

(c) **Convenient Administration :** There are no administrative risks of share transfer, as many of the Mutual Funds offer services in a demat form which save investor's time and delay.

(d) **Higher Returns :** Over a medium to long-term investment, investors always get higher returns in Mutual Funds as compared to other avenues of investment. This is already seen from excellent returns, Mutual Funds have provided in the last few years. However, investors are cautioned that such high returns riding on the IT boom should not be taken as regular returns and therefore one should look at the average returns provided by the Mutual Funds particularly in the equity schemes during the last couple of years.

(e) **Low Cost of Management :** No Mutual Fund can increase the cost beyond prescribed limits of 2.5% maximum and any extra cost of management is to be borne by the AMC.

(f) **Liquidity :** In all the open ended funds, liquidity is provided by direct sales / repurchase by the Mutual Fund and in case of close ended funds, the liquidity is provided by listing the units on the Stock Exchange.

(g) **Transparency :** The SEBI Regulations now compel all the Mutual Funds to disclose their portfolios on a half-yearly basis. However, many Mutual Funds disclose this on a quarterly or monthly basis to their investors. The NAVs are calculated on a daily basis in case of open ended funds and are now published through AMFI in the newspapers.

(h) **Other Benefits :** Mutual Funds provide regular withdrawal and systematic investment plans according to the need of the investors. The investors can also switch from one scheme to another without any load.

(i) **Highly Regulated :** Mutual Funds all over the world are highly regulated and in India all Mutual Funds are registered with SEBI and are strictly regulated as per the Mutual Fund Regulations which provide excellent investor protection.

(j) **Economies of scale :** The way mutual funds are structured gives it a natural advantage. The "pooled" money from a number of investors ensures that mutual funds enjoy economies of scale; it is cheaper compared to investing directly in the capital markets which involves higher charges. This also allows retail investors access to high entry level markets like real estate, and also there is a greater control over costs.

(k) **Flexibility :** There are a lot of features in a regular mutual fund scheme, which imparts flexibility to the scheme. An investor can opt for Systematic Investment Plan (SIP), Systematic Withdrawal Plan etc. to plan his cash flow requirements as per his convenience. The wide range of schemes being launched in India by different mutual funds also provides an added flexibility to the investor to plan his portfolio accordingly.

5. DISADVANTAGES OF MUTUAL FUNDS :

(a) **No guarantee of Return :** There are three issues involved:

(i) All Mutual Funds cannot be winners. There may be some who may underperform the benchmark index i.e. it may not even perform well as a novice who invests in the stocks constituting the index.

(ii) A mutual fund may perform better than the stock market but this does not necessarily lead to a gain for the investor. The market may have risen and the

mutual fund scheme increased in value but the investor would have got the same increase had he invested in risk free investments than in mutual fund.

(iii) Investors may forgive if the return is not adequate. But they will not do so if the principal is eroded. Mutual Fund investment may depreciate in value.

(b) Diversification : A mutual fund helps to create a diversified portfolio. Though diversification minimizes risk, it does not ensure maximizing returns. The returns that mutual funds offer are less than what an investor can achieve. For example, if a single security held by a mutual fund doubles in value, the mutual fund itself would not double in value because that security is only one small part of the fund's holdings. By holding a large number of different investments, mutual funds tend to do neither exceptionally well nor exceptionally poor.

(c) Selection of Proper Fund : It may be easier to select the right share rather than the right fund. For stocks, one can base his selection on the parameters of economic, industry and company analysis. In case of mutual funds, past performance is the only criteria to fall back upon. But past cannot predict the future.

(d) Cost Factor : Mutual Funds carry a price tag. Fund Managers are the highest paid executives. While investing, one has to pay for entry load and when leaving he has to pay for exit load. Such costs reduce the return from mutual fund. The fees paid to the Asset Management Company is in no way related to performance.

(e) Unethical Practices : Mutual Funds may not play a fair game. Each scheme may sell some of the holdings to its sister concerns for substantive notional gains and posting NAVs in a formalized manner.

(f) Taxes : When making decisions about your money, fund managers do not consider your personal tax situations. For example when a fund manager sells a security, a capital gain tax is triggered, which affects how profitable the individual is from sale. It might have been more profitable for the individual to defer the capital gain liability.

(g) Transfer Difficulties : Complications arise with mutual funds when a managed portfolio is switched to a different financial firm. Sometimes the mutual fund positions have to be closed out before a transfer can happen. This can be a major problem for investors. Liquidating a mutual fund portfolio may increase risk, increase fees and commissions, and create capital gains taxes.

6. NET ASSET VALUE :

It is the amount which a unit holder would receive if the mutual fund were wound up. An investor in mutual fund is a part owner of all its assets and liabilities. It is value of net assets of the funds.

It can be calculated by using the following formula = $\frac{Net\ Assets}{No\ of\ Units\ Outstanding}$

Question 1 :

Consider the following data of a mutual fund scheme :

Particulars	Rs. In crore
Value of investments	2,056.25
Receivables	158.25
Accrued in come	25.75
Other current assets	325.26
Liabilities	449.56
Accrued expenses	52.92

If the number of outstanding units is 200 core and sale charges is 1.5% on the NAV, what is the public offering price?

Question 2 :

The following portfolio details of a fund are available :

Stock	Share	Price (Rs.)
A	2,00,000	35
B	3,00,000	40
C	4,00,000	20
D	6,00,000	25

The Fund has accrued management fees with the portfolio manager totaling Rs.30,000. There are 40 lakhs share outstanding. What is the NAV of the fund ? if the fund is sole with a front end load of 5%, what is the sale price ?

Question 3 :

Calculate the today's NAV of flexi fund if the following details are given :-
Yesterday's NAV = Rs. 12.87, Total number of outstanding units : 1.25 Crores Face value = Rs. 10. Expenses = Rs. 1 lakh [Assumes sale NAV& Repurchase NAV to be Rs. 12.87].

Appreciation of portfolio today	12 lakhs
Units fresh subscription	2 lakhs
Units redemption	0.75 lakhs
Dividend received	1 lakhs

Question 4 :

A mutual fund made an issue of 10,00,000 units of Rs. 10 each on January 01, 2008. No entry load was charged. It made the following investments :

	Rs.
50,000 Equity shares of Rs. 100 each @ Rs. 160	80,00,000
7% Government Securities	8,00,000
9% Debentures (Unlisted)	5,00,000

10% Debentures (Listed)	5,00,000
	98,00,000

During the year, dividends of Rs. 12,00,000 were received on equity shares. Interest on all types of debt securities was received as and when due. At the end of the year equity shares and 10% debentures are quoted at 175% and 90% respectively. Other investments are at par.

Find out the Net Asset Value (NAV) per unit given that operating expenses paid during the year amounted to Rs. 5,00,000. Also find out the NAV, if the Mutual Fund had distributed a dividend of Re. 0.80 per unit during the year to the unit holders.

Question 5 :

1 April 2009 Fair Return Mutual Fund has the following assets and prices at 4.00 st p.m.

Shares	No. of Shares	Market Price Per Share (Rs.)
A Ltd.	10000	19.70
B Ltd.	50000	482.60
C Ltd.	10000	264.40
D Ltd.	100000	674.90
E Ltd.	30000	25.90
No. of units of fund		8,00,000

Please calculate :

1. NAV of the Fund.
2. Assuming Mr. X, a HNI, send a cheque of Rs.50,00,000 to the Fund and Fund Manager purchases 18000 shares of C Ltd. and balance is held in bank. Then what will be position of fund.
3. Now suppose on 2 April 2009 at 4.00 p.m. the market price of shares is as follows :

Shares	Rs.
A Ltd.	20.30
B Ltd.	513.70
C Ltd.	290.80
D Ltd.	671.90
ELtd.	44.20

Then what will be new NAV.

Question 6 :

Based on the following information, determine the Net Asset Value (NAV) on a regular income scheme on per unit basis :

	Rs (in crores)
Listed Equity shares at cost (ex-dividend)	20.00
Cash in hand	1.23
Bonds & Debentures at cost	4.3

Of these, Bonds not listed & quoted	1
Other fixed interest securities at cost	4.5
Dividend accrued	0.8
Amount payable on shares	6.32
Expenditure accrued	0.75
Number of Units (Rs.10 face value each):	20,00,000
Current realizable value of fixed income	106.5

Securities of face value of Rs.100.
The listed equity shares were purchased when the index was 1,000 Present index is 2,300
Value of listed bonds and debentures at NAV date is 8
There has been a diminution of 20% in unlisted bonds and debentures.

7. HOLDING PERIOD YIELD :

Yield means return and return should be calculated in terms of % P.A. Holding period yield means what does the investor earn for the period during which he was holding mutual fund units. It calculation of Ex-post yield (Kitna kamaya)

We are required to calculate HPY for different types of mutual fund plans. The most prominent mutual fund plans are

1. Pay out plan
2. Reinvestment Plan
3. Bonus Plan
4. Growth Plan

1. Pay-out Plan :

As the name indicates, under this plan mutual funds distributes dividend and capital gain to its investor from time to time.

$$\text{HPY (for pay out plan)} = \frac{Dividend\ Distribution + Capital\ Gain\ Distribution + Capital\ Appreciation}{Purchase\ price} \times 100$$

Question 7 :
A MF that had an NAV of Rs.20 in the beginning of the month made an income and capital gain distribution of Rs.0.0375 and Rs.0.03 per share respectively during the month, and then ended the month with an NAV of Rs.20.06. Calculating the monthly return.

Question 8 :
A Mutual Fund has a NAV of Rs.20 on 1.12.09. During December 2009, it has earned a regular income of Rs.0.03 per unit. On 31.12.09, the NAV was Rs.20.06. Calculate the monthly return and annual return.

Question 9 :

A mutual fund has a net asset value (NAV) of Rs 50 at the beginning of the year a sum of Rs 4 was distributed as income besides Rs 3 as capital gain distribution. At the end of the year NAV was Rs 55. Calculate the net return of the year. Suppose the aforesaid mutual fund in the next year gives a dividend of Rs 5 as income distribution and no capital gains distribution and the NAV at the end of the second year is Rs 50. What is the return for the second year?

Question 10 :

A has invested in three Mutual Fund schemes as per details below:

	MF A	MF B	MF C
Date of Investment	1.12.03	1.1.04	1.3.04
Amount of Investment	Rs 50,000	1,00,000	Rs 50,000
NAV on entry date	Rs 10.50	Rs 10	Rs 10
Dividend received up to 31.3.04	Rs 950	Rs 1500	Nil
NAV as at 31.3.04	Rs 10.40	Rs 10.10	Rs 9.80

What is the effective yield on per annum basis in respect of each of the three schemes to Mr. A upto 31.03.04?

2. Re-investment Plan :

In this plan, the dividend and capital gain distributions are not distributed to the holder, instead they are re-invested into mutual fund. Holders are issued units at NAV existing on the date of re-investment.

Question 11 :

A Mutual Fund having 300 units has shown is NAV of Rs.8.75 and Rs. 9.45 at the beginning and at the end of the year respectively.

The Mutual Fund has given two options:

a) Pay Rs. 0.75 per unit as dividend and Re. 0.60 per unit as a capital gain, or

b) These distributions are to be reinvested at an average NAV of Rs. 8.65 per unit.

What difference it would make in terms of return available and which option is preferable?

Question 12 : Mr. X

Mr. X, an investor purchased 200 units of ABC Mutual Fund at rate of Rs. 8.50 p.u., one year ago. Over the year Mr. X received Rs. 0.90 as dividend and had received a capital gains distribution of Rs. 0.75 per unit.

You are required to find out:

Mr. X's holding period return assuming that this no load fund has a NAV of Rs. 9.10 as on today.

Mr. X's holding period return, assuming all the dividends and capital gains distributions are reinvested into additional units as at average price of Rs. 8.75 per unit.

3. Bonus Plan & Growth Plan :

Bonus Plan : As the name indicates, under this plan mutual fund issues bonus units to its holders at random interval. Holders gets such for free instead of getting dividend distributions and capital gain distributions.

Growth Plan : There are no dividend distributions, no capital gain distribution, no units on reinvestments, no bonus units. The only gain that the holder gets is in terms of capital appreciation, i.e the difference between the NAV's at beginning and at the end.

Question 13 : Sun Moon Mutual Fund

Sun Moon Mutual Fund (Approved Mutual Fund) sponsored open-ended equity oriented scheme "Chanakya Opportunity Fund". There were three plans viz. 'A'- Dividend Re-investment Plan, 'B' - Bonus Plan & 'C'- Growth Plan.

At the time of Initial Public Offer on 1-4-1995, Mr. Anand, Mr. Bachhan & Mrs. Charu, three investors invested Rs. 1,00,000 each and chose 'B', 'C' & 'A' Plan respectively.

The History of the Fund is as follows :

Date	Dividend (%)	Bonus	Net Asset Value per Unit Ratio (FV Rs, 10)		
			Plan A	Plan B	Plan C
28-07-1999	20		30.70	31.40	33.42
31-03-2000	70	5:4	58.42	31.05	70.05
31-10-2003	40		42.18	25.02	56.1$
15-03-2004	25		44.45	29.10	64.28
31-03-2004		1:3	42.18	20.05	60.12
24-03-2005	40	1:4	48.10	19.95	72.40
31-07-2005			53.75	22.98	82.07

On 31st July all three investors redeemed all the balance units. Calculate annual rate of return to each of the investors.

Consider:

a. Long-term Capital Gain is exempt from Income tax.
b. Short-term Capital Gain is subject to 10% Income tax.
c. Security Transaction Tax 0.2 percent only on sale/redemption of units.
d. Ignore Education Cess.

Question 14 : Mr.X

Mr. X on 1.7.2000, during the initial offer of some Mutual Fund invested in 10,000 units having face value of Rs. 10 for each unit. On 31.3.2001 dividend operated by the M.F was 10% and Mr. X found that his annualized was 153.33%. On 31.12.2002, 20% dividend was

given, On 31.3.2003 Mr. X redeemed all his balance of 11,296.11 units when his annualized yield was 73.52%. What are the NAVs as on 31.3.2001, 31.12.2002 and 31.3.2003?

Question 15 : Mr.X

On 01-07-2010, Mr. X Invested Rs 50,000/- at initial offer in Mutual Funds at a face value of Rs 10 each per unit. On 31-03-2011, a dividend was paid @ 10% and annualized yield was 120%. On 31-03-2012, 20% dividend and capital gain of Rs 0.60 per unit was given. Mr. X redeemed all his 6271.98 units when his annualized yield was 71.50% over the period of holding.

Calculate NAV as on 31-03-2011, 31-03-2012 and 31-03-2013.

For calculations consider a year of 12 months.

Question 16 : Mr.A

Mr.A can earn a return of 10% by investing in equity shares of its own. Now he is considering a recently announced equity based MF scheme in which initial expenses are 6% and annual recurring expenses of 2%. How much should the MF earn to provide Mr. A return of 10%?

Question 17 : Mr. A

Mr. A can earn a return of 16 per cent by investing in equity shares on his own. Now he is considering a recently announced equity based mutual fund scheme in which initial expenses are 5.5 per cent and annual recurring expenses are 1.5 per cent. How much should the mutual fund earn to provide Mr. A return of 16 per cent?

Question 18 : Mr. J

Mr. J Purchased an open ended load fund with a NAV of Rs 50 per unit and 3% sales load. One year later J sold the fund with a NAV of Rs 54 per unit with a back end load of 3% as well. During a year, fund paid Rs 0.25 dividend per unit and distributed Rs 0.40 in capital gains per unit. If J invested Rs 10,000 in this fund, what was J's rupee and percentage return over the year. What would have been the return if this was a no load fund?

Question 19 : ABC Mutual Fund

On 1-4-2012 ABC Mutual Fund issued 20 lakh units at Rs 10 per unit. Relevant initial expenses involved were Rs 12 lakhs. It invested the fund so raised in capital market

instruments to build a portfolio of Rs 185 lakhs. During the month of April 2012 it disposed off some of the instruments costing Rs 60 lakhs for Rs 63 lakhs and used the proceeds in purchasing securities for Rs 56 lakhs. Fund management expenses for the month of April 2012 was Rs 8 lakhs of which 10% was in arrears. In April 2012 the fund earned dividends amounting to Rs 2 lakhs and it distributed 80% of the realized earnings. On 30-4-2012 the market value of the portfolio was Rs 198 lakhs.

Mr. Akash, an investor, subscribed to 100 units on 1-4-2012 and disposed off the same at closing NAV on 30-4-2012. What was his annual rate of earning?

Thanks ….

Be hope that you will find this helpful. If you would like to discuss any of the points please speak to us through the following channel.

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CHP - 7

Forex

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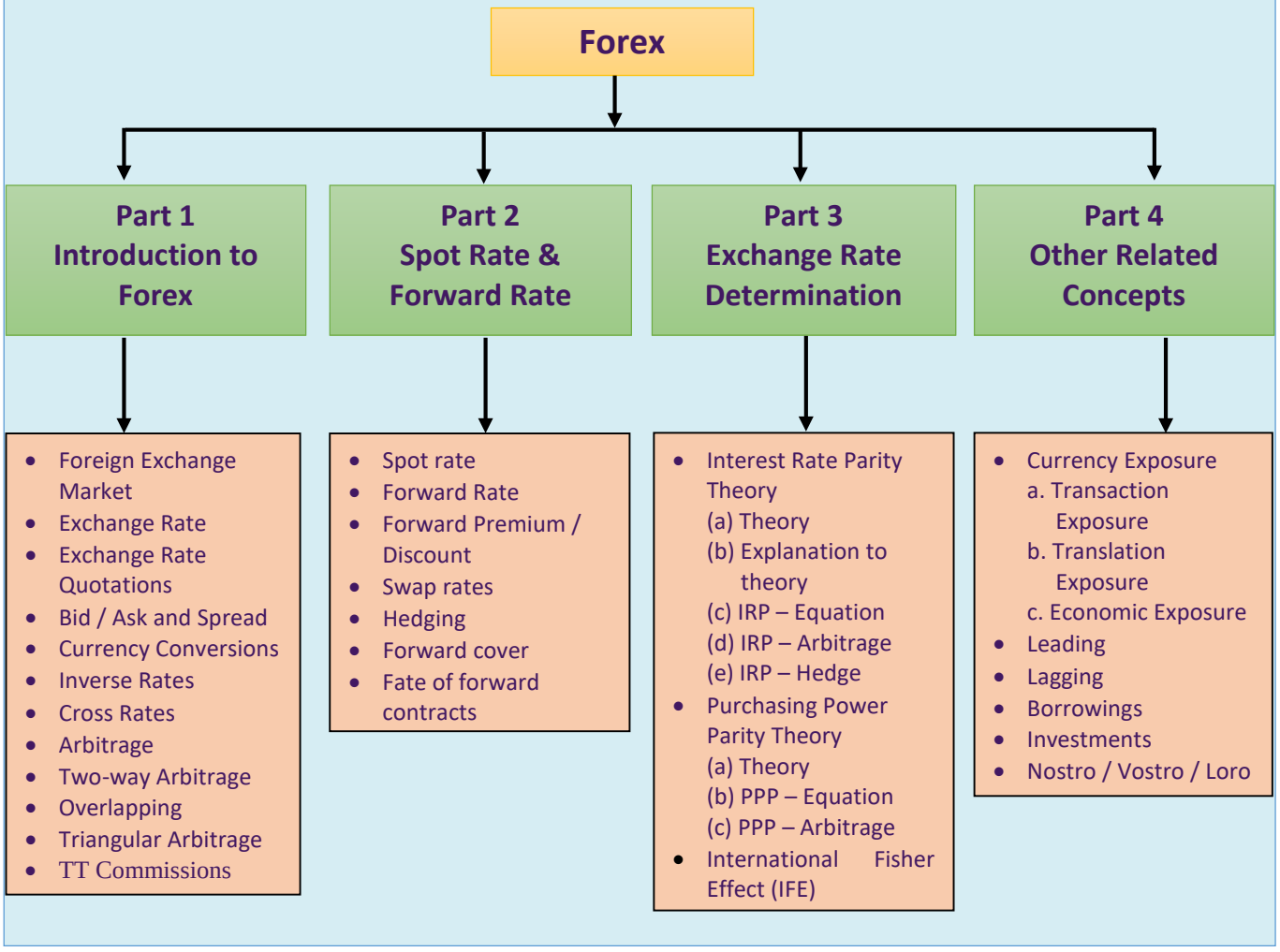
Looking at the nature and importance of the chapter, we have divided the chapter into 4 parts.



PART 1 – INTRODUCTION TO FOREX :

With Globalization of business, raising of capital from international capital markets has assumed significant proportions during the recent years. The volume of business between companies across boundaries has increased manifold. Also, with financial deregulation, first in the united states and then in Europe and Asia, has prompted and lead to increased integration of world financial markets. As a result of the rapidly changing scenario, the finance manager today has to be global in his approach.

The factors above and many more has necessitated the need to understand the concepts and fundas relation to foreign exchange.

1. Foreign Exchange Market :

The foreign exchange market is the market in which individuals, firms and banks buy and sell foreign currencies and foreign exchange. The purpose for the foreign exchange market is to permit transfers of purchasing power denominated in one currency to another. It is an over the counter (OTC) market where foreign currencies are bought and sold against one another. It is regulated by RBI who appoints Authorized dealers to give foreign exchange quotations.

The participants in the foreign exchange market can be categorized as follows:

(i) **Non-bank Entities :** Many multinational companies exchange currencies to meet their import or export commitments or hedge their transactions against fluctuations in exchange rate. Even at the individual level, there is an exchange of currency as per the needs of the individual.

(ii) **Banks :** Banks also exchange currencies as per the requirements of their clients.

(iii) **Hedgers :** This category includes those entities who wants to protect themselves against the fluctuations in the foreign exchange market. They are exposed to risk of fluctuations and wants to safeguard such exposure.

(iv) **Speculators :** This category includes commercial and investment banks, multinational companies and hedge funds that buy and sell currencies with a view to earn profit due to fluctuations in the exchange rates.

(v) **Arbitrageurs :** This category includes those investors who make profit from price differential existing in two markets by simultaneously operating in two different markets.

(vi) **Governments :** The governments participate in the foreign exchange market through the central banks. They constantly monitor the market and help in stabilizing the exchange rates.

2. Exchange Rate :

This is the Base on which entire chapter is based. This one liner will make you fall in love with this topic.

"Rate Kiska Hai"

Consider, Rs. / $ 75 - It means it's a $ Rate
- It means we can buy 1 $ for Rs.75.

3. Exchange rate Quotations :

A foreign exchange quotation can be either a direct quotation or indirect quotation, depending upon the home currency of the person concerned.

Direct Quote: It means how many units of home currency will be needed to buy one of foreign currency. Example of direct Quotes for India

1 $ = Rs 55 1 £ = Rs 98 1 Euro = Rs 83

Indirect Quote: One unit of Home currency = How many units of Foreign Currency. Example of direct Quotes for India

1 $ = $ 0.0181818 1 Rs = £ 0.102040 1 Rs = Euro 0.01248

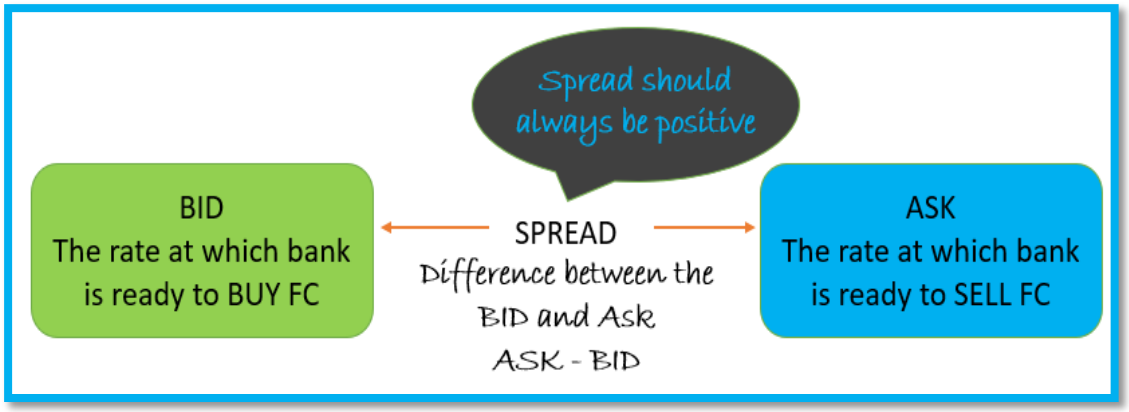
Question 1 :

Convert the following direct Quotes into indirect Quotes for India. 1 $ = Rs 55, 1 £ = Rs 82.

Question 2 :

Convert the following indirect Quotes into direct Quotes for India Rs 1 = $ 0.0322 , Rs 1 = £ 0.0122

4. Bid / Ask and Spread :



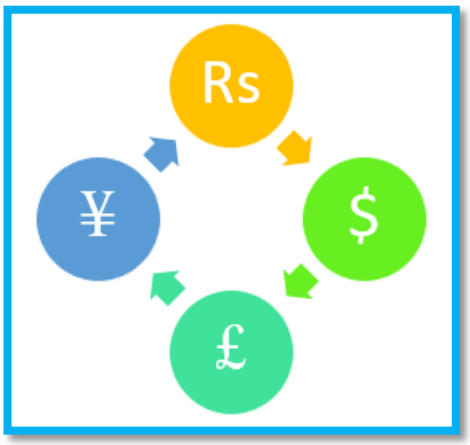
Consider Rs / $ rate is 75 / 76

- It's a $ Rate
- Bid Rate is 75. Bank is ready to Buy $ for Rs 75
- Ask Rate is 76. Bank is ready to sell $ for Rs 76
- Spread is (76 – 75) = Rs 1

Note: We are required to solve most of the questions from customers point of view so

1. Bank Sell = Customer Buy
2. Bank Buy = Customer Sell

5. Currency Conversions :



Through out Forex, we are required to convert one currency into another, like $ to Rs, Rs to £, ¥ to Rs and So on

We are required to follow 2 steps

Quotation A/ B – X / Y

Step 1– Choice of Rate If the customer wants to Buy B – Then Y If the customer wants to Sell B – Then X

Step 2 – Divide / Multiple If the amount is given in B – then multiply If the amount is given in A – then Divide

Question 3 :

Calculate how many Rs – Rightnote, a Mumbai based firm will receive or pay for its following four foreign exchange transactions.

1. The firm receives dividend of Euro 2,00,000 Euro from its French Associate Company.
2. The firm pays interest amounting 1,00,000 Yens for its borrowing from a Japanese firm.
3. The firm exported goods to USA and have just received $ 3,00,000
4. The firm imported goods from Singapore amounting to Singapore $ 4,00,000

Exchange Rate

1 $ = Rs 60.05 / Rs 60.50
1 Euro = Rs 83.31 / Rs 83.91
1 SGD = Rs 49.71 / Rs 50.21
1 ¥ = Rs 0.63 / Rs 0.65

Question 4 :

Consider the following Quotations

1 £ = 1 $ 1.5873 / 1.5923
1 $ = € 0.74 / 0.76
$ / ¥ = 0.010 / 0.012

A US person plans to travel to UK, Europe and Japan. He requires £ 11,000, € 25,000 and ¥ 4,30,000. How much $ is required.

Question 5 :

Consider the following rates

Rs / £ 82.20 / 82.40
Rs / $ 59.10 / 59.40
€ / ¥ 0.0093 / 0.0097

1. European firm having surplus funds of Euro 80,000 wants to invest in Japan. What amount of Yen it will be able to Invest ?
2. An Indian student decides to do CPA course. The price of the course is $ 1800. How much rupee is required?
3. A US firm exports to India and receives Rs 42,80,000 and wants to convert into $. How much dollar is received?
4. An Indian company requires Rs 25,00,000 for 1 year. He decides to borrow the amount in £. How much £ should be borrow to fulfill his requirement?

Question 6 :

A Japanese decides to acquire a UK based co. for a purchase consideration of pound 500million.

At that time exchange rate was –

1 pound = Yen 125.65/15

= Yen 125.65/126.15

However there was a 10 days delay and the exchange rate changed to

1 Yen = £ 0.00785/0.00795

What is the impact of the exchange rate change on the cost of acquisition of the Japanese firm in yen terms?

6. Inverse Rates :

Given A / B = X / Y implied B / A = 1/y / 1/x

Question 7 :

Given Rs / $ 59.10 / 59.40. Calculate $ / Rs rates.

7. Cross Rates :

Cross rate is the exchange rate between two currencies implied by their exchange rates with a common third currency. Cross rates are necessary when there is no active foreign exchange market in the currency pair. The rate must be computed from the exchange rates between each of these two currencies and a third currency.

	Exchange Rate	Implied Rates	Explanation
1	X / Y = A / B Y / Z = C / D	X / Z = A x C / B x D	The answer needed is cross and hence we go straight and Multiply
2	X / Y = A / B Z / Y = C / D	X / Z = A ÷ D / C ÷ B	The answer needed is straight and hence we should go cross and divide
3	Y / X = A / B Y / Z = C / D	X / Z = C ÷ B / D ÷ A	The answer needed is straight and hence we should go cross and divide

Question 8 :

Bank A in US and Bank B in UK provide the following quotations

Bank A $ / € = 0.9250 / 0.9280

Bank B £ / € = 0.6150 / 0.6230

Calculate implied $ / £ rate.

Question 9 :

Bank A in US and Bank B in UK provide the following quotations

Bank A £ / € = 0.9250 / 0.9280

Bank B €/ $ = 0.6150 / 0.6230

Calculate implied £/$ rate.

Question 10 :

Bank A in US and Bank B in UK provide the following quotations

Bank A $ / € = 0.9250 / 0.9280

Bank B $ / £ = 0.6150 / 0.6230

Calculate implied € / £ rate.

Question 11 :

Rs / £ = 74.00 / 74.50
Rs / CHF = 26.00 / 26.60
Find CHF / £

Question 12 :

On January 28, 2005 an importer customer requested a bank to remit Singapore Dollar (SGD) 25,00,000 under an irrevocable LC. However due to bank strikes, the bank could effect the remittance only on February 4, 2005. The interbank market rates were as follow:

		January 28	February 4
Bombay	US$1	Rs. 45.85/45.90	45.91/45.97
London	Pound I	US$17840/17850	1.7765/1.7775
	Pound I	SGD3.1575/3.1590	3.1380/3.1390

The bank wishes to retain an exchange margin of 0.125%.
How much does the customer stand to gain or lose due to the delay ?
(Calculate rate in multiples of .0001)

8. Arbitrage :

Arbitrage is the process by which the investor the make riskless profit.
Rules of Arbitrage

1. There are possibly 2 paths to Arbitrage
2. Both the paths can never show profit
3. Both the Paths can show loss
4. One path can show profit and one path can show loss.

9. Two Way Arbitrage :

Two way arbitrage is possible is 2 banks provide different quotes whereby the investor can buy foreign currency from one bank and sell the same to another bank and make a profit.

Question 13 :

Spot Rate (Switzerland) 1 $ = 1.3689 / 1.3695 CHF
Spot Rate (USA) 1 CHF = 0.7090/ 0.7236
You have 1 million CHF. What amount of profit you can make from arbitrage?

10. Concept of Overlapping :

As against the concept of Arbitrage, the fact is that the rates quoted by different bank are such that they overlap each other and does not give the opportunity to arbitrage

Question 14 :

Bank A Rs / $ 55.40 / 55.80
Bank B Rs / $ 55.60 / 56.40

11. Triangular Arbitrage :

As the name suggest this involves 3 currencies and three banks. Start by selling one currency and pass through the other 2 currencies and get back to the currency we started with. If we receive more than we started with, there is an arbitrage profit.

Example : If the question provides rates for 3 currencies, like say $ - £ - Rs Then we can start with $ and also end with $

Two paths can be

Path 1. Dollar – Rupees – Pound – Dollar

Path 2. Dollar – Pound – Rupees – Dollar

Question 15 :

Consider the following data

Rs / $ 46.20 / 47.10

Rs / £ 68.90 / 69.10

$ / £ 1.3650 / 1.3680

Show the process of arbitrage using $ 50,000

Question 16 :

Followings are the spot exchange rates quoted at three different forex markets:

USD/INR 48.30 in Mumbai
GBP/INR 77.52 in London
GBP/USD 1.6231 in New York

The arbitrageur has USD 1,00,00,000. Assuming that there are no transaction costs, explain whether there is any arbitrage gain possible from the quoted spot exchange rates.

12. TT Commission (Telegraphic Buy and Sell Commissions) :

Bank charges commission units buying and selling rates. One has to remember that these rates are given by bank. So the Buy commission should be applied on Bank Buy and selling commission should be applied to Bank Sell. However while adding and subtracting one has to think from customer's point of view.

Question 17 :

The interbank Quote is given by Rs / $ 52.10 / 52.70

TT Buying commission 0.2%
TT Selling commission 0.25%

Calculate TT Buying rate and TT Selling Rate.

PART 2 – SPOT RATE AND FORWARD RATE :

1. Spot Rate :

It is the rate at which one can buy and sell foreign currency immediately. Immediately means 2 days.

2. Forward Rate :

It is the rate Fixed today for buying and selling foreign currency later. Note : Both the Spot Rate and Forward Rates are known today

3. Forward premium / Discount :

Premium :

If forward rate of the currency is greater than the spot rate, the currency is said to be at premium.

- For eg spot Rs / $ 50 and 2 month forward Rs / $ 52
- It's a $ Rate and $ is said to be at premium

Discount : If forward rate of the currency is lower than the spot rate, the currency is said to at discount

- For eg spot Rs / $ 50 and 2 month forward Rs / $ 48
- It's a $ Rate and $ is said to be at discount

We can calculate premium/Discount by the following formulae

Consider Rs / $ rate --- remember that's it's a $ Rate

1. Forward premium/Discount on $ = $\frac{F-S}{S}$ x 100 x $\frac{12}{n}$

2. Forward Premium/ Discount on Rs = $\frac{S-F}{F}$ x 100 x $\frac{12}{n}$

Question 18 :

Spot rate $ 1 = Rs 50
Six month Forward $ 1 = Rs 52
Is $ at forward premium or discount. Calculate the forward premium or discount on $.

Question 19 :

Spot Rate € 1.3450 / £, 2 month forward € 1.3410 / £. Calculate Annualized forward premium / discount on each currency.

Question 20 :

3 months forward rate $ 1.5865 / £. Annualized forward premium on dollar against £

a. Based on 3 months forward rate = 7%
b. Based on 6 months forward rate = 9%

Calculate 6 months forward rate.

4. Swap Rates :

Swap Rates are the difference between the Spot Rates and Forward Rates. Given the spot rates and swap points, we have to find the forward rates.

Swap points	60/90	Low / High	Means premium and we should ADD
Swap points	90/60	High/Low	Means discount and we should LESS

Question 21 :

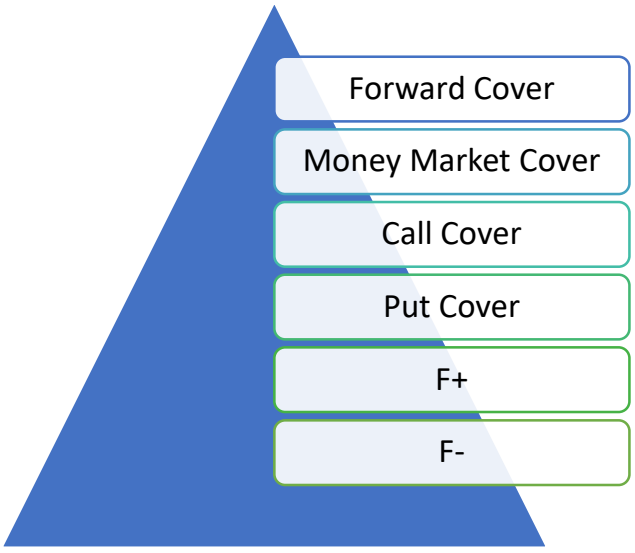
Spot rate 1$ = Rs 40.00 / 40.10
1 month forward 0.10 / 0.11
2 month forward 0.12 / 0.13
3 month forward 0.14 / 0.15
Calculate 1 month, 2 month and 3 month forward rates.

Question 22 :

Spot rate 1$ = Rs 50.00 / 50.30
1 month forward 0.10 / 0.09
2 month forward 0.15 / 0.13
3 month forward 0.19 / 0.15
Calculate 1 month, 2 month and 3 month forward rates.

5. Hedging :

Foreign Trade is subject to risk of exchange rate differences. We need to safeguard against such risk. The procedure followed to safeguard against such risk is known as Hedging. There are various ways to hedge the transaction risk.
Methods covered



6. Forward Cover :

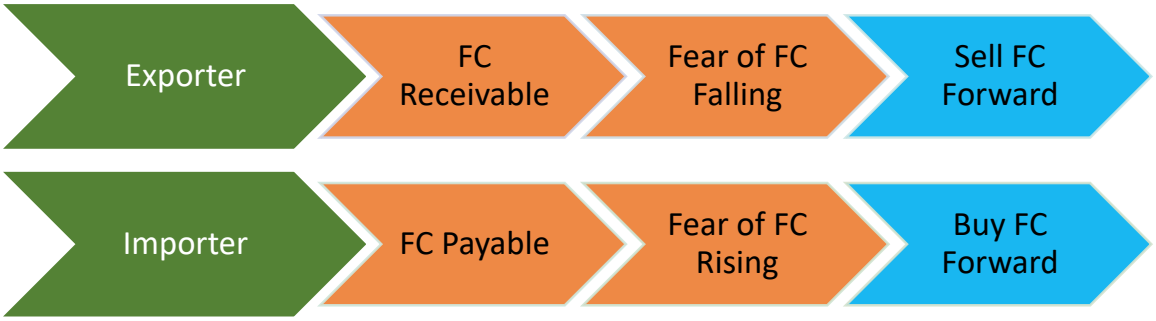
Forward cover ie Forward exchange contracts are most commonly used to hedge against the adverse movement in exchange rate.

Consider, An exporter in India exporting shirts to USA. He manufactures it for 90 and quotes it for $ 2 when the exchange rate is Rs/ $ at 50. He expects to make a profit Rs 10 per shirt. However, the client has asked for a credit period of 3 months. Now what can happen after 3 months is that the rates can fall and his expected profit may be reduced or even wiped out. Yes, off course the exchange rate can rise and his profit can increase also. But he does not want to take such risk, the risk of exposure to fluctuations in exchange rate.

Hence, he was to hedge. He can enter into forward market and make an agreement with bank to sell $ 3 months from now at the rate decided today. Bank may quote rate higher or lower to the spot depending the forward premium or discount.

Let say bank quotes Rs / $ at 49. This will reduce the exporters profit from Rs 10 to Rs 8. Even though his profit falls, atleast he sure that he is not exposed to any further risk. Any further reduction will not be applicable to him. He is now protected from any further fluctuations. Entering into the forward contract with the view to safeguard oneself, is known as hedging.

Strategy for forward cover :



Question 23 :
US firm has € 40,000 receivable after 6 months. Spot Rate is $/€ 1.0427. 6 mf rate quoted by bank is $ 1.0527/€. How can he hedge his exposure?

Question 24 :
Indian firm has $ 50,000 payable after 3 months. Spot Rate is Rs/$ 68.70. 3 mf rate quoted by bank is Rs/$ 68.90.
How can he hedge his exposure?

Question 25 : A US company

A US company imports a Radio therapy machine from Switzerland. The price is 1,00,000 CHF with the terms of 30 days. The present spot rate is 1.92 CHF per dollar. The 30 day forward rate is 1.90. The US co enters into forward contract. How many dollars the US Co. would pay after 30 days? Is the CHF at premium or at a discount ?

Question 26 : Excel Exporters

Excel Exporters are holding an Export bill in United States Dollar (USD) 1,00,000, due 60 days hence. They are worried about the falling USD value which is currently at Rs. 45.60 per USD. The concerned Export Consignment has been priced on an Exchange rate of Rs. 45.50 per USD. The Firm's Bankers have quoted a 60- day forward rate of Rs. 45.20.

Calculate:

a. Rate of discount quoted by the Bank

b. The probable loss of operating profit if the forward sale is agreed to.

Question 27 :

A company is considering hedging its foreign exchange risk. It has made a purchase on 1st Jan., 2008 for which it has to make a payment of $ 50,000 on Sept, 2008. The present exchange rate is 1 US $ = Rs. 40. It can purchase forward at Rs. 39. The company will have to make a upfront premium @ 2% of the forward amount purchased. The costs of funds to the company is 10% per annum and the rate of corporate tax is 50%. Ignore taxation. Consider the following situations and compute the profit / loss the company will make if it hedges its foreign exchange risk.

1. If the exchange rate on 30th Sept is Rs. 42 per US $.
2. If the exchange rate on 30th Sept is Rs. 38 per US $.

Question 28 : Arnie operating

Arnie operating a garment store in US has imported garments from Indian exporter of invoice amount of Rs. 1,38,00,000 (equivalent to US$ 3,00,000). The amount is payable in 3 months. It is expected that the exchange rate will decline by 5% over 3 months period. Arnie is interested to take appropriate action in foreign exchange market. The three month forward rate is quoted at Rs. 44.50.

You are required to calculate expected loss which Arnie would suffer due to this decline if risk is not hedged. If there is loss, then how he can hedge this risk.

Question 29 :

At the end of August, 2008, an Indian company, an exporter has an export exposure of 5,00,000 H.K.$ due at the end of September, 2008. HK $ is not directly quoted against India rupee. The current spot rates are INR/USD = Rs. 46 and HK$/USD = HK$2.3. It is estimated that HK$ will depreciate to HK $2.5 level and Indian Rupee to appreciate against US$ to Rs.

47. One month forward rate at the end of August are HD$/USD = HK$ 2.45 and INR/USD = Rs. 47.04.
Calculate expected loss if hedging is not done. How the position will change with the company taking a forward cover?
If spot rate on 30the September, 2008 are eventually HK$/USD = HK$ 2.52 and INR/USD = 47.88 is the decision to take forward cover justified.

Question 30 :
You have following quotes from Bank A and Bank B :

	Bank A	Bank B
SPOT	USD/CHF 1.4650/55	USD/CHF 1.4653/60
3 months	5/10	
6 months	10/15	
SPOT	GBP/USD 1.7645/60	GBP/USD 1.7640/50
3 months	25/20	
6 months	35/25	

Calculate :
1. How much minimum CHF amount you have to pay for 1 million GBP spot?
2. Considering the quotes from Bank A only, for GBP/CHF what are the Implied Swap points for Spot over 3 months?

Question 31 : AKC Ltd
Following information relates to AKC Ltd. which manufactures some parts of an electronics device which are exported to USA, Japan and Europe on 90 days credit terms.
Cost and Sales information :

	Japan	USA	Europe
Variable cost per unit	Rs.225	Rs.395	Rs.510
Export sale price per unit	Yen 650	US$10.23	Euro 11.99
Receipts from sale due in	Yen 78,00,000	US$1,02,300	Euro 85,920
90 days			

Foreign exchange rate information :

	Yen/Rs.	US$/Rs.	Euro/Rs.
Spot market	2.417-2.437	0.0214-0.0217	0.0177-0.0180
3 months forward	2.397-2.427	0.0213-0.0216	0.0176-0.0178
3 months spot	2.423-2.459	0.02144-0.02156	0.0177-0.0179

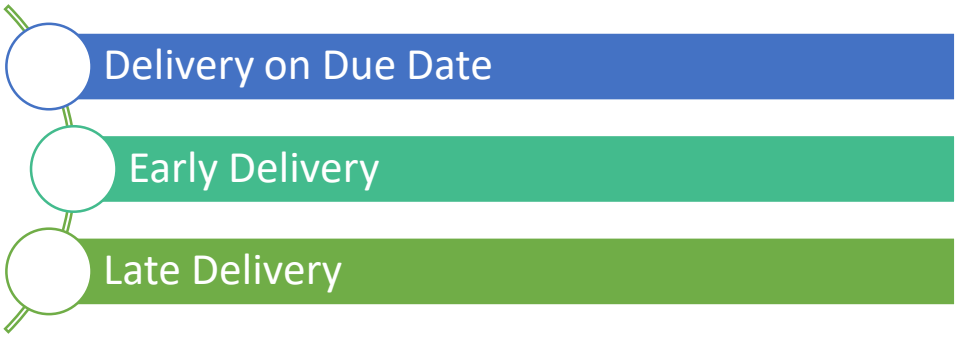
Advice AKC Ltd. by calculating average contribution to sales ratio whether it should hedge its foreign currency risk or not.

7. Fate of Forward contracts :

Whenever any forward contract is entered, normally it meets any of the following three fates.

Delivery under the Contract	1. Delivery on Due Date
	2. Delivery Before Due Date
	3. Delivery After Due Date
Cancellation of the Contract	1. Cancellation on Due Date
	2. Cancellation Before Due Date
	3. Cancellation After Due Date
Extenstion of the Contract	1. Extenstion on Due Date
	2. Extension Before Due Date
	3.Extension After Due Date

1. Delivery Under the contract :



A. Delivery on Due Date :

This situation does not pose any problem as rate applied for the transaction would be rate originally agreed upon. Exchange shall take place at this rate irrespective of the spot rate prevailing.

Question 32 :

On 1st June 2020 the bank enters into a forward contract for 2 months for selling US$ 1,00,000 at Rs 65.5000. On 1st August 2020 the spot rate was Rs 65.7500/65.2500. Calculate the amount to be debited in the customer's account.

Question 33 :

The Bank sold Hong Kong Dollar 1,00,000 spot to its customer at Rs. 7.5681 and covered itself in London market on the same day, when the exchange rates were US $1 = HK$ 8.4409 HK $ 8.4500 Local inter-bank market rates for US$ were: Spot US$1 = Rs. 62.7128

Rs. 62.9624 Calculate the cover rate and ascertain the profit or loss in the transaction. Ignore brokerage.

Question 34 : Edelweiss Bank Ltd.

Edelweiss Bank Ltd. sold Hong Kong dollar 2 crores value spot to its customer at Rs. 8.025 and covered itself in the London market on the same day, when the exchange rates were US$ 1 = HK $ 7.5880- 7.5920 Local interbank market rates for US $ were Spot US $ 1 – Rs. 60.70-61.00 Calculate the cover rate and ascertain the profit or loss on the transaction. Ignore brokerage.

B. Delivery Before the Due Date :

The bank may accept the request of customer of delivery at the before due date of forward contract provided

- Customer is ready to bear the loss – Swap loss
- Pay the fixed charges
- Pay interest on outlay of funds

Question 35 : Mr. X

On 1 October 2020 Mr. X an exporter enters into a forward contract with a BNP Bank to sell US$ 1,00,000 on 31 December 2020 at Rs 65.40/$. However, due to the request of the importer, Mr. X received amount on 28 November 2020. Mr. X requested the bank the take delivery of the remittance on 30 November 2020 i.e. before due date. The inter-banking rates on 28 November 2020 was as follows:

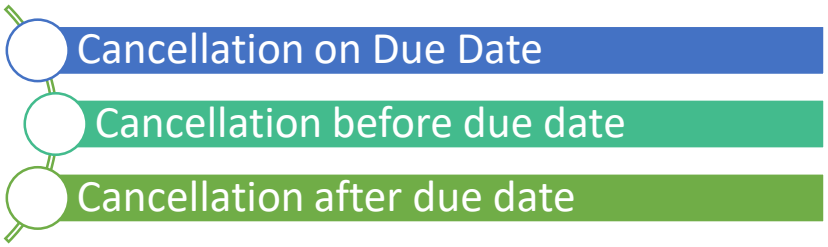
Spot	Rs 65.22/65.27
One Month Premium	10/15

If bank agrees to take early delivery then what will be net inflow to Mr. X assuming that the prevailing prime lending rate is 18%.

C. Delivery After Due Date :

In case of late delivery current rate prevailing on such date of delivery shall be applied. However, before this delivery (execution) takes place the provisions of Automatic Cancellation (discussed later on) shall be applied.

2. <u>Cancellation of Forward Contract :</u>



A. Cancellation on Due Date :

To cancel the contract on the due date, an entity is required to enter into SPOT reverse transaction. It means if the entity has buy standing then he

shall have to enter into SPOT SELL and if he has sell standing then he shall cancel the same by entering into SPOT BUY.

In case of cancellation on due date in addition of flat charges (if any) the difference between contracted rate and the cancellation rate (reverse action of original contract) is charged from/ paid to the customer.

Question 36 :

On 15th January 2020 you as a banker booked a forward contract for US$ 250000 for your import customer deliverable on 15th March 2020 at Rs 65.3450. On due date customer request, you to cancel the contract. On this date quotation for US$ in the inter-bank market is as follows:

Spot	Rs 65.2900/2975 per US$
Spot/ April	3000/ 3100
Spot/ May	6000/ 6100

Assuming that the flat charges for the cancellation is Rs 100 and exchange margin is 0.10%, then determine the cancellation charges payable by the customer.

B. Cancellation Before the Due Date :

To cancel the contract before the due date, an entity is required to enter into FORWARD reverse contract. The date of the forward contract should match the execution date of the original contract.

Consider: On 1/1/2020 Mr. X entered in 3 month forward contract for the purchase of $ 100,000. It means the transaction was due on 1/4/2020. Now if he wants to cancel the contract

- on 1/2 /2020 – then he must enter 2 month forward sell contract so that sell coincides on 1/4/2020
- on 1/3/2020 – then he must enter 1 month forward sell contract so that sell coincides on 1/4/2020

In addition of flat charges (if any) the difference between contracted rate and the cancellation rate (reverse action of original contract) is charged from/ paid to the customer.

Question 37 :

You as a banker has entered into a 3 month's forward contract with your customer to purchase AUD 1,00,000 at the rate of Rs 47.2500. However, after 2 months your customer comes to you and requests cancellation of the contract.

On this date quotation for AUD in the market is as follows:

Spot	Rs 47.3000/3500 per AUD
1month forward	Rs 47.4500/5200 per AUD

Determine the cancellation charges payable by the customer.

Question 38 :

A customer with whom the Bank had entered into 3 months forward purchase contract for Swiss Francs 10,000 @ Rs 27.25 comes to the bank after two months and requests cancellation of the contract. On this date, the rates are :

Spot	1 CHF : Rs 27.30 / 27.35
One month forward	1 CHF : RS 27.45 / 27.52

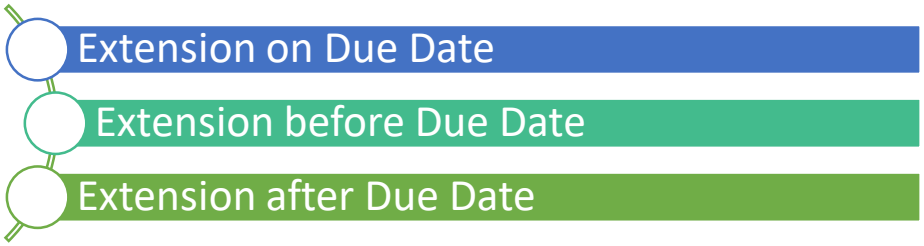
Determine the amount of Profit or Loss to the customer due to cancellation of the contract.

C. Cancellation after the Due Date :

In case of late cancellation of Forward Contract, the provisions of Automatic Cancellation (discussed later on) shall be applied.

3. <u>Extension of Forward Contract :</u>

It might also be possible that an exporter may not be able to export goods on the due date. Similarly it might also be possible that an importer may not to pay on due date. In both of these situations an extension of contract for selling and buying contract is warranted. Accordingly, if earlier contract is extended first it shall be cancelled and rebooked for the new delivery period.



A. Extension on Due Date :

In case extension is on due date it shall be cancelled at spot rate as like cancellation on due date (discussed earlier) and new contract shall be rebooked at the forward rate for the new delivery period.

Question 39 :

Suppose you are a banker and one of your export customer has booked a US$ 1,00,000 forward sale contract for 2 months with you at the rate of Rs 62.5200 and simultaneously you covered yourself in the interbank market at Rs 62.5900. However, on due date, after 2 months your customer comes to you and requests for cancellation of the contract and also requests for extension of the contract by one month. On this date quotation for US$ in the market was as follows:

Spot	Rs 62.7200/62.6800
1 month forward	Rs 62.6400/62.7400

Determine the extension charges payable by the customer assuming exchange margin of 0.10% on buying as well as selling.

Question 40 :

On 30th June 2020 when a forward contract matured for execution you are asked by an importer customer to extend the validity of the forward sale contract for US$ 10,000 for a further period of three months.

Contracted Rate	US$1 = Rs.41.87

The US Dollar quoted on 30.6.2020

Spot	Rs. 40.4800/Rs. 40.4900
Premium July	0.1100/0.1300
Premium August	0.2300/0.2500
Premium September	0.3500/0.3750

Calculate the cost for your customer in respect of the extension of the forward contract. Rupee values to be rounded off to the nearest Rupee.

Margin 0.080% for Buying Rate

Margin 0.25% for Selling Rate

B. Extension before the Due Date :

In case any request to extend the contract is received before due date of maturity of forward contract, first the original contract would be cancelled at the relevant forward rate as in case of cancellation of contract before due date and shall be rebooked at the current forward rate of the forward period.

Question 41 :

Suppose you as a banker entered into a forward purchase contract for US$ 50,000 on 5th March with an export customer for 3 months at the rate of Rs 59.6000. On the same day you also covered yourself in the market at Rs 60.6025. However, on 5th May your customer comes to you and requests extension of the contract to 5thJuly. On this date (5th May) quotation for US$ in the market is as follows:

Spot	Rs 59.1300/1400 per US$
Spot/ 5th June	Rs 59.2300/2425 per US$
Spot/ 5thJuly	Rs 59.6300/6425 per US$

Assuming a margin 0.10% on buying and selling, determine the extension charges payable by the customer and the new rate quoted to the customer.

Question 42 :

On 1st January an Indian importer had a $5,00,000 payable 3 months from now and decided to go for forward cover.

Spot rates	Rs/$ 45.60/85
3m Swap Pts	70/80

However, on 1st March he requests the bank to extend the contract by 1 month.

Spot rates	Rs/$ 45.35/55
1m Swap Pts	30/20
2m Swap Pts	50/40

Explain the method of settlement between the bank and customer

C. Late Extension :

In case of late extension current rate prevailing on such date of delivery shall be applied. However, before this delivery the provisions of Automatic Cancellation shall be applied.

Automatic Cancellation

As per FEDAI Rule 8 a forward contract which remains overdue without any instructions from the customers on or before due date shall stand automatically cancelled on 15th day from the date of maturity. Though customer is liable to pay the exchange difference arising there from but not entitled for the profit resulting from this cancellation.

Cancellation charges shall be payable consisting of following:

(i) **Exchange Difference:** The difference between Spot Rate of offsetting position (cancellation rate) on the date of cancellation of contract after due date or 15 days (whichever is earlier) and original rate contracted for.

(ii) **Swap Loss:** The loss arises on account of offsetting its position created by early delivery as bank normally covers itself against the position taken in the original forward contract. This position is taken at the spot rate on the date of cancellation earliest forward rate of offsetting position.

(iii) **Interest on Outlay of Funds:** Interest on the difference between the rate entered by the bank in the interbank market and actual spot rate on the due date of contract of the opposite position multiplied by the amount of foreign currency amount involved. This interest shall be calculated for the period from the due date of maturity of the contract and the actual date of cancellation of the contract or 15 days whichever is later.

Question 43 :

An importer booked a forward contract with his bank on 10th April for USD 2,00,000 due on 10th June @ Rs.64.4000. The bank covered its position in the market at Rs.64.2800. The exchange rates for dollar in the interbank market on 10th June and 20th June were:

	10th June	20th June
Spot USD 1	Rs.63.0000/8200	Rs.63.6800/7200
Spot/June	Rs.63.9200/9500	Rs.63.8000/8500
July	Rs.64.0500/0900	Rs.63.9300/9900
August	Rs.64.3000/3500	Rs.64.1800/2500

September	Rs.64.6000/6600	Rs.64.4800/5600

Exchange Margin 0.10% and interest on outlay of funds @ 12%. The importer requested on 20th June for extension of contract with due date on 10th August. Rates rounded to 4 decimals in multiples of 0.0025.

On 10th June, Bank Swaps by selling spot and buying one month forward.

CALCULATE:

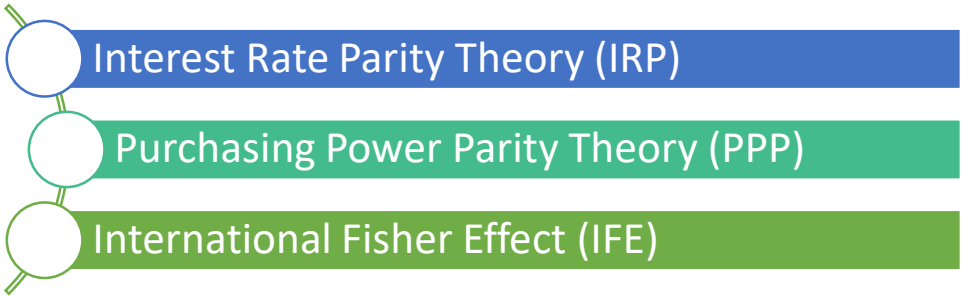
(i) Cancellation rate
(ii) Amount payable on $ 2,00,000
(iii) Swap loss
(iv) Interest on outlay of funds, if any
(v) New contract rate and
(vi) Total Cost

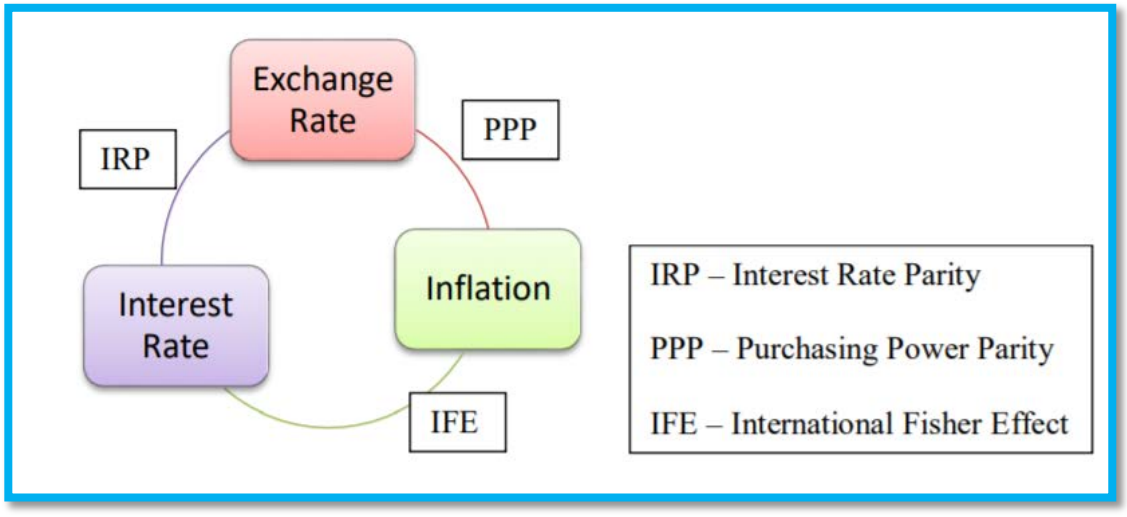
PART 3 – EXCHANGE RATE DETERMINATION :

Going through part 2, spot rates and forward, one thing that always comes to mind is how are this rates calculated.

Spot Rate: Spot rates like any other rates, rates of any other product are determined through demand and supply for the product.

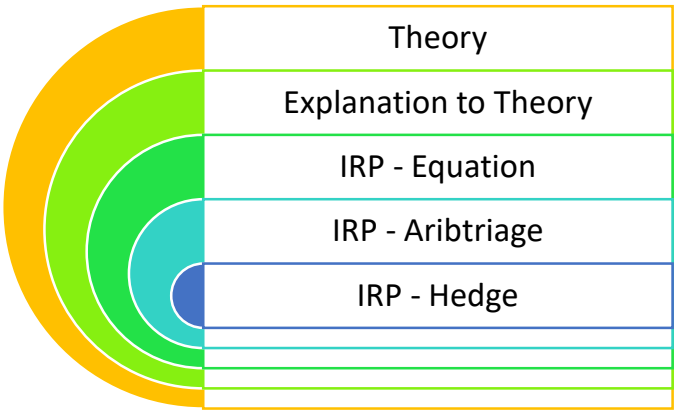
Forward Rates: Forward rates are affected by various factors, many factors which are external and internal to the country. We can study the movement of forward rates through





1. Interest Rate Parity Theory :

Lets study the theory and related concepts as under



1. Theory :

As per this theory, the exchange rate between currencies is directly affected by their interest rate differential. No one can borrow from one country and invest the same in other country and earn profit. It will be negated by difference exchange rate in spot market and forward market.

2. Explanation :

Consider a situation where interest rate in India happens to 10% and interest rate in US is 4% respectively. Spot rate is Rs./$ 50. Suppose we borrow $ 1000 for a year from US, then the amount payable shall be 1000 x 1.04 = $ 1040. $ 1000 which is borrowed is brought to India on a spot rate of Rs./$ 50. That gets him Rs 50,000 and he invest the same in India for a year @10%. The amount receivable would be 50,000 x 1.1 = Rs. 55,000. So after the year when the person goes back to repay the loan in US the forward rate will be such that he shall not be in the position to earn profit. 1 year forward Rs./$ = 55,000/1040 = 52.8846 which cuts any possibility of profit.

> **Note :** It makes sense to remember that the country who's interest rate are lower, its currency is always at premium

3. IRP – Equation :

According to IRP = $\frac{F}{S} = \frac{1+iA}{1+iB}$

Taking the above example

$\frac{F}{S} = \frac{1+iA}{1+iB}$ $= \frac{F}{50} = \frac{1+0.10}{1+0.04}$ therefore F = 52.8846

Question 44 :

The United States Dollar is selling in India at Rs. 45.50. If the interest rate for a 6-month borrowing in India is 8% per annum and the corresponding rate in USA is 2%,

i) Do you expect United States Dollar to be at a premium or at discount in the Indian forward market;

ii) What is the expected 6-month forward rate for United States Dollar in India; and

iii) What is the rate of forward premium or discount?

Question 45 :

Consider Spot rate = Sfr 11.3050/$ Now consider the following table -

Particulars	3m	6m	9m
Forword Rate	?	?	11.905
i$	10%	11%	?
isFr.	12%	?	14%
Annualized Forward discount on sfr	?	6%	?

Fill in the missing blanks. Assume that all interest rates are annualized effective.

Question 46 :

Given spot rate Rs. 87.50/£

9 month forward rate = Rs. 91.45/£

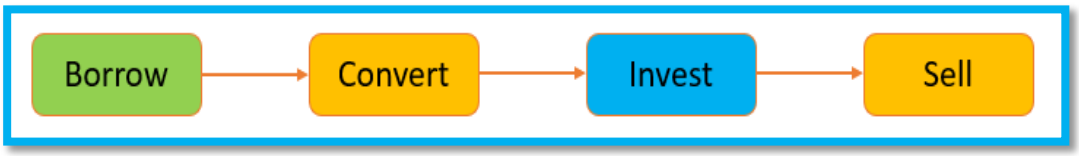
9 month Rs interest rate = 15% p.a.

Find out the £ interest rate.

4. IRP – Arbitrage :

IRP Arbitrage involves the following 4 steps

1. Borrow
2. Convert
3. Invest
4. Sell (Convert Back)



Note : We shall be asked to calculate the profit on Arbitrage. Since, every arbitrage has 2 paths selection of the path that shall give profit can be determined by comparing Actual F and F calculated as per IRP

- if actual iB < iB as per IRB - then one should borrow currency B
- if actual iB > iB as per IRB - then one should borrow currency A

Question 47 :

Given the following information :

Exchange rate - Canadian Dollar 0.665 per DM (Spot)
Canadian Dollar 0.670 per DM (3 months)

Interest rates - DM 7% p.a.
Canadian Dollar 9% p.a.

What operations would be carried out to earn the possible arbitrage gains?

Question 48 :

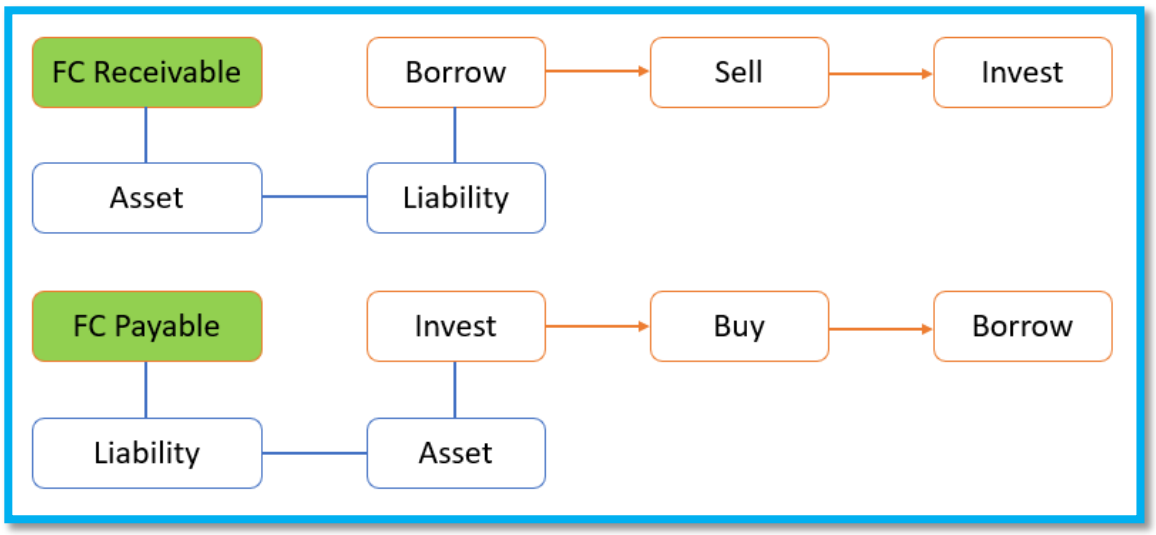
Spot rate 1 US $ = Rs 48.0123
180 days Forward rate for 1 US $ = Rs 48.8190
Annualized interest rate for 6 months - Rupee = 12%
Annualised interest rate for 6 months - US $ = 8%

Is there any arbitrage possibility? If yes how an arbitrageur can take advantage of the situation, if he is willing to borrow Rs. 40,00,000 or US $ 83,312.

5. IRP – Hedge :

We have earlier discussed Forward cover as a tool to safeguard against foreign currency exposure. Now the knowledge of IRP has helped us to establish the relation between F, S, iA and iB. Now instead of using F we can hedge ourselves by using S, iA, and iB. This is known as money market cover.

Strategy for Money Market Hedge



Question 49 :

US Firm has £ 50,000 payable after 3 months.

Spot Rate $ / £ 1.6210 / 1.6250.
3 mf $ / £ 1,6280 / 1.6350.

3 month interest rate $ 6% / 7%
and £ is 4% / 5%.
Advice the US firm regarding forward cover or money market cover.

Question 50 :
A UK firm € 90,000 receivable 6 months from now.
Spot Rate € / £ 1.5320 / 1.5350
6 moths swap points 80 / 60
6 months interest rates £ 7% / 8%
€ 3 % / 4%
Advice the UK firm as whether it should choose forward cover or money market cover.

Question 51 : Wenden Co.
Wenden Co. is a Dutch-based company which has the following expected transactions. One month : Expected receipt of £2,40,000
One month : Expected payment of £1,40,000
Three months : Expected receipts of £3,00,000
The finance manager has collected the following information :
Spot rate (£ per €) : 1.7820 ± 0.0002
One month forward rate (£ per €) : 1.7829 ± 0.0003
Three months forward rate (£ per €) : 1.7846 ± 0.0004
Money market rates for Wenden Co :

	Borrowing	Deposit
One year Euro interest rate :	4.90%	4.6
One year Sterling interest rate :	5.40%	5.1

Assume that it is now 1 April.
Required :
(a) Calculate the expected Euro receipts in one month and in three months using the forward market.
(d) Calculate the expected Euro receipts in three months using a money-market hedge and recommend whether a forward market hedge or a money market hedge should be used.

Question 52 : Proactive Ltd.
Proactive Ltd. imports some specialty instruments from Japan and exports the finished product to US. The company has a payable of ¥ 500 million and a receivable of $10 million three months hence, the following exchange rates are available in the market:

	Rs./$	Rs./V
Spot	46.65/85	0.4065/0.4115
3m forward	46.90/15	0.4218/0.4268

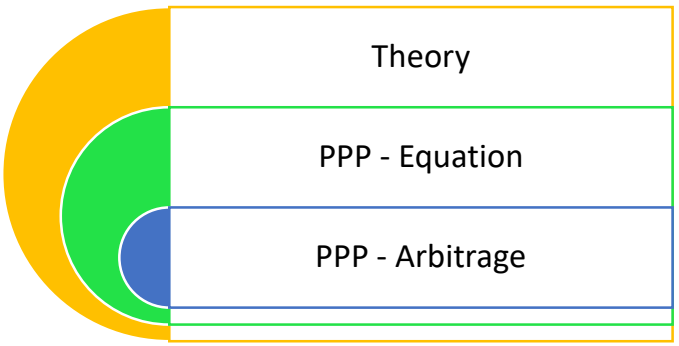
The current interest rate scenario is as follows :

Maturity	Rupee (%)	Dollar (%)	Yen (%)
3 Months	8.0/9.0	6.00/6.50	0.4/0.5

The company is considering to cover the exposures either through the forward market or through the money market. You are required to advise the company which alternative should be better for covering both the payables and receivable.

2. Purchasing Power Parity Theory :

Lets study the theory and related concepts as under



1. Theory :

As per this theory, the exchange rate between currencies is directly affected by their inflation rate differential. No one can buy from one country and sell the same in other country and earn profit. It will be negated by difference exchange rate in spot market and forward market.

2. IRP – Equation :

According to IRP = $\frac{F}{S} = \frac{1+iA}{1+iB}$

Question 53 :

Spot rate = Rs 50 / $

Expected Inflation - India ---- 8% p.a

- US ---- 3% p.a

Find E(S) after 1 year and 3 yrs.

Question 54 :

Suppose inflation rates in India and US for the 3 yrs. are forecasted to be:

Years	Inflation (India)	Inflation (US)
1	5%	2%
2	6%	3%
3	7%	4%

Find out the E(S) at the end of each year. Spot rate is Rs 55 / $

3. PPP – Arbitrage :

Arbitrage using inflation rates, involves simultaneous buying and selling. Buying at cheaper rate from one country and selling at higher rates to another. One should remember that demand and supply will cancel such an arbitrage.

Question 55 :

The price of a commodity in UK is Pound 100 while in US it is $170. Exchange rate is presently Pound 1 =$1.5. Explain the process of commodity arbitrage and also indicate the forces which will eliminate the arbitrage.

3. International Fisher Effect (IFE) :

IFE is a relationship between interest rate and inflation.

$$\frac{1+iA}{1+iB} = \frac{1+iA}{1+iB}$$

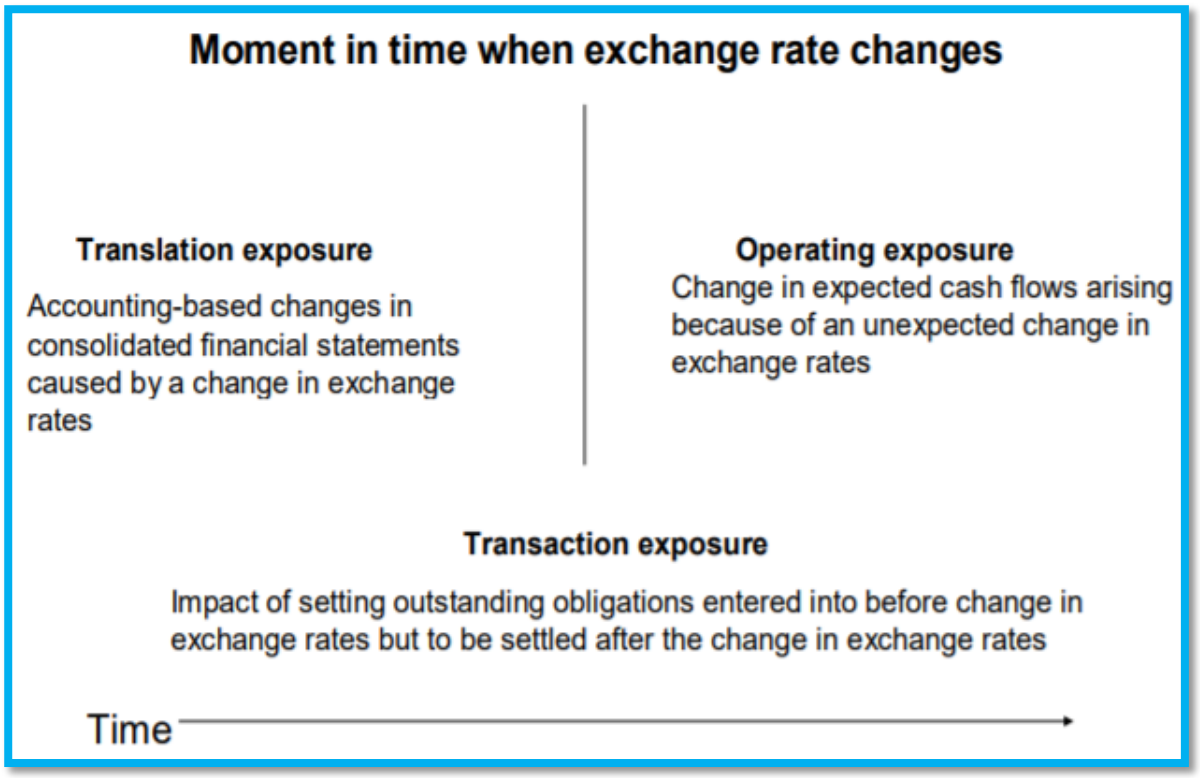
Ratio of Interest rate factors = Ratio of Inflation rate Factors

Question 56 :

Interest rate in India –10%
Inflation rate in India –6%
Inflation rate in US –4%
Calculate interest rate in US.

PART 4 – OTHER RELATED CONCEPTS :

1. Currency Exposure :



a. Transaction Exposure :

It measures the effect of an exchange rate change on outstanding obligations that existed before exchange rates changed but were settled after the exchange rate changes. Thus, it deals with cash flows that result from existing contractual obligations.

Example: If an Indian exporter has a receivable of $100,000 due in six months hence and if the dollar depreciates relative, to the rupee a cash loss occurs. Conversely, if the dollar appreciates relative to the rupee, a cash gain occurs.

b. Translation Exposure :

Also known as accounting exposure, it refers to gains or losses caused by the translation of foreign currency assets and liabilities into the currency of the parent company for consolidation purposes.

Translation exposure, also called as accounting exposure, is the potential for accounting derived changes in owner's equity to occur because of the need to "translate" foreign currency financial statements of foreign subsidiaries into a single reporting currency to prepare worldwide consolidated financial statements.

c. Economic Exposure :

It refers to the extent to which the economic value of a company can decline due to changes in exchange rate. It is the overall impact of exchange rate changes on the value of the firm. The essence of economic exposure is that exchange rate changes significantly alter the cost of a firm's inputs and the prices of its outputs and thereby influence its competitive position substantially.

Question 57 :

Following are the details of cash inflows and outflows in foreign currency of an Indian export firm, which have foreign subsidiary:

Currency	Inflow	Outflow	Spot rate	Forward rate
US $	4,00,00,000	2,00,00,000	48.01	48.82
French Franks	2,00,00,000	80,00,000	7.45	8.12
UK Pound	3,00,00,000	2,00,00,000	75.57	75.98
Japanese yens	1,50,00,000	2,50,00,000	3.20	2.40

Determine the next exposure of each of foreign currency in terms of rupees.

Question 58 : M/s Omega Electronics Ltd.

M/s Omega Electronics Ltd. Exports air conditioners to Germany by importing all the components from Singapore. The company is exporting 2,400 units at a price of Euro 500 per units. The cost of imported components is S$ 800 per unit. The fixed cost and other variables cost per unit are Rs. 1,000 and Rs.1,500 respectively. The cash flow in foreign currencies are due in six months. The current exchange rates are as follows :-

Rs./Euro 51.50/55
Rs./$ 27.20/25

After 6 months the exchange rates turn out as follows :

Rs./Euro 52.00/05
Rs./$ 27.70/75

1) You are required to calculate loss/gain due to transaction exposure.
2) Based on the following additional information calculate the loss/gain due to transaction and operating exposure if the contracted price of air conditioners is Rs.25,000 :
   a) The current exchange rate changes to :
      Rs./Euro 51.75/80
      Rs./$ 27.10/15
   b) Price elasticity of demand is estimated to be 1.5
   c) Payments and Receipts are to be settled at the end of six months.

2. Leading :

Leading means advancing a payment i.e making a payment before it is due. If the importer get certain advantage in terms of early payment by borrowing funds from local bank at local rate, then we should lead it.

Question 59 :

An Indian firm has imported a machine from USA the invoice is $ 1,00,000. The payment is to be made in 2 months time. The USD rates are quoted in the market as follows

Spot 1$ = Rs.45.00 / 45.05

2 months forward 1$ = Rs.45.30 / 45.36

The imported firm is considering the leading It can borrow rupees in India at the rate of 9% p.a.

a) Opine.
b) Will your opinion change if the exporter allows a discount of 1% on immediate payment?

3. Lagging :

Lagging means delaying the payment. The importer may decide to delay the payment if the exchange rates are in his favor and also he is the position to invest funds at a better rate.

Question 60 :

An Indian firm has imported a machine from USA the invoice is $ 1,00,000. The payment is to be made in 2 months time. The USD rates are quoted in the market as follows :

2 months forward 1$ = Rs.45.30/45.36

3 months forward 1$ = Rs.44.80 / 44.85

The importer firm is considering the lagging. The exporter firm will charge interest at the rate of 9% p.a if the payment is delayed after it becomes due. Your cost of capital is 12%. Opine.

Question 61 :

A firm is contemplating import of a consignment from the USA for a value of US dollar 10,000. The firm requires 90 days to make payment. The supplier has offered 60 days interest free credit and is willing to offer additional 30 days credit at an interest rate of 6% per annum. The bankers of the firm offer a short loan for 30 days at 9% per annum. The bankers quotation for foreign exchange is :

Spot 1 USD = Rs.46.00
60 days forward 1 USD = Rs.46.20
90 days forward 1 USD = Rs.46.35

You are required to advise the firm as to whether it should

a) pay the supplier in 60 days or
b) avail the suppliers offer of 90 days credit. Show your calculations.

Question 62 :

An Indian importer has to settle an import bill for $ 1,30,000. The exporter has given the Indian exporter two options

1) Pay immediately without any interest charges
2) Pay after three months with interest at 5% per annum

The importers bank charges 15% on OD. The exchange rate in the market are as follows

Spot Rate (Rs. / $) : 48.35 / 48.36
3 months forward rates : Rs. / $: 48.81 / 48.83

The importer seeks your advice. Give your advice.

Question 63 : NP and Co.

NP and Co. has imported goods for US $ 7,00,000. The amount is payable after three months. The company has also exported goods for US $ 4,50,000 and this amount is receivable in two months. For receivable amount a forward contract is already taken at RS 48.90.

The market rates for RS and $ are as under.

Spot Rs.48.50 / 70
Two months 25/30 points
Three months 40/45 points

The Company wants to cover the risk and it has two options as under :

a) To cover payables in the forward market and
b) To lag the receivables by one month and cover the risk only for the net amount. No interest for delaying the receivables is earned. Evaluate both the options if the cost of Rupee Funds is 12%. Which option is preferable?

4. Borrowing / Investing :

It refers to borrowing / investment in foreign currency to gain from difference in exchange rate and interest rates.

Question 64 : AMK Ltd.

AMK Ltd. an India based Company has submissions in U.S and U.K.

Forecasts of surplus funds for the next 30 days from two subsidiaries are as below.

US $ 12.5 million

UK £ 6 million

Following exchange rate information's are obtained.

	$ / Rs	**£ / Rs**
Spot	0.0215	0.0149
30 days forward	0.0217	0.0150

Annual borrowing/deposit rates (simple) are available.

Rs	6.4 % / 6.2%
$	1.6% / 1.5%
£	3.9% / 3.7 %

The Indian operation is forecasting a cash deficit of Rs 500 million.

It is assumed that interest rates are based on a year of 360 year.

1. Calculate the cash balance at the end of 30 days period in Rs for each company under each of the following scenarios ignoring transactions costs and taxes
   a) Each company invests / finances its own cash balances / deficits in local currency independently.
   b) Cash Balances are pooled immediately in India and the net balances are invested / borrowed for the 30 days period.
2. Which method do you think is preferable from the parent company's point of view?

Question 65 :

Your bank's London office has surplus funds to the extent of USD 5,00,000/- for a period of 3 months. The cost of the funds to the bank is 4% p.a. It proposes to invest these funds in London, New York or Frankfurt and obtain the best yield, without any exchange risk to the bank. The following rates of interest are available at the three centres for investment of domestic funds there at for a period of 3 months.

London	5 % p.a.
New York	8% p.a.
Frankfurt	3% p.a.

The market rates in London for US dollars and Euro are as under:

London on New York

Spot	1.5350/90
1 month	15/18
2 month	30/35
3 months	80/85

London on Frankfurt

Spot	1.8260/90

1 month 60/55
2 month 95/90
3 month 145/140

At which centre, will be investment be made & what will be the net gain (to the nearest pound) to the bank on the invested funds?

5. Nostro / Vostro / Loro :

Nostro Account :

Nostro in latin means OURS. In this sense, Nostro Account means OUR Account with you. Nostro is a current account that a bank holds with a bank in a foreign country. Such accounts are operated in the currency of that foreign country.

For e.g.

SBI has a euro A/c with some European bank

(Indian Bank has FC A/c with Foreign Bank)

We will be provided with the opening A/c bal. and the opening position, given certain transactions for a period, we have to compute the closing a/c bal and closing position.

Note :

1. We should think from Indian banks point of view
2. Think of FC not HC
3. Inflow of foreign currency – credit
4. Outflow of foreign currency – debit
5. Purchase of foreign currency – long position
6. Sale of foreign currency – short position
7. Spot transaction will affect both A/c Bal. and position. However forward transaction will affect only position.
8. Any purchase / Sale thru bills of exchange is a forward transaction
9. When a FC demand draft is made – it is a short position. If the draft later on gets cancelled, it's a long position – A/c balance is not Affected.
10. To achieve target closing balance, we advice spot transactions. This will change the position, now to achieve the target position, advice forward transaction.

Vostro Account :

Their Account with US

Loro Account :

Somebody else's Account with somebody else.

Thank you – one last time ---

Question 66 :

You as a dealer in foreign exchange have the following position in Swiss Francs on 31st October 2012

	Sw Fcs.
Balance in the Nostro A/c Credit	1,00,000
Opening position overbought	50,000
Purchased a bill on zurich	80,000
Sold forward TT	60,000
Forward purchase contract cancelled	30,000
Remitted by TT	75,000
Draft on Zurich cancelled	30,000

What steps would u take if you are required to maintain a credit balance of Sw. Fcs 30 ,000 in the Nostro A/c and keep as overbought position on Sw.Fcs. 10,000.

CHP - 8

International Finance Management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Now that we are done with forex, we can go ahead with issues relating to international finance management. In this chapter we shall cover

CHAPTER DESIGN

1. **INTERNATIONAL SOURCES OF FINANCE**
2. **INTERNATIONAL WORKING CAPITAL MANAGEMENT**
   - **(A) MULTINATIONAL CASH MANAGEMENT**
   - **(B) MULTINATIONAL RECEIVABLE MANAGEMENT**
   - **(C) MULTINATIONAL INVENTORY MANAGEMENT**
3. **INTERNATIONAL CAPITAL BUDGETING**

1. INTERNATIONAL SOURCES OF FINANCE :

Indian companies have been able to tap global markets to raise foreign currency funds by issuing various types of financial instruments which are discussed as follows:

- Foreign Currency Convertible Bonds (FCCBs)
- American Depository Receipts (ADRs)
- Global Depository Receipts (GDRs)
- Euro-Convertible Bonds (ECBs)
- Other Sources
  - Euro Bonds
  - Euro-Convertible Zero Bonds
  - Euro-bonds with Equity Warrants
  - Syndicated Bank Loans
  - Euro-Bonds
  - Foreign Bonds
  - Euro Commercial Papers
  - Credit Instruments

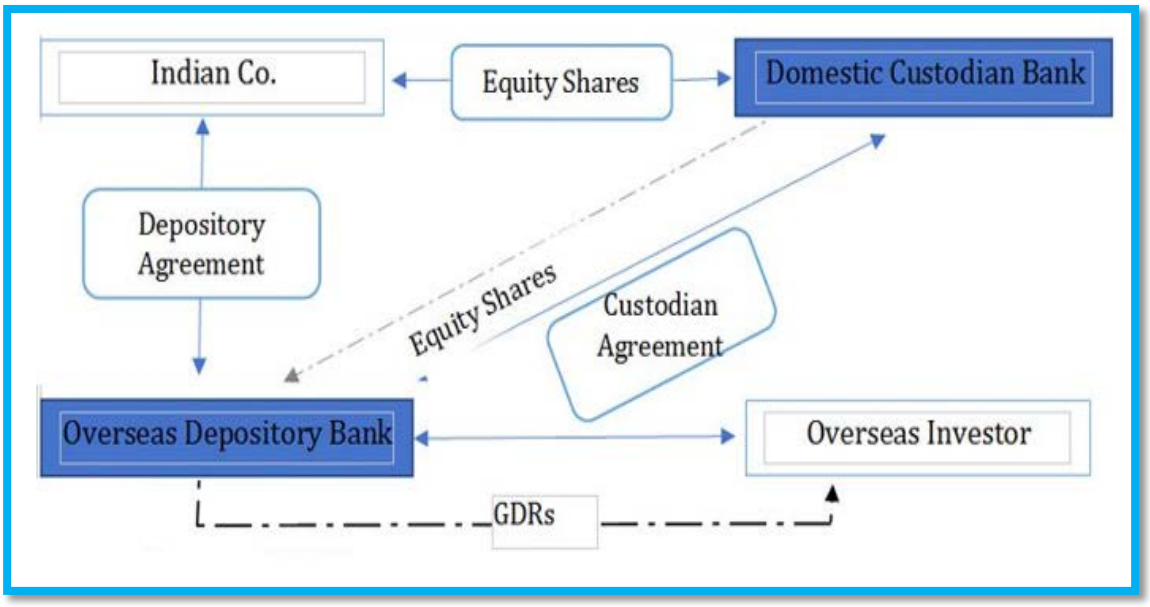
1. Foreign Currency Convertible Bonds (FCCBs) :

A type of convertible bond issued in a currency different than the issuer's domestic currency. In other words, the money being raised by the issuing company is in the form of a foreign currency. A convertible bond is a mix between a debt and equity instrument.

These types of bonds are attractive to both investors and issuers. The investors receive the safety of guaranteed payments on the bond and are also able to take advantage of any large price appreciation in the company's stock.

2. American Depository Receipts (ADRs) :

Depository receipts issued by a company in the United States of America (USA) is known as American Depository Receipts (ADRs). Such receipts must be issued in accordance with the provisions stipulated by the Securities and Exchange Commission of USA (SEC) which are very stringent.



An ADR is generally created by the deposit of the securities of a non-United States company with a custodian bank in the country of incorporation of the issuing company. The custodian bank informs the depository in the United States that the ADRs can be issued. ADRs are United States dollar denominated and are traded in the same way as are the securities of United States companies. The ADR holder is entitled to the same rights and advantages as owners of the underlying securities in the home country.

3. Global Depository Receipts (GDRs) :

A depository receipt is basically a negotiable certificate, denominated in a currency not native to the issuer, that represents the company's publicly - traded local currency equity shares. Most GDRs are denominated in USD, while a few are denominated in Euro and Pound Sterling. The Depository Receipts issued in the US are called American Depository Receipts (ADRs), which anyway are denominated in USD and outside of USA, these are called GDRs. In theory, though a depository receipt can also represent a debt instrument, in practice it rarely does. DRs (depository receipts) are created when the local currency shares of an Indian company are delivered to the depository's local custodian bank, against which the Depository bank (such as the Bank of New York) issues depository receipts in US dollar. These depository receipts may trade freely in the overseas markets like any other dollar-denominated security, either on a foreign stock exchange, or in the over-the-counter market, or among a restricted group such as Qualified Institutional Buyers (QIBs). Indian issues have taken the form of GDRs to reflect the fact that they are marketed globally, rather than in a specific country or market.

Question 1 : X Ltd.

X Ltd. is interested in expanding its operation and planning to install manufacturing plant at US. For the proposed project it requires a fund of $ 10 million (net of issue expenses/ floatation cost). The estimated floatation cost is 2%. To finance this project it proposes to issue GDRs.

You as financial consultant is required to compute the number of GDRs to be issued and cost of the GD R with the help of following additional information.

1. Expected market price of share at the time of issue of GDR is Rs.250 (Face Value Rs.100)
2. Shares shall underly each GDR and shall be priced at 10% discount to market price.
3. Expected exchange rate Rs.60/$.
4. Dividend expected to be paid is 20% with growth rate 12%.

4. Euro-Convertible Bonds (ECBs) :

A convertible bond is a debt instrument which gives the holders of the bond an option to convert the bond into a predetermined number of equity shares of the company. Usually, the price of the equity shares at the time of conversion will have a premium element

5. Other sources :

- **Euro Bonds:** Plain Euro-bonds are nothing but debt instruments. These are not very attractive for an investor who desires to have valuable additions to his investments.
- **Euro-Convertible Zero Bonds:** These bonds are structured as a convertible bond. No interest is payable on the bonds. But conversion of bonds takes place on maturity at a predetermined price. Usually there is a 5 years maturity period and they are treated as a deferred equity issue
- **Euro-bonds with Equity Warrants:** These bonds carry a coupon rate determined by the market rates. The warrants are detachable. Pure bonds are traded at a discount. Fixed income funds' managements may like to invest for the purposes of regular income.
- **Syndicated bank loans:** One of the earlier ways of raising funds in the form of large loans from banks with good credit rating, can be arranged in reasonably short time and with few formalities. The maturity of the loan can be for a duration of 5 to 10 years. The interest rate is generally set with reference to an index, say, LIBOR plus a spread which depends upon the credit rating of the borrower. Some covenants are laid down by the lending institution like maintenance of key financial ratios.
- **Euro-bonds:** These are basically debt instruments denominated in a currency issued outside the country of that currency for examples Yen bond floated in France. Primary attraction of these bonds is the refuge from tax and regulations and provide scope for arbitraging yields. These are usually bearer bonds and can take the form of
  (i) Traditional fixed rate bonds.
  (ii) Floating rate Notes.(FRNs)
  (iii) Convertible Bonds.
- **Foreign Bonds:** Foreign bonds are denominated in a currency which is foreign to the borrower and sold at the country of that currency. Such bonds are always subject to the restrictions and are placed by that country on the foreigners funds.
- **Euro Commercial Papers:** These are short term money market securities usually issued at a discount, for maturities less than one year.

- **Credit Instruments:** The foregoing discussion relating to foreign exchange risk management and international capital market shows that foreign exchange operations of banks consist primarily of purchase and sale of credit instruments. There are many types of credit instruments used in effecting foreign remittances. They differ in the speed, with which money can be received by the creditor at the other end after it has been paid in by the debtor at his end. The price or the rate of each instrument, therefore, varies with extent of the loss of interest and risk of loss involved. There are, therefore, different rates of exchange applicable to different types of credit instruments.

2. INTERNATIONAL WORKING CAPITAL MANAGEMENT :

The management of working capital in an international firm is much more complex as compared to a domestic one. The reasons for such complexity are:

(1) A multinational firm has a wider option for financing its current assets.

(2) Interest and tax rates vary from one country to the other

(3) A multinational firm is confronted with foreign exchange risk due to the value of inflow/outflow of funds as well as the value of import/export are influenced by exchange rate variations.

(4) With limited knowledge of the politico-economic conditions prevailing in different host countries, a Manager of a multinational firm often finds it difficult to manage working capital of different units of the firm operating in these countries.

(5) In countries which operate on full capital convertibility, a MNC can move its funds from one location to another and thus mobilize and 'position' the funds in the most efficient way possible.

A. Multinational Cash Management :

MNCs are very much concerned with effective cash management. International money managers follow the traditional objectives of cash management viz.

(1) effectively managing and controlling cash resources of the company as well as

(2) achieving optimum utilization and conservation of funds.

The main objectives of an effective system of international cash management are:

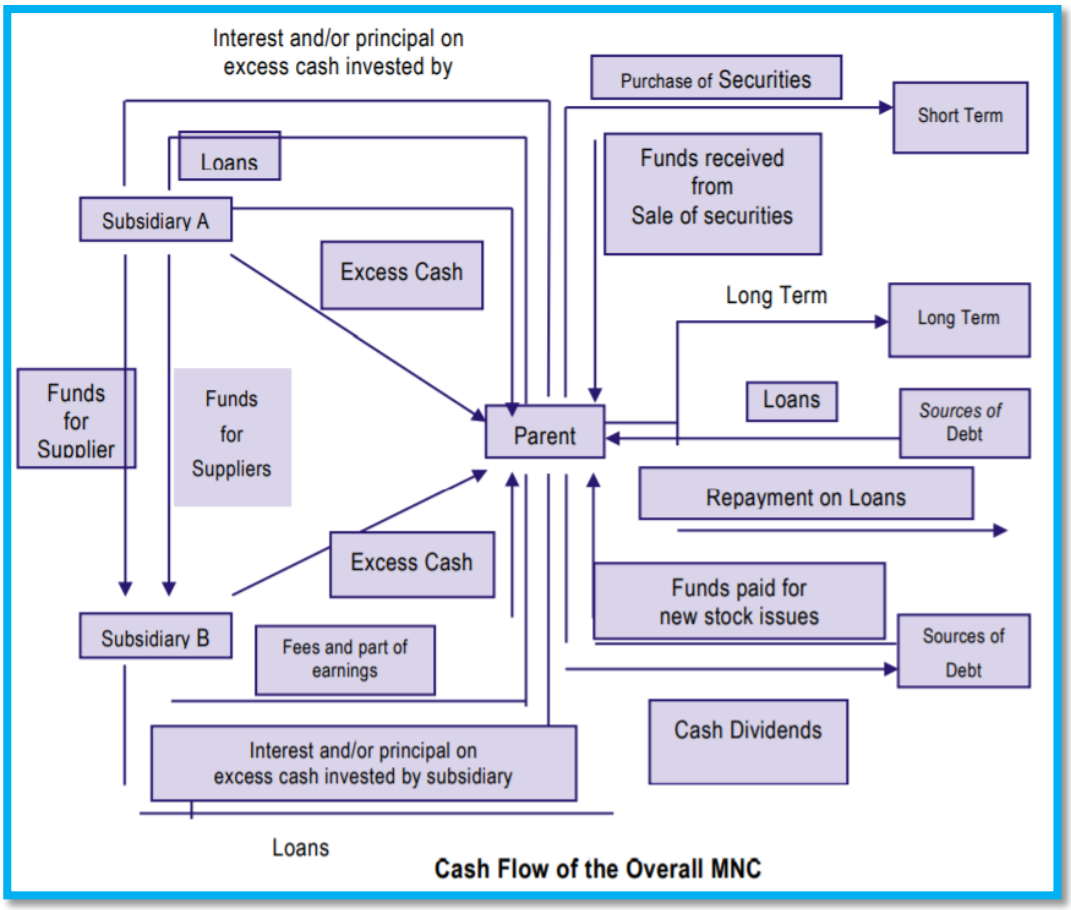
(1) To minimise currency exposure risk.

(2) To minimise overall cash requirements of the company as a whole without disturbing smooth operations of the subsidiary or its affiliate.

(3) To minimise transaction costs.

(4) To minimise country's political risk.

(5) To take advantage of economies of scale as well as reap benefits of superior knowledge.



International Cash Management has two basic objectives:

1. Optimising Cash Flow movements.
2. Investing excess cash.

As no single strategy of international cash management can help in achieving both these objectives together, its task on such aspects becomes very challenging.

There are numerous ways of optimising cash inflows:

1. Accelerating cash inflows.
2. Managing blocked funds.
3. Leading and Lagging strategy.
4. Using netting to reduce overall transaction costs by eliminating number of unnecessary conversions and transfer of currencies.
5. Minimising tax on cash flow through international transfer pricing.

B. International Inventory Management :

An international firm possesses normally a bigger stock than EOQ and this process is known as stock piling. The different units of a firm get a large part of their inventory from sister units in different countries. This is possible in a vertical set up. For political disturbance there will be bottlenecks in import. If the currency of the importing country depreciates, imports will be costlier thereby giving rise to stock piling. To take a decision against stock piling the firm has to weigh the cumulative carrying cost vis-à-vis expected increase in the price of input due to changes in exchange rate. If the probability of interruption in supply is very high, the firm may opt for stock piling even if it is not justified on account of higher cost.

C. International Receivables Management :

Credit Sales lead to the emergence of account receivables. There are two types of such sales viz. Inter firm Sales and Intra firm Sales in the global aspect.

In case of Inter firm Sales, the currency in which the transaction should be denominated and the terms of payment need proper attention. With regard to currency denomination, the exporter is interested to denominate the transaction in a strong currency while the importer wants to get it denominated in weak currency. The exporter may be willing to invoice the transaction in the weak currency even for a long period if it has debt in that currency. This is due to sale proceeds being used to retire debts without loss on account of exchange rate changes. With regard to terms of payment, the exporter does not provide a longer period of credit and ventures to get the export proceeds quickly in order to invoice the transaction in a weak currency. If the credit term is liberal the exporter is able to borrow currency from the bank on the basis of bills receivables. Also credit terms may be liberal in cases where competition in the market is keen compelling the exporter to finance a part of the importer's inventory. Such an action from the exporter helps to expand sales in a big way.

3. INTERNATIONAL CAPITAL BUDGETING :

Multinational Capital Budgeting has to take into consideration the different factors and variables which affect a foreign project and are complex in nature than domestic projects.

Question 2 :

A company has an investment opportunity costing Rs.40,000 with the following expected net cash flows (i.e. after taxes and before depreciation). Cost of Capital is 10%.

Year	Net Cash Flows
1 – 5	Rs.7,000 each year
6	Rs.8,000
7	Rs.10,000
8	Rs.15,000
9	Rs.10,000
10	Rs.4,000

Calculate 1. Payback Period 2.Discounted Payback 3. NPV 4. PI and 5. IRR

Question 3 :

An Indian firm is planning to set up a project in US. The Expected Cash Flows are

Years	0	1	2	3
Cash Flows (Millions)	(500)	200	200	300

Current Spot rate Rs.50 / $

R(f) Rs ---- 8%,

$ ---- 5%

Required return by the Indian shareholder is 22%. Compute NPV using?

A) Home currency Approach?

B) Foreign Currency Approach?

Question 4 : ABC Ltd.

ABC Ltd. is considering a project in US, which will involve an initial investment of US $ 1,10,00,000. The project will have 5 years of life. Current spot exchange rate is Rs.48 per US $. The risk free rate in US is 8% and the same in India is 12%. Cash inflow from the project are as follows :

Year	Cash Inflow
1	US $ 20,00,000
2	US $ 25,00,000
3	US $ 30,00,000
4	US $ 40,00,000
5	US $ 50,00,000

Calculate the NPV of the project using foreign currency approach. Required rate of return on this project is 14%.

Question 5 : OJ Ltd.

OJ Ltd. Is a supplier of leather goods to retailers in the UK and other Western European countries. The company is considering entering into a joint venture with a manufacturer in South America. The two companies will each own 50 per cent of the limited liability company JV(SA) and will share profits equally. £ 450,000 of the initial capital is being provided by OJ Ltd. and the equivalent in South American dollars (SA$) is being provided by the foreign partner. The managers of the joint venture expect the following net operating cash flows, which are in nominal terms:

	SA$ 000	Forward Rates of exchange to the £ Sterling
Year 1	4,250	10
Year 2	6,500	15
Year 3	8,350	21

For tax reasons JV(SV) the company to be formed specifically for the joint venture, will be registered in South America. Ignore taxation in your calculations.

Assuming you are financial adviser retained by OJ Limited to advice on the proposed joint venture.

i) Calculate the NPV of the project under the two assumptions explained below. Use a discount rate of 18 per cent for both assumptions.

Assumption 1 : The South American country has exchange controls which prohibit the payment of dividends above 50 per cent of the annual cash flows for the first three years of the project. The accumulated balance can be repatriated at the end of the third year.

Assumption 2 : The government of the South American country is considering removing exchange controls and restriction on repatriation of profits. If this

happens all cash flows will be distributed as dividends to the partner companies at the end of each year.

ii) Comment briefly on whether or not the joint venture should proceed based solely on these calculations.

Question 6 :

An Indian company is planning to set up a subsidiary in US. The initial project cost is estimated to be US $40 million; Working Capital required is estimated to be $4 million.

The finance manager of company estimated the data as follows :

Variable Cost of Production (Per Unit Sold)	$ 2.50
Fixed cost per annum	$ 3 million
Selling Price	$ 10
Production capacity	5 million units
Expected life of Plant	5 years
Method of Depreciation	Straight line Method (SLM)
Salvage Value at the end of 5 years	NIL

The subsidiary of the Indian company is subject to 40% corporate tax rate in the US and the required rate of return of such types of project is 12%. The current exchange rate is Rs. 48/US$ and the rupee is expected to depreciate by 3% per annum for next five years. The subsidiary company shall be allowed to repatriate 70% of the CFAT every year along with the accumulated arrears of blocked funds at the end of 5 years, the withholding taxes are 10%. The blocked fund will be invested in the USA money market by the subsidiary, earning 4% (free of taxes) per year.

Determine the feasibility of having a subsidiary company in the USA, assuming no tax liability in India on earnings received by the parent company from the US subsidiary.

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Interest Rate Risk


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CHAPTER DESIGN

1. INTRODUCTION
2. DETERMINATION OF INTEREST RATE
3. HEDGING INTEREST RATE RISK
   - (A) ASSET LIABILITY MANAGEMENT
   - (B) FORWARD RATE AGREEMENT
   - (C) INTEREST RATE FUTURES
   - (D) INTEREST RATE OPTIONS
   - (E) INTEREST RATE SWAPS

1. INTRODUCTION :

Companies with low profit margins and high capital expenses may be extremely sensitive to interest rate increases. Interest rate derivatives are valuable tools in managing risks. Derivatives are powerful tools that mitigate risk and build value. They help companies to develop a risk mitigation strategy.

Interest rate is the cost of borrowing money and the compensation for the service and risk of lending money. Interest rates are always changing, and different types of loans offer various interest rates. The lender of money takes a risk because the borrower may not pay back the loan. Thus, interest provides a certain compensation for bearing risk.

Coupled with the risk of default is the risk of inflation. When you lend money now, the prices of goods and services may go up by the time you are paid back, so your money's original purchasing power would decrease. Thus, interest protects against future rises in inflation. A lender such as a bank uses the interest to process account costs as well.

2. DETERMINATION OF INTEREST RATE :

The factors affecting interest rates are largely macro-economic in nature:

(a) **Supply and Demand :** Demand/supply of money- When economic growth is high, demand for money increases, pushing the interest rates up and vice versa.

(b) **Inflation :** The higher the inflation rate, the more interest rates are likely to rise.

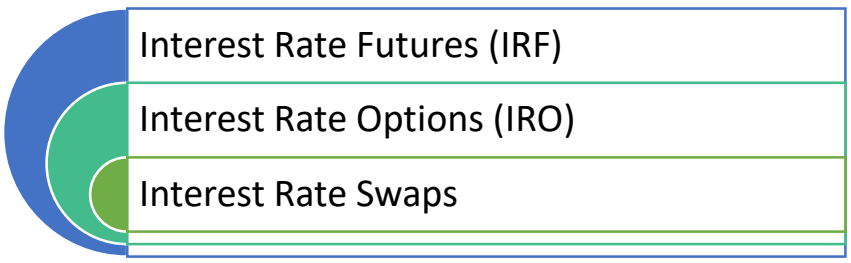
(c) **Government :** Government is the biggest borrower. The level of borrowing also determines the interest rates. Central bank i.e. RBI by either printing more notes or through its Open Market Operations (OMO) changes the key rates (CRR, SLR and bank rates) depending on the state of the economy or to combat inflation.

3. HEDGING INTEREST RATE RISK :

Methods of Hedging of Interest Rate Risk can be broadly divided into following two categories :

(A) Traditional Methods : These methods can further be classified in following categories:

(B) Modern Methods : These methods can further be classified in following categories:



1. Asset and Liability Management :

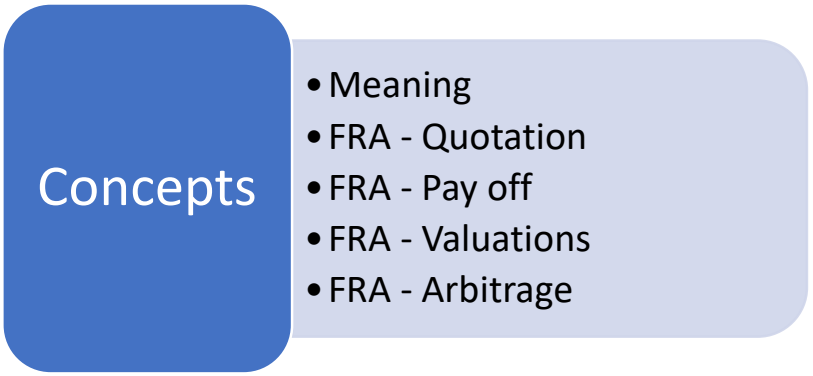
The concept of ALM is of recent origin in India. It has been introduced in Indian Banking industry w.e.f. 1st April, 1999. ALM is concerned with risk management and provides a comprehensive and dynamic framework for measuring, monitoring and managing liquidity, interest rate, foreign exchange and equity and commodity price risks of a bank that needs to be closely integrated with the bank's business strategy. Asset-liability management basically refers to the process by which an institution manages its balance sheet in order to allow for alternative interest rate and liquidity scenarios.

Banks and other financial institutions provide services which expose them to various kinds of risks like credit risk, interest risk, and liquidity risk. Asset liability management is an approach that provides institutions with protection that makes such risk acceptable. Asset-liability management models enable institutions to measure and monitor risk, and provide suitable strategies for their management.

It is therefore appropriate for institutions (banks, finance companies, leasing companies, insurance companies, and others) to focus on asset-liability management when they face financial risks of different types. Asset-liability management includes not only a formalization of this understanding, but also a way to quantify and manage these risks. Further, even in the absence of a formal asset-liability management program, the understanding of these concepts is of value to an institution as it provides a truer picture of the risk/reward trade-off in which the institution is engaged.

2. Forward Rate Agreement :

A Forward Rate Agreement (FRA) is an agreement between two parties through which a borrower/ lender protects itself from the unfavourable changes to the interest rate. Unlike futures FRAs are not traded on an exchange thus are called OTC product. Following are main features of FRA.



1. Meaning :

- Forward rate is the contract to borrow or invest a specified amount of money @ specified rate of interest at a specified point of time in future for a specified period.
- We use this agreement to hedge and also to speculate.

- One should remember that a promise to borrow is a nothing but taking a long position on interest rate i.e BUY. One takes long position with the view that the rate shall increase and they shall earn profit.
- Also a promise to invest means taking short position i.e promise to SELL. One takes SELL position with the view to that rates shall decrease in future and they will earn profit.
- BUY – belief is rates will increase – if it does it will bring profit and if it does not than it will give loss
- SELL – belief is rates shall decrease – if it does it will bring profit and if it does not than it will give loss

2. Forward Rate Quotation :

FRA (Forward Rate Agreement) is an OTC derivative in which the bank acts as authorized dealers and provide Bid / Ask Rates.

For instance Citibank Quotes at 6 x 9 FRA at 10% / 11%.

It means that the they are interest rates for 3 months (difference of 6 and 9) after 6 months.

The bullish client buy (promise to borrow) FRA at 11% waiting for upside gain. The bearish customer will sells (Promise to Sell) FRA at 10% waiting for downside gain

3. FRA – Pay off :

Payoff refers to final settlement that one party has to make to another party. The loser will pay the winner the PV of Difference in interest.

4. FRA – Valuations :

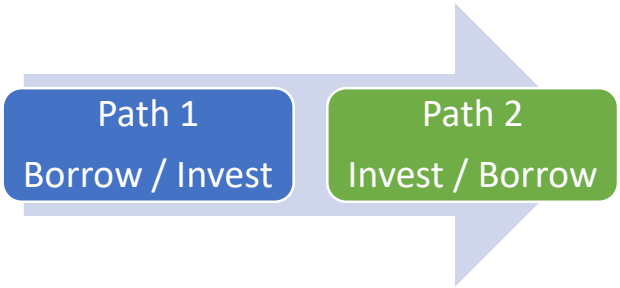
Valuation of any forward rate depends upon the principle of non-arbitrage. Similar valuation of forward rate is also depended on the principle of non-arbitrage.

$$\text{FRA} = \frac{Larger\ Period}{Smaller\ Period}$$

5. FRA – Arbitrage :

As discussed above, we calculated FRA based on the principle of non arbitrage. FRA is also quoted by the Bank. If the FRA Quoted by the bank and FRA as calculated by us does not match, we can have arbitrage.

As usual we can have 2 paths to arbitrage and our responsibility lies in finding the path of profit :



Question 1 :
RM buys 500 Cr 6 x 9 FRA at 10% / 11%. The rate turns out to be 12.5%. Calculate the amount of pay off.

Question 2 :
RM buys 500 Cr 6 x 9 FRA at 10% / 11%. The rate turns out to be 10%. Calculate the amount of pay off.

Question 3 :
A 5 x 12 FRA is presently quoted at 13% / 14%. A trader sells this FRA on notional principle of Rs.6, 00, 00,000. What would be the payoff if after 5 months the 7 month LIBOR happens to be 6%.

Question 4 :
9 month LIBOR ---- 10%
6 month LIBOR ---- 11%
What should be the price of 6 x 9 FRA?

Question 5 :
Consider the following data
3 month LIBOR ---- 8%
9 month LIBOR ---- 10%
3 x 9 FRA --- 15 % / 16 %

i) What should be the price of 3 x 9 FRA ?
ii) Show the process of arbitrage using $ 1000 ?

Question 6 :
TM Fincorp has bought a 6 x 9 Rs 100 crore Forward Rate Agreement (FRA) at 5.25%. On fixing date reference rate i.e. MIBOR turns out be as follows :

Period	Rate (%)
3 months	5.50
6 months	5.70
9 months	5.85

You are required to determine:

(a) Profit/Loss to TM Fincorp. in terms of basis points.

(b) The settlement amount.

(Assume 360 days in a year)

Question 7 :

M/s. Parker & Co. is contemplating to borrow an amount of Rs 60 crores for a period of 3 months in the coming 6 month's time from now. The current rate of interest is 9% p.a., but it may go up in 6 month's time. The company wants to hedge itself against the likely increase in interest rate.

The Company's Bankers quoted an FRA (Forward Rate Agreement) at 9.30% p.a. What will be the effect of FRA and actual rate of interest cost to the company, if the actual rate of interest after 6 months happens to be (i) 9.60% p.a. and (ii) 8.80% p.a.?

3. Interest Rate Futures :

As per Investopedia, an interest rate future is a futures contract with an underlying instrument that pays interest. An interest rate future is a contract between the buyer and seller agreeing to the future delivery of any interest-bearing asset. The interest rate future allows the buyer and seller to lock in the price of the interest-bearing asset for a future date.

Interest rate futures are used to hedge against the risk that interest rates will move in an adverse direction, causing a cost to the company.

For example, borrowers face the risk of interest rates rising. Futures use the inverse relationship between interest rates and bond prices to hedge against the risk of rising interest rates.

A borrower will enter to sell a future today. Then if interest rates rise in the future, the value of the future will fall (as it is linked to the underlying asset, bond prices), and hence a profit can be made when closing out of the future (i.e. buying the future).

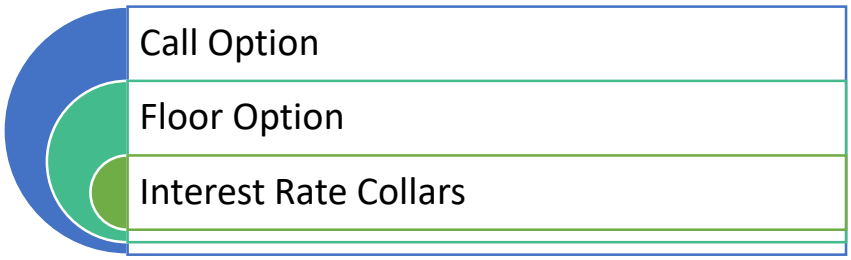
Bonds form the underlying instruments, not the interest rate. Further, IRF, settlement is done at two levels:

- Mark-to-Market settlement done on a daily basis and
- Physical delivery which happens on any day in the expiry month.

Final settlement can happen only on the expiry date. Price of IRF determined by demand and supply Interest rates are inversely related to prices of underlying bonds.

4. Interest Rate option :

Also known as Interest Rate Guarantee (IRG) as option is a right not an obligation and acts as insurance by allowing businesses to protect themselves against adverse interest rate movements while allowing them to benefit from favourable movements. It should be noted that the IRO is basically a series of FRAs which are exercisable at predetermined bench marked interest rates on each period say 3 months, 6 months etc. Some of the important types of Interest Rate Options are as follows:



Note : All the above is studied in Derivatives

5. Interest Rate Swaps :

Covered in Derivatives

Thanks ….
Be hope that you will find this helpful. If you would like to discuss any of the points please speak to us through the following channel.

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Derivative

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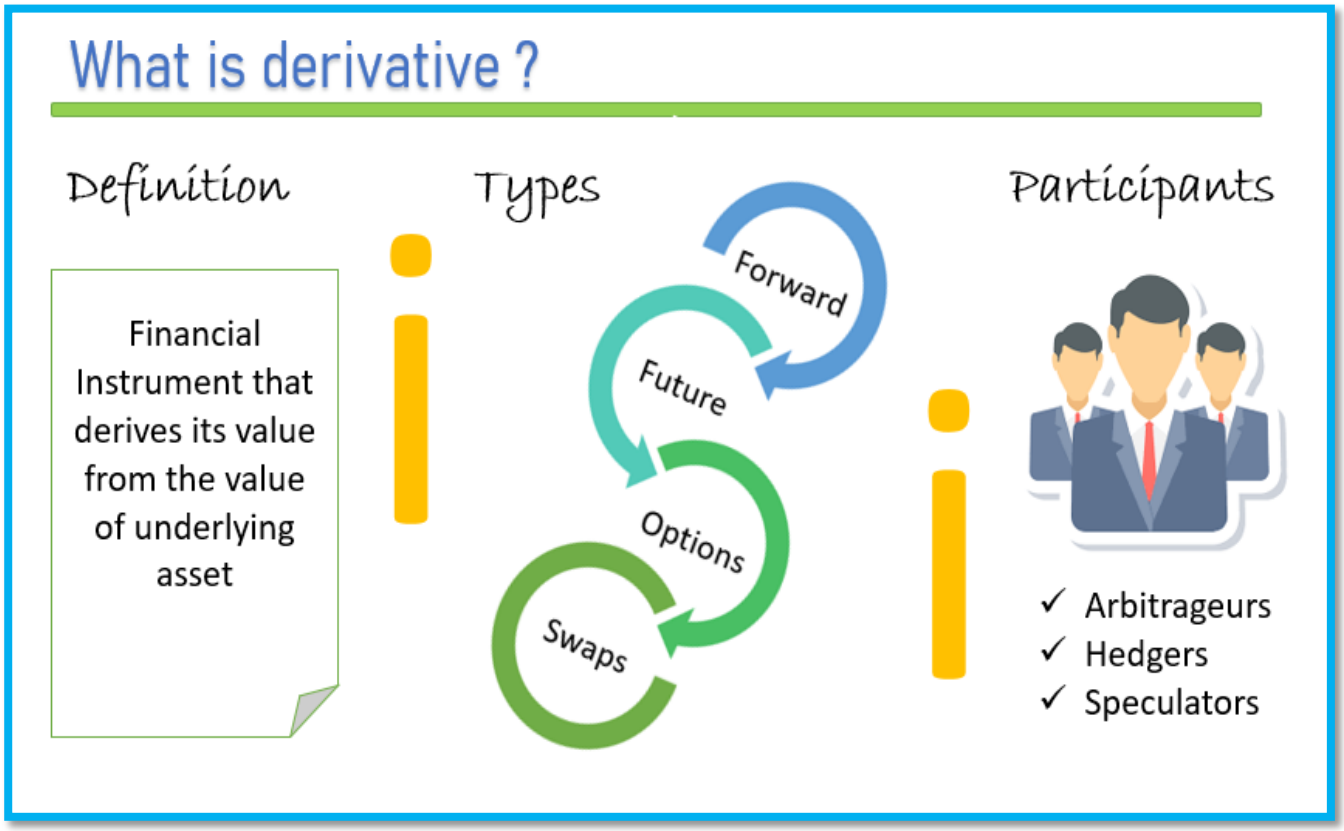
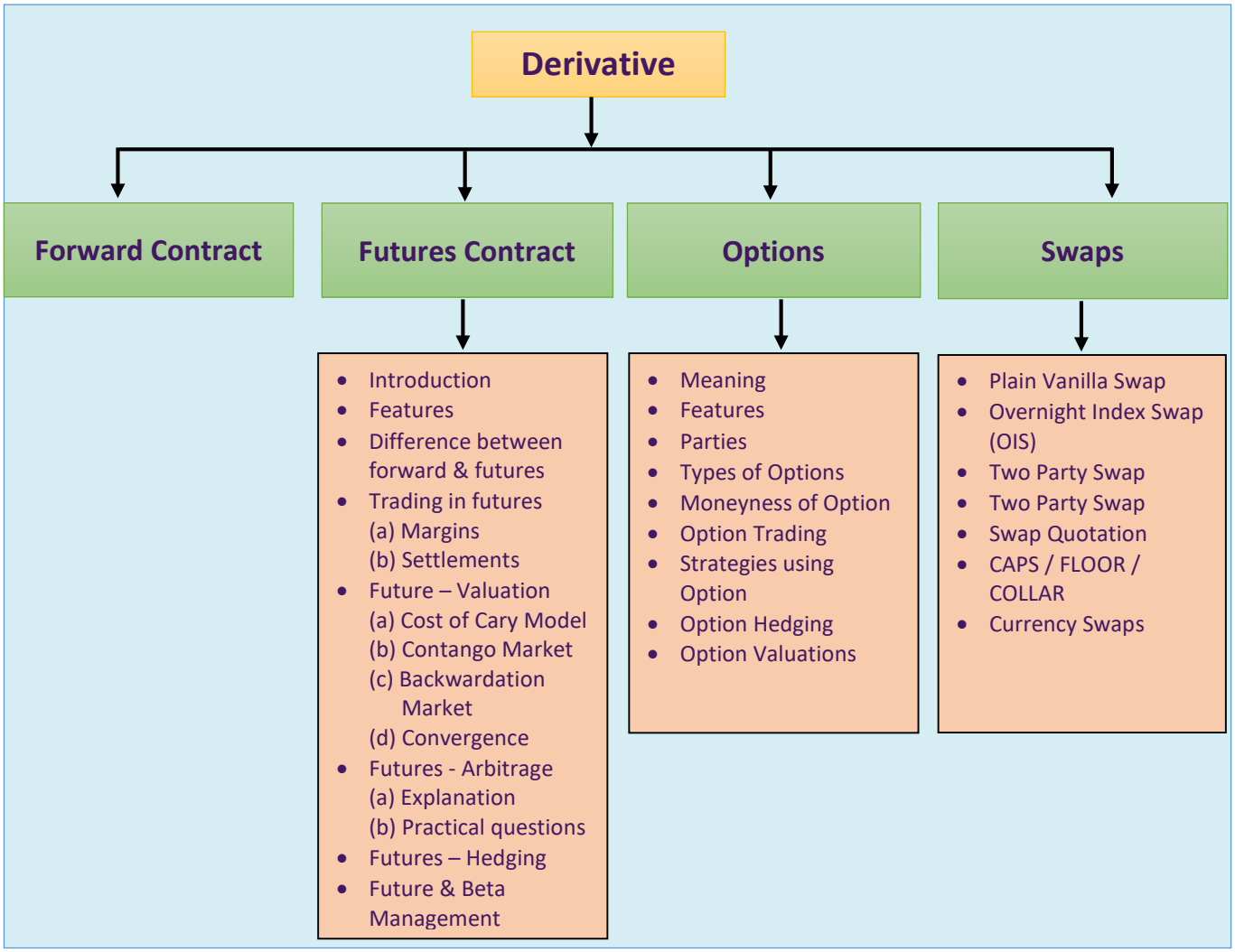




INTRODUCTION :

Derivative is a product whose value is to be derived from the value of one or more basic variables called bases (underlying assets, index or reference rate). The underlying assets can be Equity, Forex, and Commodity.

The underlying has a marketable value which is subject to market risks. The importance of underlying in derivative instruments is as follows:

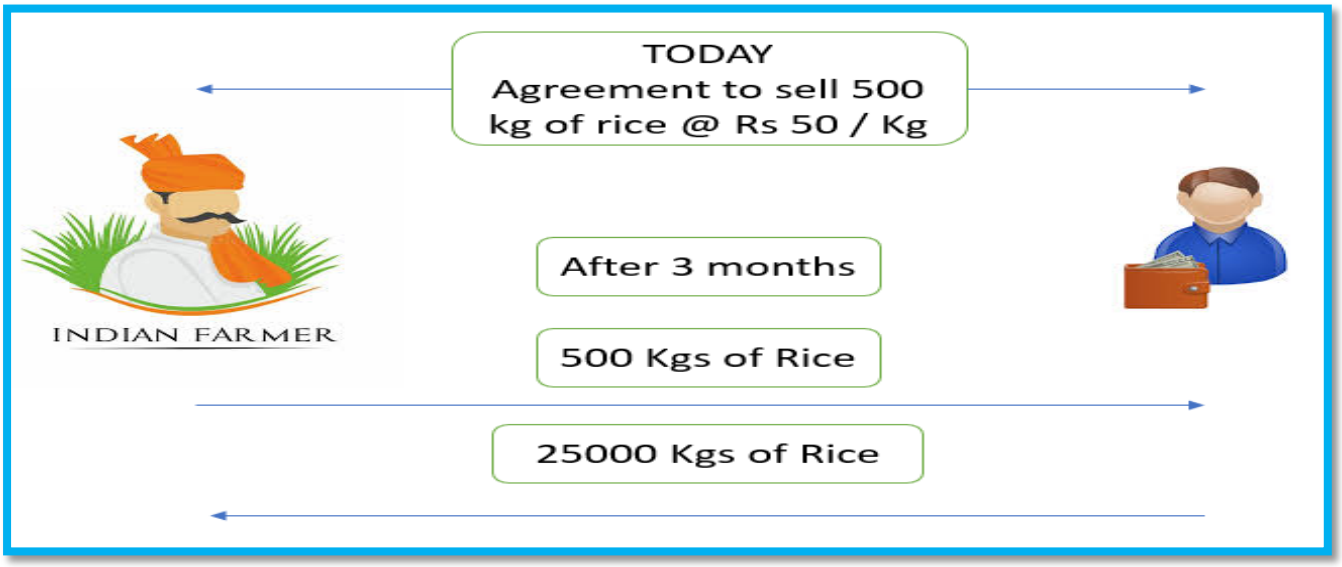
- All derivative instruments are dependent on an underlying to have value.
- The change in value in a forward contract is broadly equal to the change in value in the underlying.
- In the absence of a valuable underlying asset the derivative instrument will have no value.

On maturity, the position of profit/loss is determined by the price of underlying instruments. If the price of the underlying is higher than the contract price the buyer makes a profit. If the price is lower, the buyer suffers a loss.

1. FORWARD CONTRACT :

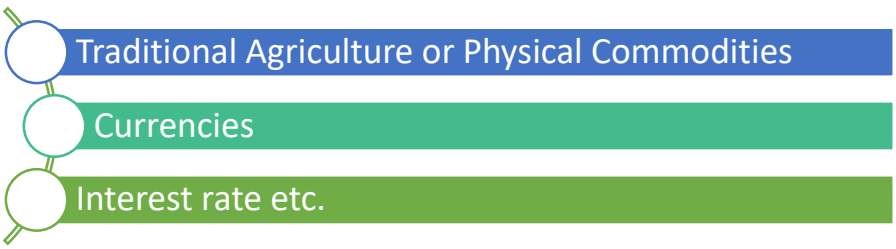
Consider, an Indian farmer grows rice and other crops at his field and expects it to be sold at profit. Now the selling price of the crops depends upon various factors. For a simple case like bumper crop can reduce his selling price and it can lead to fall in profit or even he may incur a loss. The best way to avoid such a risk is that farmer can enter into agreement with the buyer fixing the price of crops in advance.

In that way the buyer is guaranteed of supplies and seller is safe from fluctuations in risk. Such a agreement which fixes the price in advance for the product to be delivered in future is known as **forward contract** and the such a transaction is referred as **forward transactions**.



A forward contract is an agreement between a buyer and a seller obligating the seller to deliver a specified asset of specified quality and quantity to the buyer on a specified date at a specified place and the buyer, in turn, is obligated to pay to the seller a pre-negotiated price in exchange of the delivery.

Forward contracts are not standardized contract, they are OTC (Over the counter) (not traded in recognised stock exchanges) derivatives that are tailored to meet specific user needs. The underlying Asset of forward contracts can be



Features of Forward contract :

1. The are tailor made with reference to Quantity, Price, Date, region etc.
2. They are negotiated contract between two parties and therefore they are exposed to counter party risks.
3. A contract is settled by delivery or cash on the expiry date.
4. The contract can be cancelled only when both the parties agrees to do so.

2. FUTURES CONTRACT :

1. Introduction :

Unlike forward contracts, Futures are standardized contracts traded on exchanges traded on exchanges through clearing house and avoids counter party risk through margin money.

The futures today have comes a long way since its beginning in Japan during 17th Century. Such contracts were used for trading in Rice and Silk. US, in 1950 was the first one to start trading in other commodities like cotton, wheat and corn. Todays futures are way to different, and it includes trading in currencies, financial instruments like treasury bonds and securities.

A futures contract is an agreement between two parties that commits one party to buy an underlying financial instrument (bond, stock or currency) or commodity (gold, soybean or natural gas) and one party to sell a financial instrument or commodity at a specific price at a future date. The agreement is completed at a specified expiration date by physical delivery or cash settlement or offset prior to the expiration date. In order to initiate a trade in futures contracts, the buyer and seller must put up "good faith money" in a margin account.

2. Features of Futures contract :

1. Futures are highly standardized contracts that provide for performance of contracts through either deferred delivery of asset or final cash settlement.
2. The contracts are traded on organised exchanges with the exchange acting as middleman between the contracting parties.
3. It involves paying of Margin by the Buyer and Seller, which acts as a performance bond and avoids counter party risk.
4. Margins are generally Marked to Market everyday.
5. Each future has a specified lot size (No of shares). It is not negotiated by the parties of the contract.

3. Difference between Forward and Future contract :

No	Forwards	Features	Futures
1	Forward contracts are traded on personal basis or on telephone or otherwise	Trading	Futures Contracts are traded in a competitive arena
2	Forward contracts are individually tailored and have no standardized size	Size of Contract	Futures contracts are standardized in terms of quantity or amount as the case may be
3	Forward contracts are traded in an over the counter market.	Organized exchanges	Futures contracts are traded on organized exchanges with a designated physical location.

4	Forward contracts settlement takes place on the date agreed upon between the parties.	Settlement	Futures contracts settlements are made daily via. Exchange's clearing house.
5	Forward contracts may be delivered on the dates agreed upon and in terms of actual Delivery	Delivery date	Futures contracts delivery dates are fixed on cyclical basis and hardly takes place. However, it does not mean that there is no actual delivery.
6	Cost of forward contracts is based on bid – ask spread.	Transaction costs	Futures contracts entail brokerage fees for buy and sell order.
7	Forward contracts are not subject to marking to market	Marking to market	Futures contracts are subject to marking to market in which the loss or profit is debited or credited in the margin account on daily basis due to change in price.
8	Margins are not required in forward contract.	Margins	In futures contracts every participants is subject to maintain margin as decided by the exchange authorities
9	n forward contract, credit risk is born by each party and, therefore, every party has to bother for the creditworthiness.	Credit risk	In futures contracts the transaction is a two way transaction, hence the parties need not to bother for the risk.

4. Trading in Futures :

As discussed, trading in futures requires some margin money from both, to act as guarantee that each will abide by the terms of the contract.

a) The margins are classified as

1. Initial Margin:

This is re quired to start the contract. The exchange can change the margin anytime it thinks fit. It depends upon the volatility of the stock. It is generally calculated as Initial Margin = $\mu + 3\sigma$.

2. Maintenance Margin :

It is the minimum balance that should be maintained in the Margin Account. It is not required to be paid over and above the initial Margin. It is the part of the Initial Margin. It just means that since futures are marked to market daily, the balance in margin will fluctuate, and therefore it can go down

substantially. Maintenance margin refers to the limit that should be maintained. It is generally 75% of the initial Margin.

3. Variable Margin:

It is calculated on daily basis for the purpose of marked to market all outstanding positions at the end of each day. It is to be deposited or withdrawn in cash. The day's closing price is generally used as the basis for the purpose of Marking to Market.

b) Settlement of Futures contract :

Futures contract can be settled in any of the following 3 ways

1. Close out :

In this method, the futures trader closes out the futures contract even before the expiry. If he is long a futures contract, he can take a short position in the same contract. The long and the short position will be off-set and his margin account will be marked to marked and adjusted for P&L. Similarly, if he is short a futures contract, he will take a long position in the same contract to closeout the position.

2. Physical Delivery :

If the futures trader does not closeout the position before expiry, and keeps the position open and allows it to expire, then the futures contract will be settled by physical delivery or cash settlement (discussed below). Taking physical Delivery is the most cumbersome way to settle futures. At the expiry of the futures contract, the short position holder will deliver the underlying asset to the long position holder.

3. Cash Settlement :

In case of cash settlement (in case the contract has expired), there is no need for physical delivery of the contract. Instead the contract can be cash-settled. When the contract expires, his margin account will be marked-to market for P&L on the final day of the contract. Cash settlement is a preferred option for most traders because of the savings in transaction costs.

Question 1 :

A trader has gone long on 5 Brent crude futures for December settlement at $26.32 per barrel. The minimum contract size for Brent futures contract is 100,000 barrel. The initial margin is $50,000 and the maintenance margin is $30,000. The futures close at the following prices on the next ten trading days:

Day	1	2	3	4	5	6	7	8	9	10
	$26.19	$26.30	$26.45	$26.48	$26.34	$26.21	$25.98	$25.87	$25.90	$25.95

The trader will take out the profit out of the margin account whenever he gets the opportunity to do so.

You are required to :

1. Prepare the margin account showing all the cash flows.
2. Find the profit/loss for the trader after 10 trading days.

5. Futures Valuation :

The difference between the prevailing spot price of an asset and the futures price is known as the basis, i.e.,

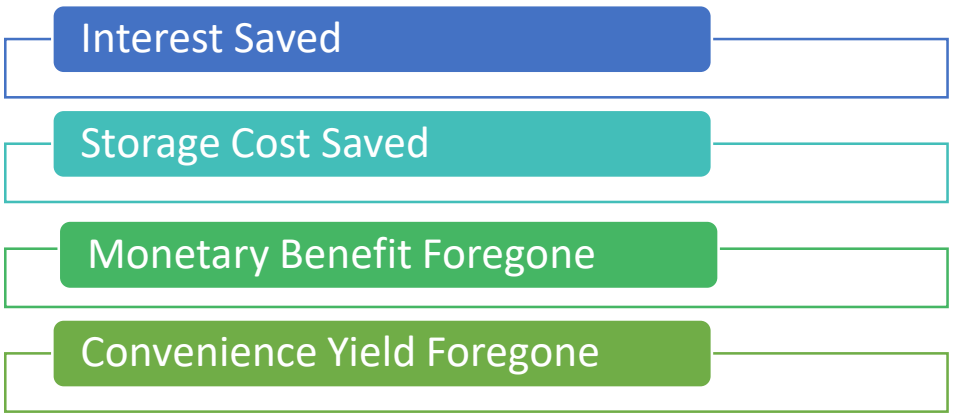
Basis = Spot price – Futures price

Cost of Carry Model :

As per the cost of carry model (COC)

Futures price = spot price + net cost of carry i.e. F = S + NCC

NCC Includes



where : NCC = interest saved + storage cost saved – monetary benefit (eg. dividend) foregone – convenience yield forgone

Type 1	Future value type : F = S + Interest + FV of SC - FV of MB - FV of CY.
Type 2	Present value type : PV of F = S + PV of SC - PV of MB - PV of CY.

Contango Market :

In a normal market, the spot price is less than the futures price (which includes the full cost-ofcarry) and accordingly the basis would be negative. Such a market, in which the basis is decided solely by the cost-of-carry is known as a contango market.

Backwardation Market :

Basis can become positive, i.e., the spot price can exceed the futures price only if there are factors other than the cost of carry to influence the futures price. In case this happens, then basis becomes positive and the market under such circumstances is termed as a backwardation market or inverted market.

Convergence :

Basis will approach zero towards the expiry of the contract, i.e., the spot and futures prices converge as the date of expiry of the contract approaches. The process of the basis approaching zero is called convergence.

Question 2 :

Spot price of a commodity = 800
6 month futures price = 780
R_f = 9% p.a. compounded monthly
Storage cost = Rs. 10 at the end of each month
Monetary benefit= Rs. 15 at the end of each quarter
Calculate PV of convenience yield

Question 3 :

The following information is available about standard gold.

Spot Price (SP)	Rs.15,600 per 10 gms.
Future Price (FP)	Rs.17,100 for one year future contract
Risk free interest Rate $(R)_f$	8.5%
Present Value of Storage Cost	Rs.900 per year

From the above information you are requested to calculate the Present Value of Convenience yield (PVC) of the standard gold.

Question 4 :

Solve the following

a. 9 months futures price on a cdty = 635
   R_f = 8% p.a. compounded quarterly
   Find spot price.

b. Spot price of the commodity = 430
   R_f = 8% p.a. compounded monthly
   Find 6 moths futures pric

c. 9 months futures price on a cdty = 165

Spot price = 160
Storage cost = Rs 8 at the end of every month
R_f = 8% p.a. compounded monthly
Find PV Of CY.

Question 5 :
Find out the future price depending upon the information given :
Case 1 : Stock price - Rs.1200
Futures maturity - 6 months
Interest rate -10%
Dividend yield - 3%

Case 2 : Stock price - Rs.500
Futures maturity - 3 months
R_f - 12%
Annualized Dividend yield - 5%

Case 3 : Stock price - Rs.800
Futures maturity - 6 months
R_f - 9%
Dividend rate - 80% (face value-10)

Case 4 : Stock price - Rs.600
Futures maturity - 6 months
R_f - 14%p.a. compounded continuously
Dividend yield - 8%p.a. compounded continuously

6. Futures – Arbitrage :

Consider :
The price of ACC stock on 31 December 2010 was Rs 220 and the futures price on the same stock on the same date, i.e., 31 December 2010 for March 2011 was Rs 230. Other features of the contract and related information are as follows:

Time to expiration	- 3 months (0.25 year)
Borrowing rate	- 15% p.a.
Annual Dividend on the stock	- 25% payable before 31.03. 2011
Face Value of the Stock	- Rs 10

Based on the above information, the futures price for ACC stock on 31 December 2010 should be:
= 220 + (220 x 0.15 x 0.25) – (0.25 x 10) = 225.75
Thus, as per the 'cost of carry' criteria, the futures price is Rs 225.75, which is less than the actual price of Rs 230 on 31 March 2011. This would give rise to arbitrage opportunities and consequently the two prices will tend to converge.

How Will the Arbitrager Act?

Arbitrage in futures will involve entering into stock and futures simultaneously. Depending upon the Actual futures price in comparison with theoretical futures price, we can enter into

1. Cash and Carry Arbitrage (S+, F- and borrow) OR
2. Reverse cash and Carry Arbitrage (S-, F+ and invest)

If actual futures price is not equal to theoretical futures price there is an arbitrage opportunity.

Situation 1 : CASH AND CARRY ARBITRAGE Long stock, short futures& borrow funds i.e. S+, f- & borrow funds when futures are over priced i.e. actual f > theoretical f. It will involve interest expense & dividend income.

Situation 2 : REVERSE CASH AND CARRY ARBITRAGE i.e. short stock, Long futures & invest funds S- , f+ & invest It will involve interest expense & dividend income.

Whatever be the type of arbitrage, profit will be equal to the amount of mispricing i.e. difference between actual f &theoretical f multiplied by lot size

Question 6 :

Stock price of RM = 640

R_f = 10%

Dividend yield = 1 %

3mf pp' = 780

Show the process of arbitrage (lot size 500)

Question 7 :

Stock price of RM = 640

3 month futures price = 515

Risk free interest rate = 9%

Dividend yield = 2%

Show the process of arbitrage, (lot size = 500 shares)

Question 8 :

Price of index = 5920

3 months NIFTY futures = 6035

R_f = 10%. It is expected that 40% of the companies comprising NIFTY will provide a dividend yield of 2%

Show the process of arbitrage

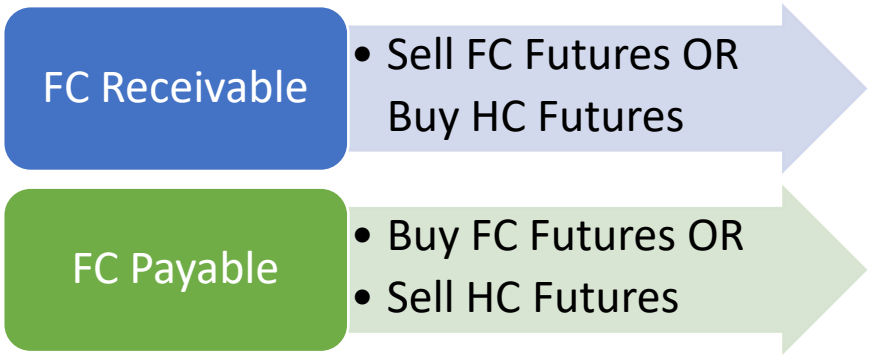
7. Futures – Hedging :

There are 3 main purpose of entering into futures contract

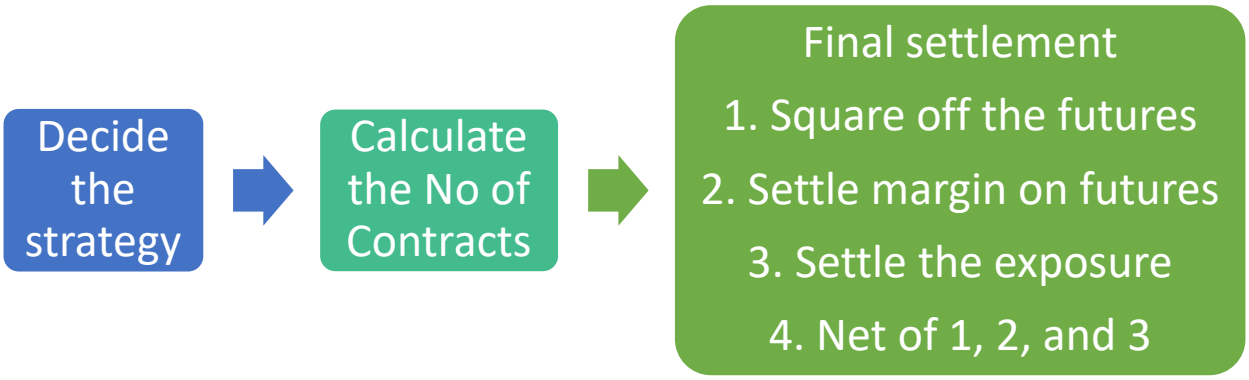
We have seen speculation and Arbitrage. Let's, proceed to understanding hedging involving futures. We have already covered the meaning of hedge during the chapter of forex. We have also covered Forward cover and Money Market Cover in that chapter.

Futures hedge is very similar to forward cover. However, one needs to keep in mind that futures cover is imperfect hedge unlike, forward cover and money market cover, which are perfect hedge.

Strategy for hedging using futures cover



Steps to Execute the Hedge



Question 9 :
On 17/01, a U.S. firm knows that it has a £8,90,000 receivable on 17/03. The spot rate is £.6452/ $ and the 2 month forward rate is £.6495/$. Pound futures for maturity ending March are quoted at $1.5367/£. Standard size of one contract is £62,500. On 17/03, the spot rate happens to be £.6508/$ and Pound futures quote at 1,5329/£. Compare no cover, forward cover and futures cover in terms of $ inflows on the 17/03?

Question 10 : XYZ Ltd.

XYZ Ltd. is an export oriented business house based in Mumbai. The Company invoices in US currency. Its receipt of US $ 1,00,000 is due on September 1, 2005.

Market information as at June 1, 2005.

	Exchange Rates US $/Rs.	Currency Futures US $/Rs.
Spot	0.02140	June 0.02126
1 Month	Fwd 0.02136	September 0.02118
3 Months	Fwd 0.02127	
Contract size	Rs.4,72,000	

	Initial Margin	Interest Rates in India
June	Rs. 10,000	7.50%
September	Rs. 15,000	8.00%

On September 1, 2005 the spot rate US $/Re. is 0.02133 and currency future rate is 0.02134. Comment which of the following methods would be most advantageous for XYZ Ltd.

i. Using for word contract.
ii. Using currency futures.
iii. Not hedging currency risks.

It may be assumed that variation in margin would be settled on the maturity of the futures contract.

Question 11 : Nitrogen Ltd.

Nitrogen Ltd., a UK company is in the process of negotiating an order amounting to €4 million with a large German retailer on 6 months credit. If successful, this will be the first time that Nitrogen Ltd. has exported goods into the highly competitive German market. The following three alternatives are being considered for managing the transaction risk before the order finalized.

i. Invoice the German firm in Sterling using the current exchange rate to calculate the invoice amount.
ii. Alternative of invoicing the German firm in € and using a forward exchange contract to hedge the transaction risk.
iii. Invoice the German first in € and use sufficient 6 months sterling future contracts (to the nearly whole number) to hedge the transaction risk.

Following date is available :

Spot Rate	€1.1750 - 1.1770/£
6 months forward premium	0.60 - 0.55 Euro Cents
6 months further contract is currently trading at	€1.1760/£
6 months future contract size is	£62,500
Spot rate and 6 months future rate	€11785/£

Required :

Calculate to the nearest € the receipt for Nitrogen Ltd, under each of the three proposals. In your opinion, which alternative would you consider to be the most appropriate and the reason therefore.

8. Futures and Beta Management :

Beta management is studied in detail in the chapter of portfolio management. We shall just cover the concept of futures in beta management.

Beta management is all about time management. Beta management can be done through

1. Stock management
2. Futures trading

No of futures contracts to be brought or sold = $\frac{V_p[\beta_t - \beta_p]}{F \times M \times \beta_f}$

V_p = Value of portfolio
β_t = Target Beta → if not given – then zero
β_p = Beta of Portfolio
β_f = Beta of Futures
F = Future PP
M = Multiple (Lot size)

Remember β of nifty futures is 1

Question 12 : RM Ltd.

RM Ltd. has been the following portfolio

Shares	Prop	Holding Beta
R Ltd.	40%	3
M Ltd.	30%	2.5
H Ltd.	20%	1
P Ltd.	10%	0.8

1) Calculate the Beta of the portfolio
2) How many futures contract need to bought or sold to achieve a target β of 0.83 Take futures pp' to be 4000 & lot size 50.
3) How many futures contract should be bought or sold for complete hedge?
4) The fund manager expects market to rise and wants to achieve a β of 4.43. How many futures should be bought or sold?

Question 13 :

Consider a fund manager having a corpus of 500 lakhs as shown below :

	Rs. (in Lakhs)	Beta
Bond	150	0.8
Equity	300	4
Cash	50	0
	500	

Nifty futures trade at 5750 (lot size 50)

Futures of reliance industries trade at 1140 (lot size 250)
The fund manager is expecting a market crash

a. find out the beta of the portfolio and interpret the same
b. how many nifty futures should be bought or sold to achieve a beta of 0.5
c. how many nifty futures should be bought or sold foe complete hedging.
d. how many reliance industries should be bought or sold to achieve a beta of 0.7 (Assume that beta of reliance futures is 1.6)

Question 14 :

You have the following five stocks in your portfolio :

Security	No of Shares	Price / Share	Beta
A	10000	50	1.2
B	5000	20	2.0
C	8000	25	0.7
D	10000	100	1.0
E	500	200	1.3

1. Compute portfolio beta
2. How much additional investment is required in Risk free investment to have beta to 0.8 ?
3. How much additional investment is required in Security B to increase beta to 1.4?
4. If the Nifty future is 2700 points and future have a contract multiplier of 50, how many future contracts to be hedged to obtain the position as in (iii) above ?

3. OPTIONS :

1. Meaning :

Imagine you want to buy a bike, that you saw other day with a trader, who deals in second hand bikes. You ask for price and he tells you that it will cost Rs. 50,000. Now you really don't have Rs 50,000 right now, but also does not want to leave that bike, so ask him to keep it reserve for you for 3 months and that will give you good time to collect the funds. However, he tells you, for him to keep that bike on hold for 3 months, you will have to pay him Rs. 3000 right now (this is not the advance, this is the amount needed to compensate him to hold it for you)

After 3 months

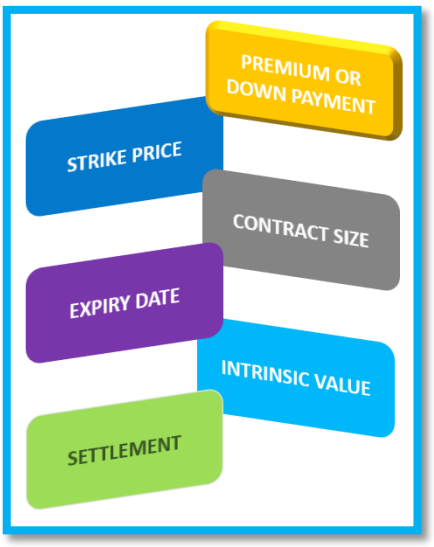
- You knew from somewhere that the bike was one which salman had it 5 years ago. You definitely go and buy it for Rs. 50,000 (Over and above 3,000). This will fetch you good profit.
- You found that bike had some great patches due to wear and tear and now you don't wanna buy it. You simply wont. Just that you should forget that 3000.

So what does option mean ?

An option is a contract that gives the buyer the right, but not the obligation, to buy or sell an underlying asset at a specific price on or before a certain date. An option, just like a

stock or bond, is a security. It is also a binding contract with strictly defined terms and properties.

2. Features of Option Contract :



Premium or down payment : The holder of this type of contract must pay a certain amount called the 'premium' for having the right to exercise an options trade. In case the holder does not exercise it, s/he loses the premium amount. Usually, the premium is deducted from the total payoff, and the investor receives the balance.

Strike price : This refers to the rate at which the owner of the option can buy or sell the underlying security if s/he decides to exercise the contract. The strike price is fixed and does not change during the entire period of the validity of the contract. It is important to remember that the strike price is different from the market price. The latter changes during the life of the contract.

Contract size : The contract size is the deliverable quantity of an underlying asset in an options contract. These quantities are fixed for an asset. If the contract is for 100 shares, then when a holder exercises one option contract, there will be a buying or selling of 100 shares.

Expiration date : Every contract comes with a defined expiry date. This remains unchanged until the validity of the contract. If the option is not exercised within this date, it expires.

Intrinsic value : An intrinsic value is the strike price minus the current price of the underlying security. Money call options have an intrinsic value.

Settlement of an option : There is no buying, selling or exchange of securities when an options contract is written. The contract is settled when the holder exercises his/her right to trade. In case the holder does not exercise his/her right till maturity, the contract will lapse on its own, and no settlement will be required.

No obligation to buy or sell : In case of option contracts, the investor has the option to buy or sell the underlying asset by the expiration date. But he is under no obligation to purchase or sell. If an option holder does not buy or sell, the option lapses.

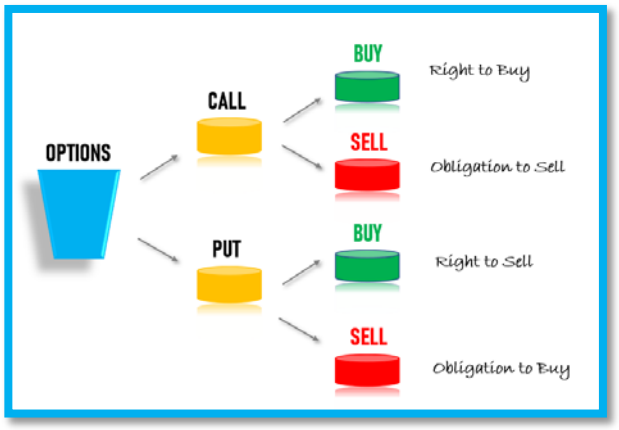
3. Parties to options :

There are two parties to options

1. Buyer – Known as holder
2. Seller – Known as Writer

Buyer (Holder) – The buyer of the call has the right, but not the obligation to buy/ sell the underlying asset, i.e. he has a choice to exercise.
Seller (Writer) – The seller suffers from the obligation, does not a right to buy / sell the underlying asset, i.e. he does not enjoy choice.

4. Types of Options :



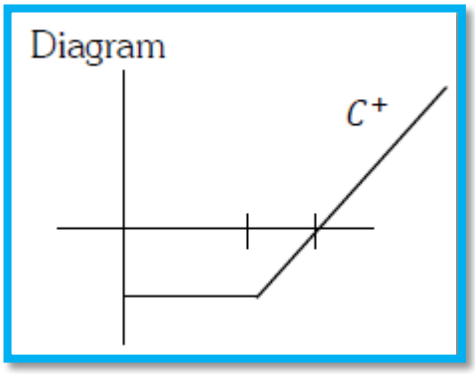
Call options :

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.

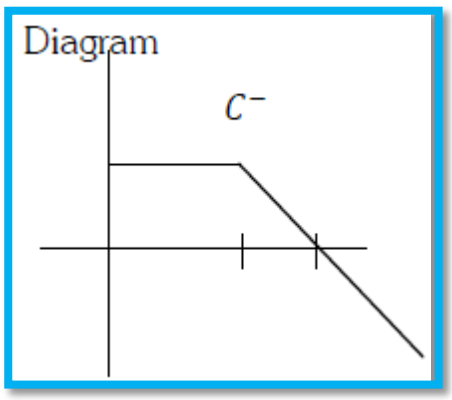
1. C + :

Call option gives the holder the right, not an obligation, to buy an underlying asset at the specified price, for a specified period of time.

1. He is buyer of Call
2. He has right to Buy
3. He has right to enjoy up side
4. Pay off will be positive
5. He has to pay Premium



2. C – :



1. He is Seller of Call
2. He has Obligation to Sell
3. He has Obligation to pay up side
4. Pay off will be Negative
5. He will receive premium

Let us understand how call option works with the help of the following example

RM buys one lot of Reliance Dec 2500 call option and pays the premium of 250 per share. Spot price is 2250 and lot size is 50 shares

Buy 1 lot and pay premium = 50 x 250 = 12,500

Option give him the right to buy share of reliance at 2500 anytime between now and 31st dec

1. If the share price goes above 2500, he will exercise the option. Let say share price is 2900. He will be in gain 400 (2900 – 2500) on each share i.e 400 x 50 = 20,000

Profit
20,000 – 12,500
= 7,500

2. If the share price goes below 2500, he will allow the option to lapse.

Loss
12,500

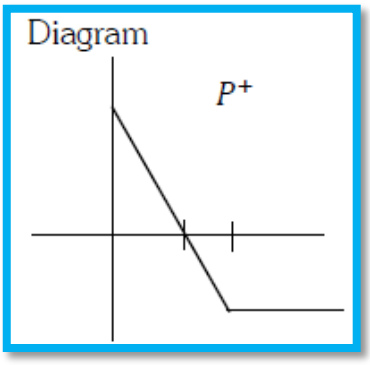
Note : In the above example, we have considered RM as buyer of option. For seller of call option, the cash flows will be exactly opposite.

Put option :

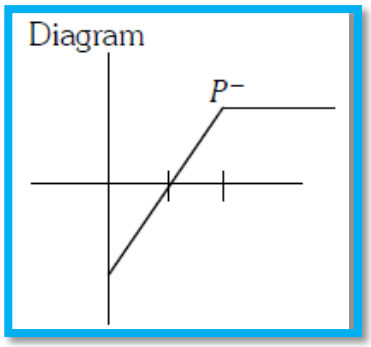
The Put Option gives the holder the right to sell a particular asset at the strike price anytime on or before the expiration date in return for a premium paid up front. Since you can sell a stock at any given point of time, if the spot price of a stock falls during the contract period, the holder is 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.

1. P + :

1. He is buyer of Put
2. He has right to sell
3. He has right to enjoy down side
4. Pay off will be positive
5. He has to pay Premium



2. P – :



1. He is Seller of Put
2. He has Obligation to Buy
3. He has Obligation to pay down side
4. Pay off will be Negative
5. He will receive Premium

Let us understand how call option works with the help of the following example

RM buys one lot of Reliance Dec 2000 Put option and pays the premium of 200 per share. Spot price is 2100 and lot size is 50 shares

Buy 1 lot and pay premium = 50 x 200 = 10,000

Option give him the right to sell share of reliance at 2000 anytime between now and 31st dec

1. If the share price goes below 2000, he will exercise the option. Let say share price is 1700. He will be in gain 300 (2000 – 1700) on each share i.e 300 x 50 = 15,000

Profit 15,000 – 10,000 = 5,000

2. If the share price goes above 2000, he will allow the option to lapse.

Loss 10,000

Summary :

C+	C -	P +	P -
Buyer of Call	Seller of Call	Buyer of Put	Seller of Put
Right to Buy	Obligation to Sell	Right to Sell	Obligation to Buy
Right to Enjoy Upside	Obligation to Pay upside	Right to enjoy downside	Obligation to Pay downside
Premium outflow	Premium Inflow	Premium outflow	Premium Inflow
Pay off Inflow	Pay off Outflow	Pay off Inflow	Pay off Outflow

5. Moneyness of Option :

There are 3 possibilities

1. **In the money :** An option, Call or Put is said to be in the money, when it can be exercised gainfully.
2. **At the money :** An option, Call or Put is said to be At the money, when the strike price of the option is equal to its Exercise price. In short he does not stand to gain or loss.

3. **Out of the money :** An option, Call or Put is said to be Out of Money, when the investor stand to loss his premium. Option will lapse at this price.

6. Option Trading :

Question 15 : Mr. Tony

Mr. Tony has purchased a 3-month call option of King Ltd.' s equity share with an exercise price of Euro 51. Determine the value of Call option at expiration if the share price at expiration turns out to be either 47 or 54 Draw a diagram to illustrate your answer. Premium Paid = Euro 1

Question 16 : Mr. X

Mr. X purchased a 3-month call option on equity share of Prerna Ltd. from Mr. Y at a strike price of Rs.160. Call Premium Rs.5. Current price Rs.155. Explain profit/loss (also called 'pay off) to X as well to Y, if prices at expiration are Rs.140, Rs.150, Rs.160, Rs.170 or Rs.180.

Question 17 :

A call and put exist on the same stock each of which is exercisable at Rs.60. They now trade for :

Market price of stock or stock index	Rs.55
Market price of call	Rs.9
Market price of put	Rs.1

Calculate the expiration date cash flow, investment value, and net profit from:

i. Buy 1.0 call
ii. Write 1.0 call
iii. Buy 1.0 put
iv. Write 1.0 put

For expiration date stock prices of Rs.50, Rs.55, Rs.60, Rs.65, Rs.70.

7. Option Strategies :

Apart from buying and selling options (Calls and Puts) one can also design strategies

1. Combination strategy :

Depending upon whether you choose one strike price or two strike price, we can have the following types of strategies

1. STRADDLE → 1 strike price → 1Put & 1 Call
2. STRIP → 1 strike price → 2Put & 1 Call

3. STRAP → 1 strike price → 1Put & 2Call
4. STRANGLE → 2 strike price → call at a higher E & put at a lower E.

Note : Depending upon our belief we can design a long and short strategy.

- If we have a volatile belief, we should go long. This will create V as diagram
- If we have non volatile belief, we should go short. The diagram will be inverted Λ.

Question 18 : VCC Ltd.

The equity share of VCC Ltd. is quoted at Rs. 210. A 3-month call option is available at a premium of Rs.6 per share and a 3-month put option is available at a premium of Rs. 5 per share. Ascertain the net payoffs to the option holder of a call option and a put option.

i) The strike price in both cases in Rs. 220; and

iI) The share price on the exercise day is Rs. 200,210,220,230,240.

Also indicate the price range at which the call and the put options may be gainfully exercised.

Question 19 : XYZ

XYZ established the following spread on the Delta Corporation's stock :

1) Purchased one 3-month call option for 100 Nos. with a premium of Rs.30 and an exercise price of Rs.550.
2) Purchased one 3-month put option for 100 Nos. with a premium of Rs.5 and an exercise price of Rs.450.

The current price of Delta Corporation's stock is Rs.500. Determine XYZ profit or loss if the price of Delta Corporation :

a) Stays at Rs.500 after 3 months.
b) Falls to Rs.350 after 3 months.
c) Rises to Rs.600.

2. Spread strategy :

Spread strategy involves using simultaneous calls or puts at different strike price. It means we shall use only calls or only put and not both together.

The spread strategy can be designed depending upon the strike prices.

- Two Strike Price – Bull and Bear Spread
- 3 Strike Price – Butterfly Spread

Bull / Bear Spread – It Uses 2 Strike Price

To Design Bull / Bear Spread

Bull Spread = Long at lower strike price and short on higher strike price i.e. [+, –]

Bear Spread = Short at lower strike price and long at higher strike price i.e. [–, +]

Question 20 :

Consider 3 month options on NIFTY

Strike Price	Put Premium	Call Premium
5400	80	240
5700	210	100

1. Design & explain bullish put spread
2. Design & explain bearish call spread

Question 21 :

Consider the following one month option on Nifty

Strike Price	Put Premium	Call Premium
5400	350	160
5600	252	237
5800	180	340

(i) Volatile butterfly put spread

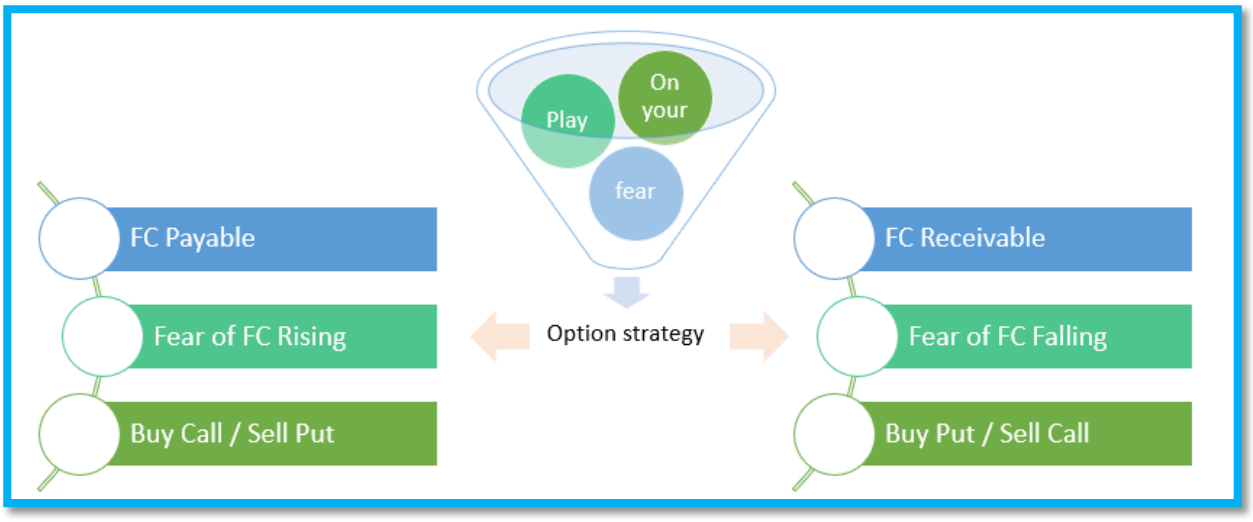
(ii) Non Volatile butterfly call spread

(iii) Show the profit diagram, break even points, max profits and max loss. Also show the profit profile at important prices.

8. Options Hedge :

Firstly we should remember that option is not a perfect hedge. We don't get one direct figure of receivable or payable.

To Design Hedge using option – we should remember the following slogan



Steps to Present the Answer

Question 22 : An Indian firm

An Indian firm has Dollar 2 lacs payable after 3 Months

Exchange Rate Forecasts

Spot Rate	Prob
42	0.2
46	0.3
50	0.4
58	0.1

Call option on $ at a Strike Price of 45 is available for a premium of 1.3 (Rs./$) Put Option on $ at a Strike Price of 44 is trading at a premium of Rs.0.8 /$ Evaluate the Call Cover and Put Cover.

Question 23 : XYZ Ltd.

XYZ Ltd. a US firm will need 3,00,000 in 180 days. In this connection, the following information is available:

Sport rate 1 £ = $ 2.00

180 days forward rate of £ as of today = $ 1.96 Interest rates are as follows :

	UK	US
180 days deposit rate	4.50%	5%
180 days borrowing rate	5%	5.50%

A call option of £ that expires in 180 days has an exercise price of $1.97 and a premium of $0.04. XYZ Ltd. has forecast the spot rates 180 days hence as below :

Future Rate	Probability
$1.91	25%
$1.95	60%
$2.05	15%

Which of the following strategies would be most preferable to XYZ Ltd.?

(i) a forward contract (ii) a money market hedge

(iii) an option contract (iv) no hedging

Show calculations in each case.

Question 24 : XYZ

XYZ, an Indian firm, will need to pay Japanese Yen 5,00,000 on 30th June. In order to hedge the risk involved in foreign currency transaction, the firm is considering twp alternative methods i.e forward contract cover and currency option contract.

On 1st April, following quotations (JPY/INR) are made available :

Spot	3 month forward
1.9516/1.9711	1.9726/1.9923

The prices for forex currency option on purchase are as follows :

Strike Price	JY 2.125
Call Option (June)	JY 0.047
Put Option (June)	JY 0.098

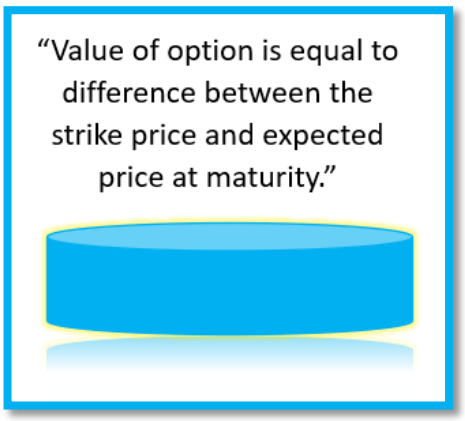
For excess or balance of JY Covered, the firm would use forward rate as future spot rate. You are required to recommend cheaper hedging alternative for XYZ.

9. Option Valuations :

Options valuations are very similar, conceptually, to valuation of futures, forward rate etc. IT is based on the principal of Non-Arbitrage.

Example :
Consider, reliance is currently trading at Rs.1,400. You buy a call option on reliance at strike price of 1400 @ 50. That means the premium on call option is 50. The value of call is 50.

Why would you pay Rs 50 for such an option?
What's your expectation regarding future price of reliance?
Based on the principal of non arbitrage – we expect the share price of reliance at expiry to be 1450.



Determinants of option Valuation :

1. **Current Value of the Underlying Asset :** Options are assets that derive value from an underlying asset. Consequently, changes in the value of the underlying asset affect the value of the options on that asset. Since calls provide the right to buy the underlying asset at a fixed price, an increase in the value of the asset will increase the value of the calls. Puts, on the other hand, become less valuable as the value of the asset increase.

2. **Variance in Value of the Underlying Asset :** The buyer of an option acquires the right to buy or sell the underlying asset at a fixed price. The higher the variance in the value of the underlying asset, the greater will the value of the option be. This is true for both calls and puts. While it may seem counter-intuitive that an increase in a risk measure (variance) should increase value, options are different from other securities since buyers of options can never lose more than the price they pay for them; in fact, they have the potential to earn significant returns from large price movements

3. **Dividends Paid on the Underlying Asset :** The value of the underlying asset can be expected to decrease if dividend payments are made on the asset during the life of the option. Consequently, the value of a call on the asset is a decreasing function of the size of expected dividend payments, and the value of a put is an increasing function of expected dividend payments. There is a more intuitive way of thinking about dividend payments, for call options. It is a cost of delaying exercise on in-the-money options. To see why, consider an option on a traded stock. Once a call option

is in the money, i.e., the holder of the option will make a gross payoff by exercising the option, exercising the call option will provide the holder with the stock and entitle him or her to the dividends on the stock in subsequent periods. Failing to exercise the option will mean that these dividends are foregone.

4. **Strike Price of Option:** A key characteristic used to describe an option is the strike price. In the case of calls, where the holder acquires the right to buy at a fixed price, the value of the call will decline as the strike price increases. In the case of puts, where the holder has the right to sell at a fixed price, the value will increase as the strike price increases.

5. **Time To Expiration On Option:** Both calls and puts become more valuable as the time to expiration increases. This is because the longer time to expiration provides more time for the value of the underlying asset to move, increasing the value of both types of options. Additionally, in the case of a call, where the buyer has to pay a fixed price at expiration, the present value of this fixed price decreases as the life of the option increases, increasing the value of the call.

6. **Riskless Interest Rate Corresponding to Life Of Option:** Since the buyer of an option pays the price of the option up front, an opportunity cost is involved. This cost will depend upon the level of interest rates and the time to expiration on the option. The riskless interest rate also enters into the valuation of options when the present value of the exercise price is calculated, since the exercise price does not have to be paid (received) until expiration on calls (puts). Increases in the interest rate will increase the value of calls and reduce the value of puts.

Summary :

Factor	Call Value	Put Value
Increase in underlying asset's value	Increases	Decreases
Increase in strike price	Decreases	Increases
Increase in variance of underlying asset	Increases	Decreases
Increase in time to expiration	Increases	Decreases
Increase in interest rates	Increases	Decreases
Increase in dividends paid	Decreases	Increases

Valuation Model :

There are various models on option valuation, which can be classified in 2

1. Traditional Approach
2. Modern Approach

Note : All the option valuation models will give us the value of call. We should use Put-Call parity theory to find the value if put after finding the value of call.

Option Valuation models :

Option Valuation Model	Portfolio Replication Model
	Put call Parity Theory (To find the value of put)
	Risk Neutral Model
	Binomial Model
	Black and Scholes Model (Modern Approach)

1. Portfolio Replication Model :

"So = N x C + PV Of Lower of EP or LP"

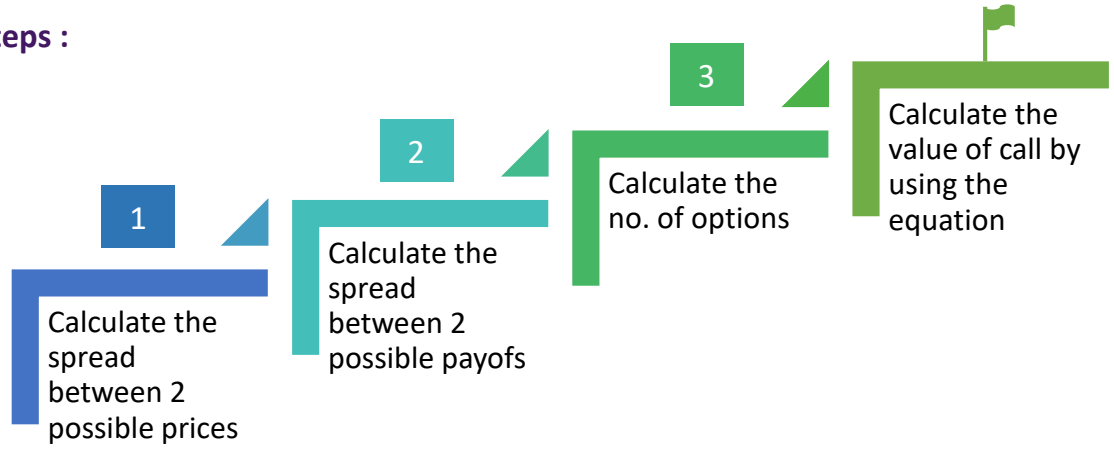
Where

SO	• Current Price
N	• Number of Options
C	• Value of Call
PV	• Present Value
EP	• Exercise Price
LP	• Lower Possible Price

Assumption :

1. The model creates replica of stock portfolio through options (Call options)
2. The stock portfolio contains single stock, the stock whose call value is to be calculated.
3. The option portfolio contains any No of options to match the stock portfolio.
4. Matching the stock portfolio with the option portfolio we shall calculate the value of call.

Steps :



Question 25 :
A stock with current price of 400, Strike price 440 (1 year), Rf = 10%. Probable MP at the end of the year is 360 / 480.

2. Put – Call Parity theory

This model is used to calculate the value of Put.

Equation :

> **"Value of Put = Value of call + PV of exercise price – Current Price"**

Explanation :

An investor will always love to gain & equally would want to protect himself against any possible loss. This can be done through
Strategy 1 = Buy Stock + Buy Put
Strategy 2 = Buy call + Invest in PV of RF

Question 26 :
CP = 250, Rf 10%
Required : Frame the equation for put call parity theory

3. This model is based on the assumption that

> **"Rf = Expected rate of return from the share"**

Question 27 :

A stock with current price of 400, Strike price 440 (1 year), Rf = 10%. Probable MP at the end of the year is 360 / 480.

4. Binomial Model :

Binomial model is mathematical expression of Risk Neutral Model.

$$Vc = \frac{Cu * P + Cd * (1-P)}{Rf} \text{ (PV of possible PO)}$$

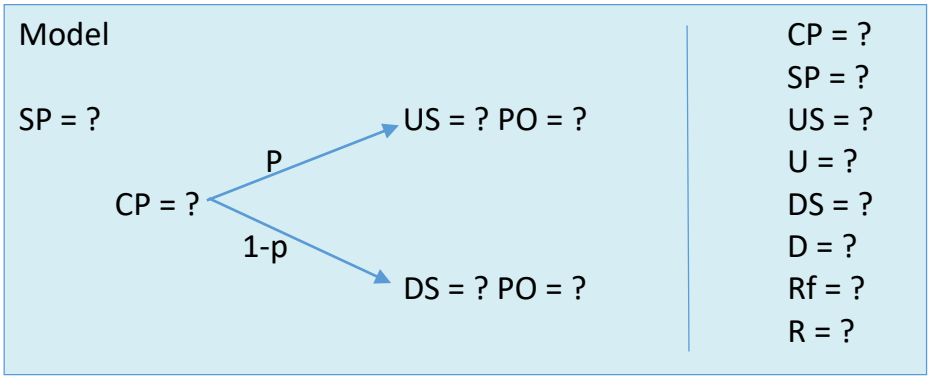
Where,

- **Vc** • Value of Call
- **Cu** • Pay off on the upside
- **P** • Probability
- **Cd** • Pay off on the downside
- **Rf** • Risk Free Rate

$$P = \frac{R-d}{U-d}$$

Where,

- **R** • Risk Free Rate
- **D** • 1 - return on the downside (EP/CP)
- **U** • 1 + return on the upside (EP/CP)



Question 28 :
A stock with current price of 400, Strike price 440 (1 year), Rf = 10%. Probable MP at the end of the year is 360 / 480.

Question 29 :
Current price Rs.100 Strike price of a 3- month call option Rs.95. After three months, the price may be Rs.150 or Rs.70. Risk free rate : 12% p. a (not compounded continuously). option writer uses borrowed funds. Option Premium by Binomial Model?

Question 30 :
Current share price Rs. 1,000. Risk tree rate of return 20 % p. a (not compounded continuously). Find the value of a 3 months call option with strike price of Rs. 1000 using Binomial Model assuming that at expiration date the spot price will be either Rs. 1150 or Rs. 900.

Question 31 :
The stock of a company is currently quoted in the market at Rs.150. The price of the stock is expected to go up or down by 10% in next one year and by 15% in the second year. The risk-free interest rate in the economy is 6%.
Required :
Using two-step Binomial Model, find out the price of a 2-year American put option on the company's stock with strike price of Rs.175.

Question 32 : PQR Ltd.
Equity share of PQR Ltd. is presently quoted at Rs 320. The Market Price of the share after 6 months has the following probability distribution:

Market Price	Rs 180	260	280	320	400
Probability	0.1	0.2	0.5	0.1	0.1

A put option with a strike price of Rs 300 can be written.

You are required to find out expected value of option at maturity (i.e. 6 months)

5. Black and Scholes Model :

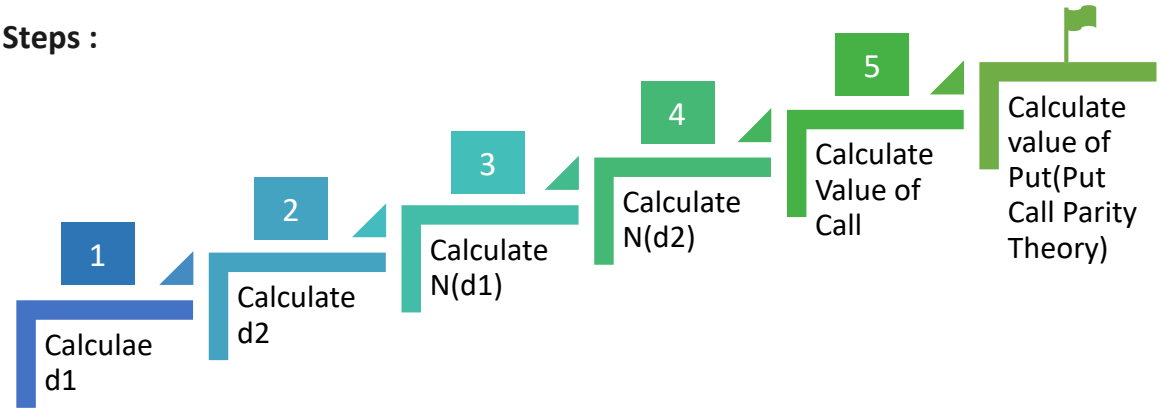
Black-Scholes or Black–Scholes–Merton model is a mathematical model used to determine the fair price or theoretical value for a call or a put option

It is based on six variables :	1. Volatility,
	2. Type of Option,
	3. Underlying Stock Price,
	4. Time,
	5. Strike Price,
	6. and Risk-free Rate.

Formulas :

1.	$Vc = S \times N(d1) - \frac{E}{e^{rt}} \times N(d2)$	Where, Vc = Value of Cell Vp = Value of Put S = Current Price E = Exercise Price Ln = Natural Log t = time (in years) r = Rf (continuous compounding σ = Standard deviation
2.	$Vp = Vc + \frac{E}{e^{rt}} - S$	
3.	$d1 = \frac{Ln\left(\frac{S}{E}\right) + \left[r + \frac{\sigma^2}{2}\right]t}{\sigma\sqrt{t}}$	
4.	$d2 = d1 - \sigma\sqrt{t}$	

Steps :



Question 33 :

S = 415 , E = 400. Calculate $Ln\left(\frac{S}{E}\right)$.

Question 34 :

S = 415, E = 400. Calculate 3 month call option when Rf = 5%. Standard deviation is 0.22 or 22%. Calculate d1 and d2.

Question 35 :

Calculate N(d1) and N(d2) for the above d1 and d2.

Question 36 :

S = 415, E = 400. Calculate 3 month call ooption when rf = 5%. Standard deviation is 0.22 or 22%. Calculate Value of Call.

Question 37 : X Company's

Following information is available for X Company's shares and Call option:

Current share price Rs.185

Option exercise price Rs.170

Risk free interest rate 7%

Time of the expiry of option 3 years

Standard deviation 0.18

Calculate the value of option using Black-Scholes formula.

4. SWAPS:

Swaps Means Exchange. A swap is a derivative contract through which two parties exchange financial instruments. These instruments can be almost anything, but most swaps involve cash flows based on a notional principal amount that both parties agree to. Usually, the principal does not change hands. Each cash flow comprises one leg of the swap. One cash flow is generally fixed, while the other is variable, that is, based on a a benchmark interest rate, floating currency exchange rate or index price

INTEREST SWAPS :

The most common kind of swap is an interest rate swap. Swaps do not trade on exchanges, and retail investors do not generally engage in swaps. Rather, swaps are over-the-counter contracts between businesses or financial institutions.

1. **Plain Vanilla Swap :**

It's a fixed v/s floating swap in which one party agrees to pay fixed rate in return of floating. The interest are based on notional amount. The swap is decided for a fixed period and can have periodic set offs. It means that there are multiple bets inside one bet.

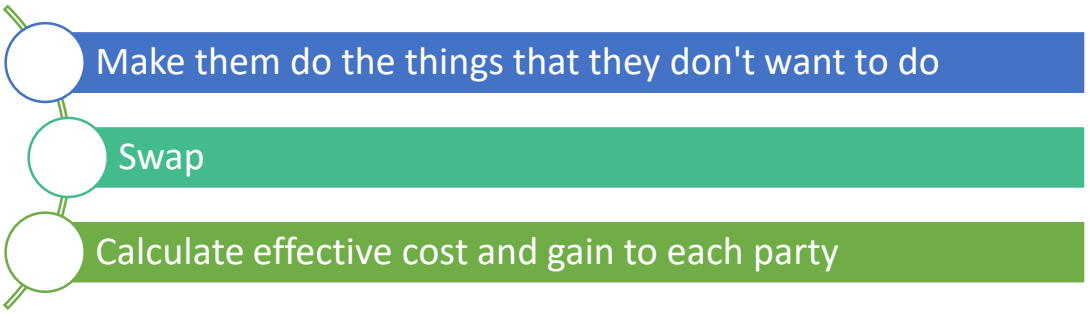
2. **Overnight Index Swap (OIS) :**

Its extremely short term plain vanilla swap. Its like for few days. The point to be remembered is that the floating is compounded daily, except on Sunday.

3. **Two Party Swap :**

Based on theory of comparative Advantage Under this swap, two parties agree to swap interest rate liabilities among one another for mutual benefits. Theory of comparative advantage means one party has advantage in fixed rate market while the other has advantage in the floating rate. The swap happens because both get some advantage which otherwise was not possible.

Rules to create a swap



Note : If the effective or gain is given to use then we should do step 1, then go to step 3 and then complete step 2

4. **Two Party Swap – Based on theory of Absolute Advantage :**

Theory of Absolute advantage means one party has absolute advantage over both the fixed and the floating market. One wonder then why should he swap? This possibly explains why trade exist ? If one country is good in doing everything in world, then why does other country exist or why does trade happens. This is probably because they should employ assets in those areas in which are far better.

Note : In swap based on absolute advantage, we the question does not specify the gain or effective cost to other party, then we should assume that the gain is distributed equally.

5. Swap Quotation :

When the customer goes to bank to swap his interest rate liability, the quotation given by bank are standard, very similar to Forex rates, like the buy rate and sell rate. The swap quotes fixed v/s floating swap rates which is best understood by the following example.

6. CAPS / FLOOR / COLLAR :

- An interest rate cap is a type of interest rate derivative in which the buyer receives payments at the end of each period in which the interest rate exceeds the agreed strike price. An example of a cap would be an agreement to receive a payment for each month the LIBOR rate exceeds 2.5%.
- Similarly an interest rate floor is a derivative contract in which the buyer receives payments at the end of each period in which the interest rate is below the agreed strike price.
- Caps and floors can be used to hedge against interest rate fluctuations. For example, a borrower who is paying the LIBOR rate on a loan can protect himself against a rise in rates by buying a cap at 2.5%. If the interest rate exceeds 2.5% in a given period the payment received from the derivative can be used to help make the interest payment for that period, thus the interest payments are effectively "capped" at 2.5% from the borrowers' point of view.

An interest rate collar is the simultaneous purchase of an interest rate cap and sale of an interest rate floor on the same index for the same maturity and notional principal amount.

- The cap rate is set above the floor rate.
- The objective of the buyer of a collar is to protect against rising interest rates (while agreeing to give up some of the benefit from lower interest rates).
- The purchase of the cap protects against rising rates while the sale of the floor generates premium income.
- A collar creates a band within which the buyer's effective interest rate fluctuates

7. Currency Swaps :

In Currency swap, two parties agrees to pay each other's debt obligation denominated in different currencies. A currency swap involves

i) An exchange of principal amounts today
ii) An exchange of interest payments during the currency of loan
iii) a re-exchange of principal amounts at the time of maturity

Consider Spot Rate today $/£ 1.5. A US company raises a loan of £ 1,00,000 from some bank in Britain for three years at interest rate of 12 %. This means US company is suppose to pay £ 12,000 as interest at the end every year and has to repay £ 1,00,000 at the end of 3 years. On the other hand UK

Question 38 :

On 1st Jan 2010, A and B enter into financial swaps

Notional Principle - $ 500 mn
Term of the swap - 1 year
Payment frequency - quarterly.
Fixed Leg - 10%
Floating Leg - 3 month LIBOR.

B is the Fixed rate payer.

Calculate net cash flows at the end of each quarter if the 3 month LIBOR at the beginning of each quarter happens to be

Date	LIBOR
1/1/10	11%
1/4/10	8%
1/7/10	7%
1/10/10	13%

Question 39 : Derivative Bank

Derivative Bank entered into a plain vanilla swap through on OIS (Overnight index Swap) on a principal of Rs.10 crores and agreed to receive MIBOR overnight floating rate for a fixed payment on the principal. The swap was entered into on Monday, 2nd August, 2010 and was to commence on 3rd August, 2010 and run for a period of 7 days.

Respective MIBOR rates for Tuesday to Monday were –

Tuesday 8%, Wednesday 9%, Thursday 10%, Friday 7%, Saturday 9%, Monday 10%.

If Derivative Bank received? 317 net on settlement, calculate. Fixed rate and interest under both legs.

Notes :

Sunday is Holiday. Work in rounded rupees and avoid decimal working.

Question 40 : X Ltd.

On 20th July, Thursday, X Ltd. entered into a 6 day OIS with a bank for a notional principal of Rs.800 lakhs. The fixed rate of the swap was 11 %. The following table shows the Mibor for each day :

Date	Mibor
20/7	12%
11/7	11.50%
22/7	10%
23/7 (sun)	N.A.
24/7	13%
25/7	12.50%

Compute the net payment at the end of the swap. (X Ltd. is the fixed rate receiver)

Question 41 : R and M

Consider 2 firms R and M who wish to borrow funds from the market.

Firm	Fixed Rate	Floating Rate	Preference
R	8%	L + 3	Floating
M	11%	L + 1	Fixed

1. Design the swap to enable each firm achieve its preferred from of funding at a cheaper cost.
2. What if, in the swap M pays to R 7%, while R will pay to M L + 0.5%, show the swap and find out the effective cost of each party.
3. Design the swap such that the effective cost to R comes to L.
4. Design the swap such that the overall gain is equally shared between R and M
5. Design the swap with bank acting as the intermediary, such that the overall swap gain is shared between R, M and Bank in the ratio of 1 : 1 : 2.

Question 42 : White Ltd. and Black Ltd.

White Ltd. and Black Ltd. both wish to borrow $100 million for five years and have been offered the following rates :

Firm	Lending term available		Maturity
	Fixed interest	Floating interest	
White Ltd.	5%	6m LIBOR + 0.25%	5 years
Black Ltd.	4%	6m LIBOR + 0.75%	5 years

White Ltd. requires a fixed rate loan while Black Ltd. requires a floating rate loan.

You are required to

1. Design a swap that will net a bank, acting as an intermediary 0.20 percent per annum and that will appear equally attractive to both companies.
2. Explain the risks various parties face in this swap

Question 43 : R and M

Consider 2 firms R and M who wish to borrow funds from the market.

Firm	Fixed Rate	Floating Rate	Preference
R	10%	L + 0.25	Floating
M	13%	L + 1.5	Fixed

Design the swap to enable each firm achieve its preferred from of funding at a cheaper cost.

Question 44 : APCO Ltd. and PATCO Ltd.

The borrowing requirements of two companies APCO Ltd. and PATCO Ltd. as well as the lending terms available to them in different markets are given as under:

Firm	Objective	Lending term available Fixed interest	Floating interest	Maturity
APCO	US$ 100 mln. affixed rate	9%	6m LIBOR + 0.75%	5 years
PATCO	US$ 100 mln. at floating rate	8%	6m LIBOR + 0.25%	5 years

You are required to

1. Explain how to go about a swap in order to reduce their borrowing cost. Show the same with a diagram.
2. What are the risks involved in this swap?

Question 45 :

Suppose a dealer quotes 'All-in-cost' for a generic swap at 8% against six month LIBOR flat. If the notional principal amount of swap is Rs.5,00,000,

(i) Calculate semi-annual fixed payment.

(ii) Find the first floating rate payment for (i) above if the six month period from the effective date of swap to the settlement date comprises 181 days and that the corresponding LIBOR was 6% on the effective date of swap.

(iii) In (ii) above, if the settlement is on 'Net' basis, how much the fixed rate payer would pay to the floating rate payer?

Generic swap is based on 30/360 days basis.

Question 46 : Drilldip Inc.

Drilldip Inc. a US based company has a won a contract in India for drilling oil field. The project will require an initial investment of Rs 500 crore. The oil field along with equipments will be sold to Indian Government for Rs 740 crore in one year time. Since the Indian Government will pay for the amount in Indian Rupee (Rs) the company is worried about exposure due exchange rate volatility.

You are required to:

(a) Construct a swap that will help the Drilldip to reduce the exchange rate risk.

(b) Assuming that Indian Government offers a swap at spot rate which is 1US$ = Rs 50 in one year, then should the company should opt for this option or should it just do

nothing. The spot rate after one year is expected to be 1US$ = Rs 54. Further you may also assume that the Drilldip can also take a US$ loan at 8% p.a.

Question 47 :

Suppose that a 1-year cap has a cap rate of 8% and a notional amount of Rs 100 crore. The frequency of settlement is quarterly and the reference rate is 3-month MIBOR. Assume that 3-month MIBOR for the next four quarters is as shown below.

Quarters	3 Month Mibor (%)
1	8.70
2	8.00
3	7.80
4	8.20

Question 48 :

Suppose that a 1-year floor has a floor rate of 4% and a notional amount of Rs 200 crore. The frequency of settlement is quarterly and the reference rate is 3-month MIBOR. Assume that 3-month MIBOR for the next four quarters is as shown below.

Quarters	3 Month Mibor (%)
1	4.70
2	4.40
3	3.80
4	3.40

Question 49 : X Ltd.

(a) X Ltd. wants to borrow fixed rate funds for 5 years. It can do so at an interest rate of 13% p.a. Also floating rate funds are available at a spread of 150 basis points over LIBOR. It approaches a swap bank which quotes 5-year fixed to floating swap at 20/30 basis points over 5-year treasuries vs. LIBOR. How should the firm reduce the cost of its fixed rate funding given that 5- year treasuries are yielding 10%.

(b) Another firm Y Ltd. had borrowed 7-year fixed rate funds 2 years ago at 14%. It is now expecting interest rates to fall and therefore wants to convert its fixed rate liability into floating rate liability. Explain how Y Ltd. can achieve this objective.

Question 50 : X Ltd.

X Ltd. has already borrowed 7 yr. fixed rate funds at 14% 2 years ago. It is now expecting int. rates to fall. To capitalize on the same, it decides to convert its fixed rate liability into floating rate liabilities through a swap. Banks are quoting fixed to floating interest rate swap at 40/70 basis points over 5 year treasuries v/s LIBOR.

(a) Explain how X Ltd. can accomplish its objective. Compute its annual interest rate if libor in the 5 yr. period happens to be 95%, 10.5%, 11 %, 12% & 10%.

(b) On a post-facto basis, do you think it was prudent for X Ltd. to have converted the nature of funding? Treasuries are yielding 9%.

Question 51 : X Ltd.

3 years ago X Ltd had borrowed 7 year floating rate funds at L+1. However it now expects interest rates to rise and would therefore like to convert into fixed rate funding. 4 year fixed floating swaps are quoted at a spread of 50/70 basis pts over 4yr treasury v/s libor.

1. Explain how X ltd can achieve its objective.
2. If labor at the beginning of each year in the subsequent 4yr period happens to be 7%, 6%, 9% and 10%, was it prudent for X ltd to convert its nature of funding.

CHP - 11

Portfolio Management

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CHAPTER DESIGN

1. INTRODUCTION
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4. PORTFOLIO RETURN, STANDARD DEVIATION AND BETA
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1. INTRODUCTION :

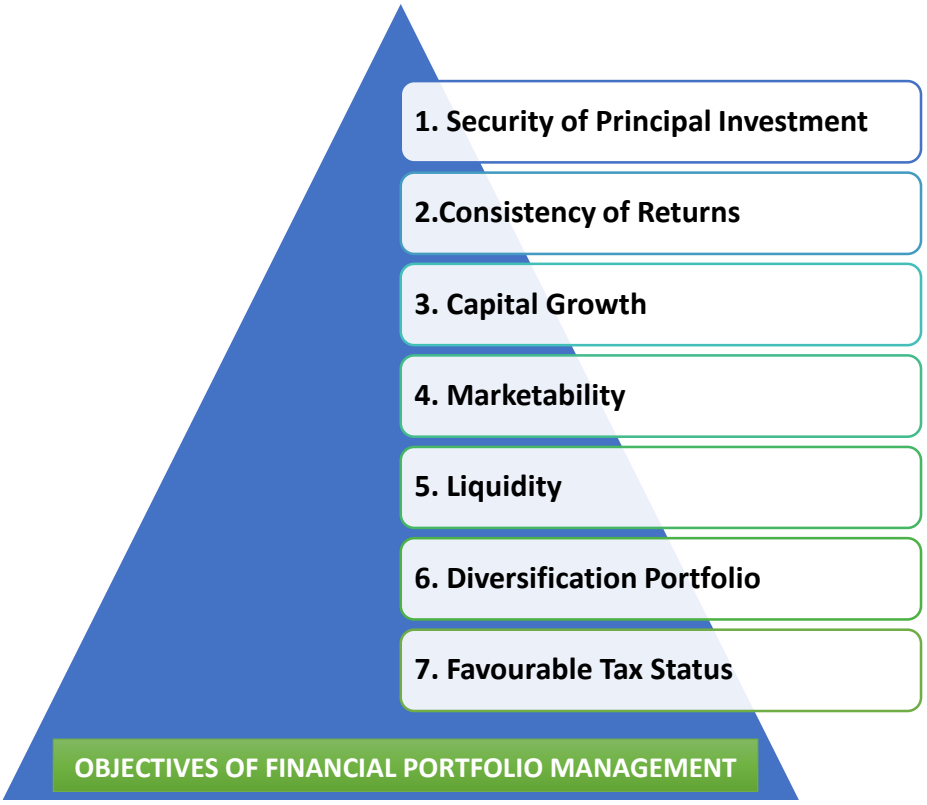
We have done chapters like Equity analysis and Bond Analysis. They helped us to understand how we should calculate the values of Equity shares and Bonds which helps us in our investments choices. Everyone wants to invest funds and earn huge profits. But such investments are not risk free.

Investment in the securities such as bonds, debentures and shares etc. is lucrative as well as exciting for the investors. Though investment in these securities may be rewarding, it is also fraught with risk. Therefore, investment in these securities requires a good amount of scientific and analytical skill.

As per the famous principle of not putting all eggs in the same basket, an investor never invests his entire investable funds in one security. He invests in a well diversified portfolio of a number of securities which will optimize the overall risk-return profile. Investment in a portfolio can reduce risk without diluting the returns. An investor, who is expert in portfolio analysis, may be able to generate trading profits on a sustained basis.

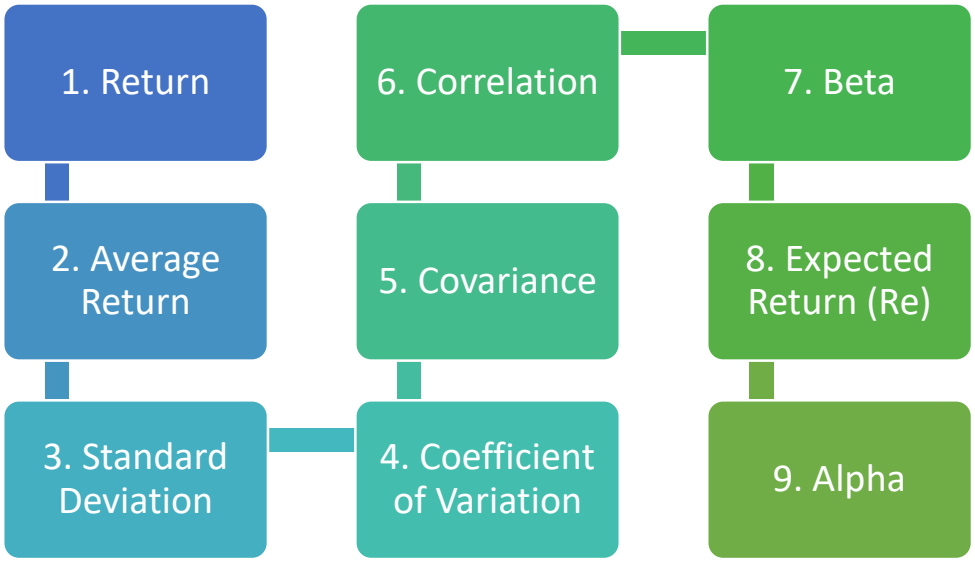
Every investment is characterized by return and risk. The concept of risk is intuitively understood by investors. In general, it refers to the possibility of the rate of return from a security or a portfolio of securities deviating from the corresponding expected/average rate and can be measured by the standard deviation/variance of the rate of return.

2. OBJECTIVES OF PORTFOLIO MANAGEMENT :



3. BASICS :

Before we go ahead to learn detailed version of portfolio management, lets clear some basics on securities



1. Return :

Return comprises the income, which is in form of dividends or interest, and the capital gain (loss). It is expressed in percentage form and it is calculated as follows :

$$\therefore R = \left(\frac{D_1 + P_1}{P_0}\right) - 1$$

Question 1 : RM Ltd.

RM Ltd. has been showing a consistent growth in the share price as well as dividends in the recent past. Such growth rate is about 10% per annum. Price of this share prevailing today is Rs.140 per share. The company has declared a dividend of Rs.21 in the current year. You are required to determine the expected rate of return for the shareholder at present.

2. Average Return (Mean) :

It simply means average of returns for a particular period.

$$\therefore \overline{X} = \frac{\sum x}{n} \text{ or } \sum x.p$$

Question 2 :

Determine the average rate of return based on the following data:

Year	Expected Dividend (Rs.)	Expected Share Price (Rs.)
1	20	216
2	22	250
3	24	256
4	25	240
5	30	260

Presently the price of the share is Rs.200.

Question 3 :

The rates of returns in past 20 years have been observed as follows:

Year	Returns	Year	Returns
1	16%	11	16%

2	18%	12	12%
3	15%	13	18%
4	16%	14	21%
5	15%	15	15%
6	16%	16	16%
7	21%	17	18%
8	18%	18	21%
9	15%	19	21%
10	12%	20	18%

Determine Average rate of Return over the past 20 years.

Question 4 :

A stock costing Rs.120 pays no dividends. The possible prices that the stock might sell for at the end of the year with the respective probabilities are:

Price	Probabilities
115	0.1
120	0.1
125	0.2
130	0.3
135	0.2
140	0.1

Required:

Calculate the expected return.

3. Risk :

Measurement of risk with respect to, investments is very important. All investments are not free from risk. Therefore, measuring the degree of risk involved is required before an investment decision is taken.

4. Standard Deviation :

Standard Deviation is one of the most popular and effective tool for measuring risk. Standard Deviation is a measure of absolute risk. The deviation in the returns can be considered as a basic cause of risk.

$$\text{Variance} = \sigma^2 = \frac{\sum d^2}{n} \text{ or } \sum d^2 . p$$

$$\text{SD} = \sigma = \sqrt{\sigma 2}$$

Question 5 :

Calculate Standard Deviation from the following Information:

Year	
1	16
2	18
3	15
4	16
5	15
6	16
7	21
8	18
9	15
10	12

Question 6 :

A stock costing Rs.120 pays no dividends. The possible prices that the stock might sell for at the end of the year with the respective probabilities are:

Price	Probabilities
115	0.1
120	0.1
125	0.2
130	0.3
135	0.2
140	0.1

Required :

1. Calculate the expected return.
2. Calculate the standard deviation of returns.

5. Co-efficient of Variation (CV) :

Co-efficient of Variation is a measure of relative risk, because it measures risk in terms of each percentage of returns.

$$CV = \frac{Standard\ Deviation}{Mean} = \frac{\sigma}{Mean}$$

The relative risk measure i.e., Co-efficient of Variation shall indicate the degree of risk for each percentage of return.

Question 7 :

Consider the following cases:

CASE 1 :

Particulars	Securities	
	X	Y
Rate of Return	15%	15%
Standard Deviation	2%	3%

CASE 2 :

Particulars	Securities	
	X	Y
Rate of Return	19%	15%
Standard Deviation	3%	3%

CASE 3 :

Particulars	Securities	
	X	Y
Rate of Return	20%	15%
Standard Deviation	2%	3%

CASE 4 :

Particulars	Securities	
	X	Y
Rate of Return	18%	24%
Standard Deviation	1.6%	3%

You are required to analyze the above four cases and observe whether standard deviation will be effective tool for decision on selection of one out of the two securities X and Y.

6. Covariance :

Covariance is a measure of how much two random variables change together. If the greater values of one variable mainly correspond with the greater values of the other variable, and the same holds for the smaller values, i.e., the variables tend to show similar behavior, the covariance is positive. In the opposite case, when the greater values of one variable mainly correspond to the smaller values of the other, i.e., the variables tend to show opposite behavior, the covariance is negative.

$$COVxy = \frac{\sum dxdy}{n} = or \sum dxdy.p$$

7. Correlation :

Correlation is another way to determine how two variables are related. In addition to telling you whether variables are positively or inversely related, correlation also tells you the degree to which the variables tend to move together.

$$\text{CORxy} = \frac{COVxy}{\sigma x \sigma y}$$

Question 8 :

The historical rates of return of two securities over the past ten years are given. Calculate the covariance and the correlation coefficient of the two securities.

Years	1	2	3	4	5	6	7	8	9	10
Security 1	12	8	7	14	16	15	18	20	16	22
Security 2	20	22	24	18	15	20	24	25	22	20

8. Beta :

β is a factor that measure risk associated with any security. It indicates the risk involved in its returns as compared to the risk prevailing in the market.

$$\beta x = \frac{COVxm}{\sigma 2m}$$

Question 9 :

Given below is information of market rates of returns and data from two companies A and B :

	Year 2002	Year 2003	Year 2004
Market (%)	12.0	11.0	9.0
Company A (%)	13.0	11.5	9.8
Company B (%)	11.0	10.5	9.5

Required :

Determine the beta co-efficient of the shares of company A and Company B

9. CAPM (Re) :

This model is based on the concept that the expected return on a security is aggregate of the risk free rate and the premium for the risk. The Required rate of return will be given by

$$Re = Rf + \beta\ (Rm - Rf)$$

Question 10 : ABC Ltd.

ABC Ltd. has been maintaining a growth rate of 10 per cent in dividends. The company has paid dividend @ Rs.3 per share. The rate return on market portfolio is 12 percent and the risk free rate of return in the market has been observed as 8 percent. The Beta co-efficient of company's share is 15.

You are required to calculate the expected rate of return on company's shares as per CAPM model and equilibrium price per share by dividend growth model.

Question 11 :

A Company pays a dividend of Rs.2.00 per share with a growth rate of 7%. The risk free rate is 9% and the market rate of return is 13%. The Company has a beta factor of 1.50. However, due to a decision of the Finance Manager, beta is likely to increase to 1.75. Find out the present as well as the likely value of the share after the decision.

10. Alpha :

Alpha is the excess of returns provided by a security over its expected returns as per CAPM. If α of a security is positive then it is beneficial to invest in such security.

$$(\alpha) = \overline{X} - Re \text{ (Actual Return – Expected Return)}$$

Question 12 : RM Ltd.

Equity shares of RM Ltd. are presently quoted at Rs.210. These shares have been regularly providing a yield of 30% with β as 1.2. The average rate of return prevailing in the market is 20% and the risk free interest rate is 10% per annum. You are required to determine the following:

1. Expected rate of return based on CAPM
2. α for this security
3. Whether these shares should be acquired at present

4. PORTFOLIO RETURN, STANDARD DEVIATION AND BETA :

Now that we are done with the basics let us proceed with the concepts of the portfolio. First we shall learn how to calculate Return, Standard deviation and Beta of the portfolio

1. Return of the portfolio :

"Return on Portfolio is the weighted average of returns of individual securities included in the portfolio where the weights are the proportions of money invested in each security or the market values of such securities at a particular date."

Return of the portfolio = Weighted Average of returns of all Individual Securities

2. Portfolio Standard Deviation : Pocket book

Portfolio Risk can be calculated by using the following formula :

SD of Portfolio

If COR = 1 = σ_p= Weighted Average of Individual Stocks

If COR = 1 = $\sigma_p = \sqrt{\sigma^2 x w^2 + \sigma^2 y w^2 y + 2\sigma x \sigma y w x w y cor_{xy}}$

Question 13 :

Consider the following data regarding two securities X and Y :

Market Conditions	Probability	R(x)	R(y)
Very Good	0.25	22	16
Good	0.25	18	14
Average	0.25	14	12
Bad	0.25	10	10

You are required to determine the following:

1. Expected rate of return for Security X and Y
2. Standard Deviation of returns for both the Securities
3. Correlation between returns of X and Y
4. Average return on portfolio or expected return on portfolio if the investor has invested 75% of this total money in Security X and the remaining in Security Y.
5. Standard Deviation of the portfolio by Direct Method
6. Standard Deviation of the portfolio by 1st Principle Method

Question 14 : Mr.A

Mr.A is interested to invest RS 1,00,000 in the securities market. He selected two securities B and D for this purpose. The risk return profile of these securities are as follows

Security	Risk (σ)	Expected Return (ER)
B	10%	12%
D	18%	20%

Co-efficient of correlation between B and D is 0.15.

You are required to calculate the portfolio return of the following portfolios of B and D to be considered by A for his investment.

(i) 100 percent investment in B only;

(ii) 50 percent of the fund in Band the rest 50 percent in D;

(iii) 75 percent of the fund in B and the rest 25 percent in D; and

(iv) 100 percent investment in D only.

Also indicate that which portfolio is best for him from risk as well as return point of view?

Question 15 :

Consider the following information on two stocks, A and B:

Year	Return on A (%)	Return on B (%)
2006	10	12
2007	16	18

You are required to determine:

1. The expected return on a portfolio containing A and B in the proportion of 40% and 60% respectively.
2. The Standard Deviation of return from each of the two stocks.
3. The covariance of returns from the two stocks.
4. Correlation coefficient between the returns of the two stocks.
5. The risk of a portfolio containing A and B in the proportion of 40% and 60%.

3. Portfolio Beta : Pocket Book

Beta of the portfolio = Weighted Average Beta of individual Stock

Question 16 :

Market Conditions	Probability	Rate of Return (%)		
		Market	Company X	Company Y
Very Good	0.2	22	30	18
Good	0.2	20	24	16

Average	0.4	16	17	14
Bad	0.1	10	9	12
Very Bad	0.1	6	2	10

Risk Free Rate is 10%. Weight: X = 30% and Y = 70%

Compute for both the companies:

1. β of X and of Y
2. Weighted Average of β of portfolio
3. Also determine portfolio α
4. β of portfolio based on First Principle.

5. THE CONCEPT OF FIRST PRINCIPLE :

First principle means, we should treat portfolio as single security. This way we can calculate, return, risk and Beta for the portfolio as we did for the single security.

PRACTICE QUESTIONS

Question 17 :

The distribution of return of security 'F' and the market portfolio 'P' given below:

Probability	Return %	
	F	P
0.3	30	10
0.4	20	20
0.3	0	30

You are required to calculate the expected return of security 'F' and the market portfolio 'P' the covariance between the market portfolio and security and beta for the security.

Question 18 :

Following is the data regarding six securities:

	A	B	C	D	E	F
Return (%)	8	8	12	4	9	8
Risk (Standard deviation)	4	5	12	4	5	6

1. Assuming three will have to be selected, state which ones will be picked
2. Assuming perfect correlation, show whether it is preferable to invest 75% in A and 25% in C or to invest 100% in E.

Question 19 :

Consider the following data:

Market Conditions	Rm	Rx	Probability
Good	20%	26%	0.3

Average	18%	20%	0.5
Bad	15%	12%	0.2

Risk free rate of return is 10%

You are required to determine the following:

1. Standard Deviation of returns of market and Security X
2. β of security X and expected returns as per CAPM

Question 20 : An Investor

An investor is holding 1,000 shares of Fat lass Company. Presently the rate of dividend being paid by the company is Rs.2 per share and the share is being sold at Rs.25 per share in the market. However, several factors are likely to change during the course of the year as indicated below :

	Existing	Revised
Risk free rate	12%	10%
Market risk premium	6%	4%
Beta value	1.4	1.25
Expected growth rate	5%	9%

In view of the above factors whether the investor should buy, hold or sell the shares? And why?

Question 21 :

You hold one stock A with a standard deviation of 20%. You are thinking about buying another stock B with a standard deviation of 30%. You will hold these two stocks in a portfolio, with 50% of your money invested in each. Stock B has a correlation coefficient of 0.2 with stock A. Your friend says that adding a stock with higher standard deviation B than stock A will result in a riskier portfolio than just holding 'A' alone. Is he right? That is, will your portfolio of A & B be riskier than just stock A?

Question 22 : Mr.Tempest

Mr. Tempest has the following portfolio of four shares:

Name	Beta	Investment? Lakh
Oxy Rin Ltd.	0.45	0.80
Boxed Ltd.	0.35	1.50
Square Ltd.	1.15	2.25
Ellipse Ltd.	1.85	4.50

The risk free rate of return is 7% and the market rate of return is 14%.

Required:

1. Determine the portfolio return
2. Calculate the portfolio beta

Question 23 : Mr.V

Mr. V has Rs.5,00,000 invested in a Companies X, Y and Z in the ratio of 3:3:4. The β of equity shares of X, Y and Z are 1.2, 1.6 and 1.5 respectively.

The average returns by these 3 companies are 16%, 23% and 18% for X, Y and Z respectively. The risk free rate is 6% per annum and rate of return in market is 14% per annum.

You are required to compute the portfolio β and the average return on portfolio. Also use CAPM and determine the rate of return expected on such portfolio.

Determine portfolio α (alpha) and conclude whether the portfolio is favorable or unfavorable. Would you advice any change in the portfolio. If yes, then suggest the effect of such change assuming that the investor is required to retain at least Rs.1,00,000 on each security.

6. THE CONCEPT OF SML / CML AND CL :

A. Security Market Line (SML) :

A Security market line exhibits relationship between expected returns (Calculated on the basis of CAPM) of investments and their Betas. (By expected return we mean, the total return an investor should get considering the risk he has undertaken)

To Draw the line, Betas are taken on X-axis and the expected returns on Y – axis

Question 24 :

RF 10%. RM 15%. From the following information draw SML

Securities	Likely Returns	Beta
Shares of A Ltd.	13.00%	0.50
Shares of B Ltd.	14.00%	1.00
Shares of C Ltd.	18.00%	1.50
Shares of D Ltd.	20.00%	2.00

Which share is undervalued / overvalued?

B. Capital Market Line (CML) :

A CML exhibits relationship between expected returns of investors and their standard – deviations. (By expected we mean, the total return an investor should get considering the risk he has undertaken).

To draw this line SDs are taken on X-axis and the expected returns on Y – axis.

Question 25 :

The following data relate to four different portfolios

Portfolio	Expected Rate of Return	S.D. of Returns from portfolio
A	16%	6.0
B	14%	7.5
C	12%	3.0
D	15%	9.0

The expected return on Market portfolio is 9.50 % with the standard deviation of 3. The Rf is 5%. Draw CML to comment on each of these portfolios.

C. Characteristic Line (CL) :

A Characteristic line exhibits regression relationship between the return on an investment and the return on market portfolio

Characteristic Line

$\alpha = R - E(R)$

$R = \alpha + E(R)$

$R = \alpha + Rf + (Rm - Rf)\beta$

$R - Rf = \alpha + (Rm - Rf)\beta$

Let, $Rx - Rf = y$

$Rm - Rf = x$

$\therefore y = \alpha + \beta.x$

Question 26 :

The Rate of Return of Co. X and Market Portfolio P is given for 5 years

Year	Rx	Rm
1	12	14
2	14	16
3	16	18
4	18	20
5	20	22

Calculate α, β and also state what is characteristics line of Security.

PRACTICE QUESTIONS

Question 27 : An Investor

An investor holds two stocks A and B. An analyst prepared ex-ante probability distribution for the possible economic scenarios and the conditional returns for 2 stocks and the market index as shown below :

Economic Scenario	Probability	Conditional Returns (%)		
		A	B	Market
Growth	0.40	25	20	18
Stagnation	0.30	10	15	13
Recession	0.30	-5	-8	-3

The risk free rate during the next year is expected to be around 11%. Determine whether the investor should liquidate his holdings in stock A and B or on the contrary make fresh investments in them. CAPM assumptions are holding true.

Question 28 : A Ltd.

A Ltd. has an expected return of 22% and standard deviation of 40%. B Ltd. has an expected return of 24% and standard deviation of 38%. A Ltd. has a beta of 0.86 and B Ltd. a beta of 1.24. The correlation coefficient between the return of A Ltd. and B Ltd. is 0.72. The standard deviation of the market return is 20%. Suggest:

1. Is investing in B Ltd. better than investing in A Ltd.?
2. If you invest 30% in B Ltd. and 70% in A Ltd. what is your expected rate of return and portfolio standard deviation?
3. What is the market portfolios expected rate of return and how much is the risk-free rate?
4. What is the beta of Portfolio if A Ltd.'s weight is 70% and B Ltd.'s weight is 30%?

Question 29 : A Company

A company choice of investments between several different equity oriented mutual funds. The company has an amount of Rs.1 crore to invest. The details of the mutual funds are as follows:

Mutual Fund	Beta
A	1.6
B	1.0
C	0.9
D	2.0

E	0.6

Required :

1. If the company invests 20% of its investment in the first two mutual funds and an equal amount in the mutual funds C, D and E, what is the beta of the portfolio?
2. If the company invests 15% of its investment in C, 15% in A, 10% in E and the balance in equal amount in the other two mutual funds, what is the beta of the portfolio?
3. If the expected return of market portfolio is 12% at a beta factor of 1.0 what will be the portfolios' expected return in both the situations given above?

Question 30 :

A holds the following portfolio :

Share/Bond	Beta	Initial Price Rs.	Dividends Rs.	Market Price at end of year Rs.
Epsilon Ltd.	0.8	25	2	50
Sigma Ltd.	0.7	35	2	60
Omega Ltd.	0.5	45	2	135
GOI Bonds	0	1,000	140	1005

Calculate :

1. The expected rate of return on his portfolio using Capital Asset Pricing Method (CAPM)
2. The average return of his portfolio. Risk-free return is 14%.

Question 31 :

Your client is holding the following securities:

Particulars of Securities	Cost	Dividends/Interest Rs.	Market price Rs.	Beta Rs.
Equity Shares:				
Gold Ltd.	10,000	1,725	9,800	0.6
Silver Ltd.	15,000	1,000	16,200	0.8
Bronze Ltd.	14,000	700	20,000	0.6
GOI Bonds	36,000	3,600	34,500	0
				0.01

Average return of the portfolio is 15.7%, calculate:

1. Expected rate of return in each, using the Capital Asset Pricing Model (CAPM).
2. Risk free rate of return.

Question 32 : Mr. X

Mr. X owns a portfolio with the following characteristics:

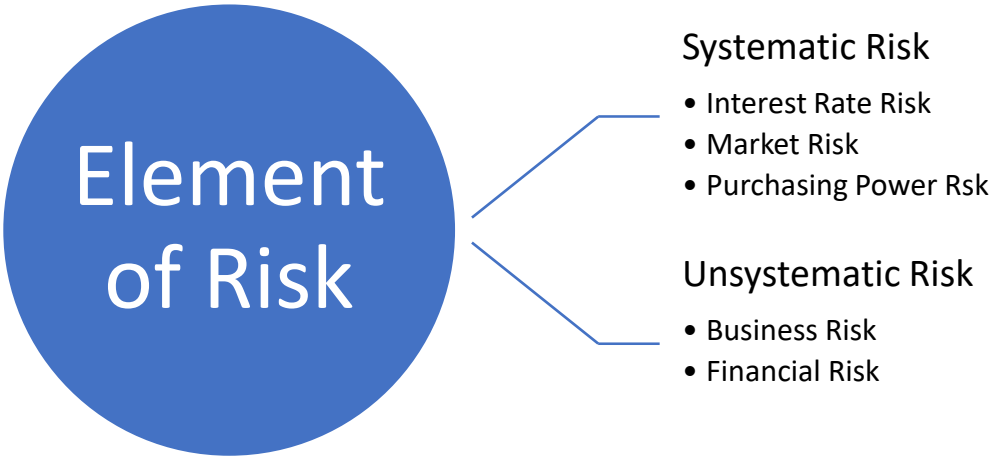
	Security A	Security B	Risk Free security
Factor 1 sensitivity	0.8	1.5	0
Factor 2 sensitivity	0.6	1.2	0
Expected Return	15%	20%	10%

It is assumed that security returns are generated by a two factor model.

1. If Mr. X has f 1,00,000 to invest and sells short Rs 50,000 of security B and purchases Rs 1,50,000 of security A what is the sensitivity of Mr. X's portfolio to the two factors?
2. If Mr. X borrows Rs 1,00,000 at the risk free rate and invests the amount he borrows along with the original amount of Rs 1,00,000 in security A and B in the same proportion as described in part (i), what is the sensitivity of the portfolio to the two factors?
3. What is the expected return premium for portfolio in Part 2?

7. RISK ANALYSIS :

It is very common that an intelligent investor would attempt to anticipate the kind of risk that he/she is likely to face and would also estimate the extent of risk associated with different investment proposal.



Total Risk = Systematic Risk + Unsystematic Risk

1. **Systematic Risk :**

Systematic Risk comprises of factors that are external to the company (macro in nature) and affect a large number of securities simultaneously. They are mostly uncontrollable in nature.

It occurs due to economic, political and social systems of the economy. Systematic Risk cannot be avoided and investor should take such risk to get better returns

For eg: When an economy goes into recession, corporate profits will decline and stock price of company tumbles.

Systematic Risk can further be sub-divided into

Interest Rate Risk	Purchasing Power Risk	Market Risk
This arises due to variability in the interest rate and time to time and particularly affects debt securities like bonds and debentures.	It is referred as inflation risk. Inflation affects the purchasing power of the people. Changes in inflation rate can lead to erosion of investors wealth	Share price changes in market continuously over the period of time. Market can be bullish or bearish

2. Unsystematic Risk :

Unsystematic Risk includes those factors which are internal to companies (micro in Nature) and affect only those particular companies. They can be controlled to a great extent. Unsystematic risk is the risk specific to the company. It should be eliminated reduced by combining it with another security having negative co-relation. This process is known as diversification of risk.

Un-Systematic Risk can further be sub-divided into

Business Risk	Financial Risk
It results from sale and purchase of securities affected by business cycles, technological changes. Every security has bullish and bearish phases.	It arises due to change in capital structure of the company. It is also known as leveraged risk and expressed in terms of debt equity ratio. Companies with high borrowing indicated high gearing

Measurement of Systematic Risk :

The systematic risk of the security is measured by a statistical measure which is called as beta.

The two statistical methods to calculate Beta are

1. Correlation Method
2. Regression Method

1. Correlation Method :

$\beta x = \frac{COVxy}{\sigma^2 m}$ or $\beta x = CORxy \times \frac{\sigma x}{\sigma m}$

2. Regression Method :

$Rx = \alpha + \beta(Rm)$ (Equation derived from charactertics line)

Calculation of Unsystematic Risk :

Lets not forget that

Total Risk = Systematic Risk + Unsystematic Risk

	SD Approach	Variance Approach
Total Risk - Systematic Risk	α of stock $\sigma m * \beta x$	σ^2 of stock $\sigma^2 m * \beta^2 x$
Unsystematic Risk	xxxx	xxxx

Question 33 :

The return and market portfolio for a period of four years are as under

Year	% Return of Stock B	% Return of Market Portfolio
1	10	8
2	12	10
3	9	9
4	3	-1

For stock B, you are required to determine

(1) Characteristics Line

(2) Systematic Line and Unsystematic Line

Question 34 :

Following are the details of a portfolio consisting of 3 shares:

Shares	Portfolio Weight	Beta	Expected Return (%)	Total Variance
X Ltd.	0.3	0.50	15	0.020
Y Ltd.	0.5	0.60	16	0.010

Z Ltd.	0.2	1.20	20	0.120

Standard Deviation of Market Portfolio Return = 12%

You are required to calculate the following:

(i) The Portfolio Beta.

(ii) Residual Variance of each of the three shares.

(iii) Portfolio Variance using Sharpe Index Model.

Question 35 :

Following are the details of a portfolio consisting of three shares

Share	Portfolio Weight	Beta	Expected return in %	Total Variance
A	0.20	0.40	14	0.015
B	0.50	0.50	15	0.025
C	0.30	1.10	21	0.100

Standard Deviation of Market Portfolio Returns = 10%

You are given the following additional data :

Covariance (A,B) = 0.030

Covariance (A,C) = 0.020

Covariance (B,C) = 0.040

Calculate the following

i) The portfolio Beta

ii) Residual variance of each of the three shares

iii) Portfolio variance using Sharpe index Model

PRACTICE QUESTIONS

Question 36 : X and Y

Assuming that two securities X and Y are correctly priced on SML and expected return from these securities are 9.40% (Rx) and 13.40% (Ry) respectively. The Beta of these securities are 0.80 and 1.30 respectively.

Mr. A, an investment manager states that the return on market index is 9%.

You are required to determine,

(a) Whether the claim of Mr. A is right. If not then what is correct return on market index.

(b) Risk Free Rate of Return

Question 37 :

Suppose that economy A is growing rapidly and you are managing a global equity fund that has so far invested only in developed-country stocks. Now you have decided to add stocks of economy A to your portfolio. The table below shows the expected rates of return,

standard deviations, and correlation coefficients (all estimated for the aggregate stock market of developed countries and stock market of Economy A).

	Developed country stocks	Stocks of Economy A
Expected rate of return (%)	10	15
Risk (SD %)	16	30
Correlation Coefficient	0.30	

Assuming the risk-free interest rate to be 3%, you are required to determine:

(a) What percentage of your portfolio should you allocate to stocks of Economy A if you want to increase the expected rate of return on your portfolio by 0.5%?

(b) What will be the standard deviation of your portfolio assuming that stocks of Economy A are included in the portfolio as calculated above?

(c) Also show how well the Fund will be compensated for the risk undertaken due to inclusion of stocks of Economy A in the portfolio?

Question 38 :

The following information is available in respect of security A.

Equilibrium Return	12%
Market Return	12%
6% Treasury Bond trading at	Rs.120
Co-variance of market return and security Return	196%
Co-efficient of correlation	0.80

You are required to determine the standard deviation of

(1) Market Return

(2) Security Return

Question 39 : Mr. FedUp

Mr. FedUp wants to invest an amount of Rs.520 lakhs and had approached his Portfolio Manager. The Portfolio Manager had advised Mr. FedUp to invest in the following manner:

Security	Moderate	Better	Good	Very Good	Best
Amount in Lakhs	60	80	100	120	160
Beta	0.50	1.00	0.80	1.20	1.50

You are required to advise Mr. FedUp in regard to the following, using Capital Asset Pricing Methodology:

(i) Expected return on the portfolio, if the Government Securities are at 8% and the NIFTY is yielding 10%.

(ii) Advisability of replacing Security 'Better' with NIFTY.

Question 40 : A trader

A trader is having in its portfolio shares worth Rs.85 lakhs at current price and cash Rs.15 lakhs. The beta of share portfolio is 1.6. After 3 months the price of shares dropped by 3.2%.

Determine:

(i) Current portfolio beta

(ii) Portfolio beta after 3 months if the trader on current date goes for long position on Rs.100 lakhs Nifty futures.

8. CONCEPT OF BETA MANAGEMENT :

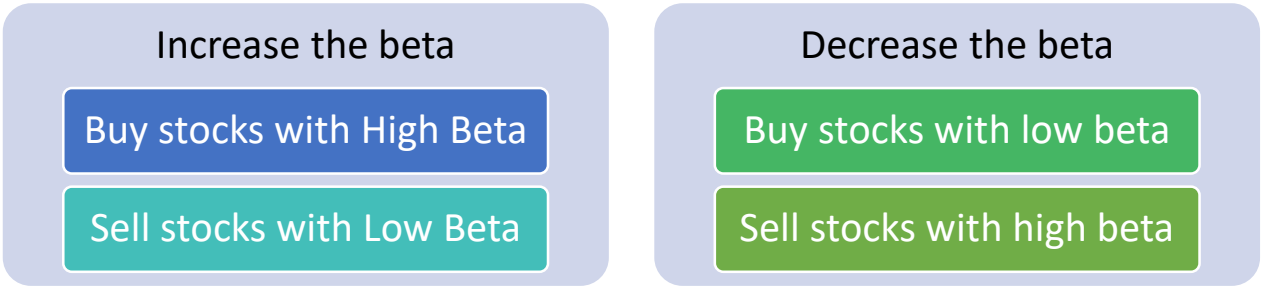
As studied before Beta refers to sensitivity of stock / Portfolio to changes in Market. A high Beta Portfolio means higher risk. An entity would like to manage the beta depending upon there expected volatility in the market.

Beta management is all about timing. At times entity would love high beta portfolio and at other times entity would love to have low beta portfolio. Beta management is possible by 2 ways

1. Stock Management
2. Futures

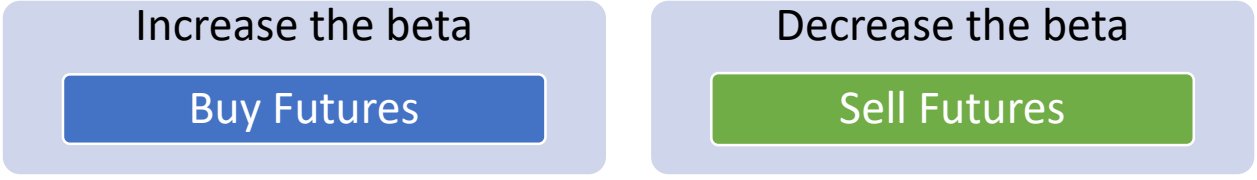
1. Stock Management :

This is the traditional way be manage beta. Depending upon our expectations we can increase the beta of the portfolio or decrease the beta of portfolio



2. Futures :

If the entity does not want to change the composition, but want to protect or gain advantage of short-term market volatility, they can enter into futures.



Beta Management :

Beta management is all about time management. Beta management can be done through

1. Stock management
2. Futures trading

No of futures contracts to be brought or sold = $\frac{V_p[\beta_t - \beta_p]}{F \times M \times \beta_f}$

V_p = Value of portfolio

β_t = Target Beta → if not given – then zero

β_p = Beta of Portfolio

β_f = Beta of Futures

F = Future PP

M = Multiple (Lot size)

Remember β of nifty futures is 1

Question 41 :

A portfolio Manager (PM) has the following four stocks in his portfolio

Security	No. of shares	Market Price per share	B
VSL	10,000	50	0.9
CSL	5,000	20	1.0
SML	8,000	25	1.5
APL	2,000	200	1.2

Compute the following

1. Portfolio Beta
2. If the PM seeks to reduce the beta to 0.8, how much risk free investment should he bring in?
3. If the PM seeks to increase the beta to 1.2 how much risk free investment should be bring in?

9. PORTFOLIO WITH MORE THAN TWO SECURITIES :

So far we have considered a portfolio with only two securities. The benefits from diversification increase as more and more securities with less than perfectly positively correlated returns are included in the portfolio. As the number of securities added to a portfolio increases, the standard deviation of the portfolio becomes smaller and smaller.

Expected Return :

The expected return of a portfolio is the weighted average of the returns of individual securities in the portfolio, the weights being the proportion of investment in each security. The formula for

calculation of expected portfolio return is the same for a portfolio with two securities and for portfolios with more than two securities.

Variance and Standard Deviation :

The portfolio variance and standard deviation depend on the proportion of investment in each security as also the variance and covariance of each security included in the portfolio. Variance and standard deviation of portfolio with more than 2 securities can calculated by using the concept of Co-variance matrix

Question 42 :

Calculate Variance and SD from the following information

Security	Wts	SD	COR
X	0.25	16	XY = 0.7
Y	0.35	7	XZ = 0.3
Z	0.40	9	YZ = 0.4

Question 43 :

Consider

Security	SD	COR
A	20	AM = 0.6
B	18	BM = 0.95
C	12	CM = 0.75
Market	15	

Assume Equal Investment in each stock.

Calculate :

1. Beta of each stock
2. Beta of portfolio
3. COVab, ac and bc
4. Variance of portfolio
5. SD of portfolio

10. MARKOWITZ MODEL OF RIS-RETURN OPTIMIZATION:

The portfolio selection problem can be divided into two stages, (1) finding the mean-variance efficient portfolios and (2) selecting one such portfolio. Investors do not like risk and the greater the riskiness of returns on an investment, the greater will be the returns expected by investors. There is a tradeoff between risk and return which must be reflected in the required rates of return on investment opportunities. The standard deviation (or variance) of return measures the total risk of an investment. It is not necessary for an investor to accept the total risk of an individual

security. Investors can and do diversify to reduce risk. As number of holdings approach larger, a good deal of total risk is removed by diversification.

1. Assumptions of the Model :

It is a common phenomenon that the diversification of investments in the portfolio leads to reduction in variance of the return, even for the same level of expected return. This model has taken into account risks associated with investments - using variance or standard deviation of the return. This model is based on the following assumptions. :

(i) The return on an investment adequately summarises the outcome of the investment.

(ii) The investors can visualise a probability distribution of rates of return.

(iii) The investors' risk estimates are proportional to the variance of return they perceive for a security or portfolio.

(iv) Investors base their investment decisions on two criteria i.e. expected return and variance of return.

(v) All investors are risk averse. For a given expected return he prefers to take minimum risk, for a given level of risk the investor prefers to get maximum expected return.

(vi) Investors are assumed to be rational in so far as they would prefer greater returns to lesser ones given equal or smaller risk and are risk averse. Risk aversion in this context means merely that, as between two investments with equal expected returns, the investment with the smaller risk would be preferred.

(vii) 'Return' could be any suitable measure of monetary inflows like NPV but yield has been the most commonly used measure of return, so that where the standard deviation of returns is referred to it is meant the standard deviation of yield about its expected value.

2. Efficient Frontier :

Markowitz has formalised the risk return relationship and developed the concept of efficient frontier. For selection of a portfolio, comparison between combinations of portfolios is essential. As a rule, a portfolio is not efficient if there is another portfolio with:

(a) A higher expected value of return and a lower standard deviation (risk).

(b) A higher expected value of return and the same standard deviation (risk)

(c) The same expected value but a lower standard deviation (risk)

Markowitz has defined the diversification as the process of combining assets that are less than perfectly positively correlated in order to reduce portfolio risk without sacrificing any portfolio returns. If an investors' portfolio is not efficient he may:

(i) Increase the expected value of return without increasing the risk.

(ii) Decrease the risk without decreasing the expected value of return, or

(iii) Obtain some combination of increase of expected return and decrease risk.

This is possible by switching to a portfolio on the efficient frontier.

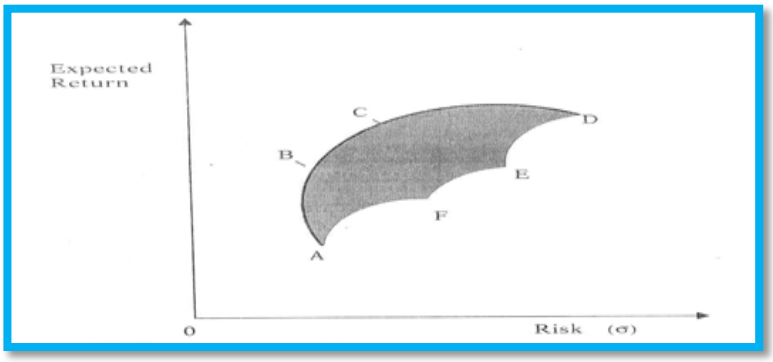


Fig. 1: Markowitz Efficient Frontier

If all the investments are plotted on the risk-return space, individual securities would be dominated by portfolios, and the efficient frontier would be containing all Efficient Portfolios (An Efficient

Portfolio has the highest return among all portfolios with identical risk and the lowest risk among all portfolios with identical return). Fig – 1 depicts the boundary of possible investments in securities, A, B, C, D, E and F; and B, C, D, are lying on the efficient frontier. The best combination of expected value of return and risk (standard deviation) depends upon the investors' utility function. The individual investor will want to hold that portfolio of securities which places him on the highest indifference curve, choosing from the set of available portfolios. The dark line at the top of the set is the line of efficient combinations, or the efficient frontier. The optimal portfolio for an investor lies at the point where the indifference curve for the concerned investor touches the efficient frontier. This point reflects the risk level acceptable to the investor in order to achieve a desired return and provide maximum return for the bearable level of risk. The concept of efficient frontier and the location of the optimal portfolio are explained with help of Fig-2.

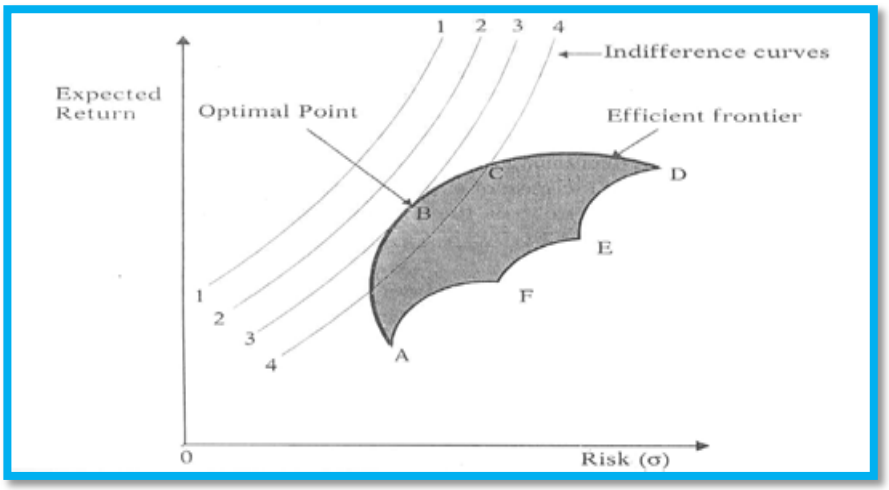


Fig. 2 : Optimal Investment under Markowitz Model

In Fig-2 A, B, C, D, E and F define the boundary of all possible investments out of which investments in B, C and D are the efficient portfolios lying on the efficient frontier. The attractiveness of the investment proposals lying on the efficient frontier depends on the investors' attitude to risk. At point B, the level of risk and return is at optimum level. The returns are highest at point D, but simultaneously it carries higher risk than any other investment.

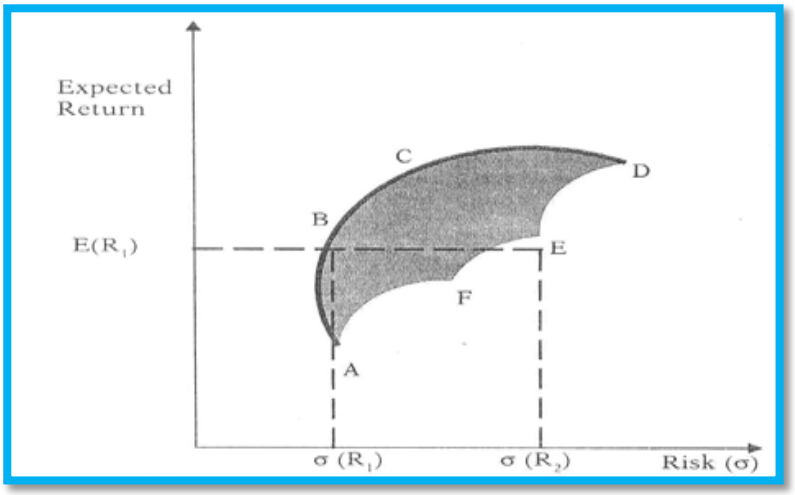


Fig.3 : Selection of Portfolios

The shaded area represents all attainable or feasible portfolios, that is all the combinations of risk and expected return which may be achieved with the available securities. The efficient frontier contains all possible efficient portfolios and any point on the frontier dominates any point to the right of it or below it.

Consider the portfolios represented by points B and E. B and E promise the same expected return E (R_1) but the risk associated with B is σ (R_1) whereas the associated with E is σ (R_2). Investors, therefore, prefer portfolios on the efficient frontier rather than interior portfolios given the assumption of risk aversion; obviously, point A on the frontier represents the portfolio with the least possible risk, whilst D represents the portfolio with the highest possible rate of return with highest risk. The investor has to select a portfolio from the set of efficient portfolios lying on the efficient frontier. This will depend upon his risk-return preference. As different investors have different preferences, the optimal portfolio of securities will vary from one investor to another.

11. CONCEPT OF MINIMUM RISK PORTFOLIO :

Minimum Variance Portfolio is a collection of securities that combine to minimize the price volatility of overall portfolio.

Volatility is a statistical measure of a particular security price movement (up & Down). So minimum Risk portfolio should have less ups and down.

Bottomline : Minimum variance portfolio can hold investments types that are volatile on their own but when combined, create a diversified portfolio that has lower volatility than any of the individual parts.

Example :

	Average Return	SD	CORab = - 0.7
Security A	3	1.5	
Security B	5	4.2	

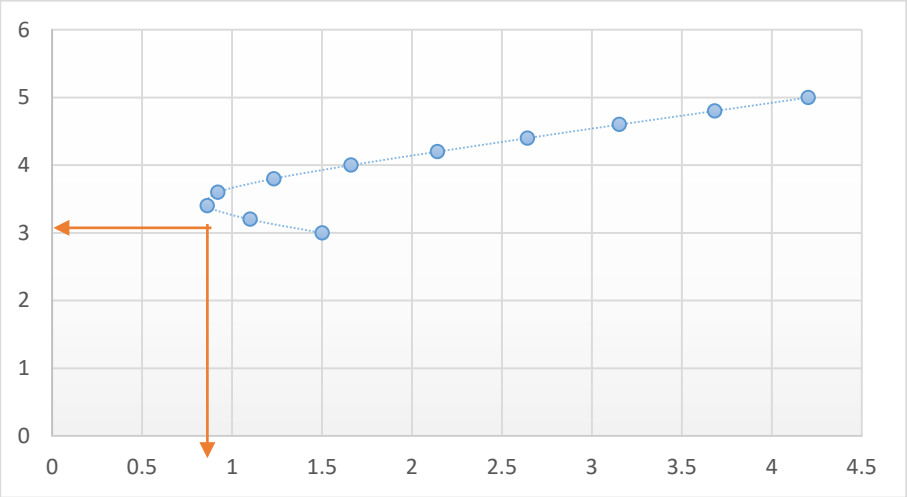
Rp = Ra x wt + Rb x wt

σp = $wt^2a\sigma^2a + wt^2b\sigma^2$ + 2σaσbwtawtbCORab

Alternative 1 to find Minimum Variance Portfolio (R & D)

	Wta	**Wtb**	**Rp**	σp	
	1	0	3	1.5	
	0.9	0.1	3.2	1.1	
→	0.8	0.2	3.4	0.86	Minimum Risk Portfolio
	0.7	0.3	3.6	0.92	
	0.6	0.4	3.8	1.23	
	0.5	0.5	4	1.66	
	0.4	0.6	4.2	2.14	
	0.3	0.7	4.4	2.64	
	0.2	0.8	4.6	3.15	
	0.1	0.9	4.8	3.68	
	0	1	5	4.2	

Chart :



Alternative 2 : Formula

$$\text{Wtx} = \frac{\sigma^2 y - COVxy}{\sigma^2 x + \sigma^2 y - 2COVxy} \quad \text{or} \quad \frac{\sigma^2 y - CORxy\sigma x\sigma y}{\sigma^2 x + \sigma^2 y - 2CORxy\sigma x\sigma y}$$

$$\text{i.e } \frac{17.64 - (-0.7\ x\ 1.5\ x\ 4.2)}{2.25 + 17.64 - 2(-0.7\ x\ 1.5\ x\ 4.2)} = \frac{22.05}{28.71} = 0.768$$

12. ARBITRAGE PRICING THEORY MODEL (APT) :

Unlike the CAPM which is a single factor model, the APT is a multi factor model having a whole set of Beta Values – one for each factor. Arbitrage Pricing Theory states that the expected return on an investment is dependent upon how that investment reacts to a set of individual macro-economic factors (degree of reaction measured by the Betas) and the risk premium associated with each of those macro – economic factors. The APT developed by Ross (1976) holds that there are four factors which explain the risk premium relationship of a particular security. Several factors being identified e.g. inflation and money supply, interest rate, industrial production and personal consumption have aspects of being inter-related.

Re = Rf + Risk associated with factor affecting the stock

Question 44 :

Risk Free Rate 8%
Risk Premium for Interest Rate 2%
Risk Premium for Forex 0.5%
Risk Premium for GNP 3%
Risk Premium for Inflation 0.8%
The Betas of the company with respect to the above factors are as below:

1.	Interest Rate β	0.8
2.	Forex β	1.3
3.	GNP β	0.6
4.	Inflation β	1.25

Calculate the expected rate of return using APTM.

Question 45 : Mr.Tamarind

Mr. Tamarind intends to invest in equity shares of a company the value of which depends upon various parameters as mentioned below:

Factor	Beta	Expected in % Value	Actual value in %
GNP	1.2	7.70	7.70
Inflation	1.75	5.50	7.00
Interest rate	1.3	7.75	9.00
Stock market index	1.7	10.0	12.0
Industrial production	1.00	7.0	7.50

If the risk free rate of interest be 9.25%, how much is the return of the share under Arbitrage Pricing Theory?

13. FORMULATION OF PORTFOLIO STRATEGY :

Two broad choices are required for the formulation of an appropriate portfolio strategy. They are active portfolio strategy and passive portfolio strategy.

1. Active Portfolio Strategy (APS)
2. Passive Portfolio Strategy

1. Active Portfolio Strategy (APS) :

An APS is followed by most investment professionals and aggressive investors who strive to earn superior return after adjustment for risk. The vast majority of funds (or schemes) available in India follow an "active" investment approach, wherein fund managers of "active" funds spend a great deal of time on researching individual companies, gathering extensive data about financial performance, business strategies and management characteristics. In other words, "active" fund managers try to identify and invest in stocks of those companies that they think will produce better returns and beat the overall market (or Index).

There are four principles of on active strategy. These are:

2. Passive Portfolio Strategy :

Active strategy was based on the premise that the capital market is characterized by efficiency which can be exploited by resorting to market timing or sector rotation or security selection or use of special concept or some combination of these sectors.

Passive strategy, on the other hand, rests on the tenet that the capital market is fairly efficient with respect to the available information. Hence they search for superior return. Basically, passive strategy involves adhering to two guidelines. They are:

(a) Create a well diversified portfolio at a predetermined level of risk.

(b) Hold the portfolio relatively unchanged over time unless it became adequately diversified or inconsistent with the investor risk return preference.

Question 46 : Ms. Sunidhi

Ms. Sunidhi is working with an MNC at Mumbai. She is well versant with the portfolio management techniques and wants to test one of the techniques on an equity fund she has constructed and compare the gains and losses from the technique with those from a passive buy and hold strategy. The fund consists of equities only and the ending NAVs of the fund he constructed for the last 10 months are given below:

Month	Ending NAV (Rs./unit)	Month	Ending NAV (Rs./unit)
December 2008	40.00	May 2009	37.00
January 2009	25.00	June 2009	42.00
February 2009	36.00	July 2009	43.00
March 2009	32.00	August 2009	50.00
April 2009	38.00	September 2009	52.00

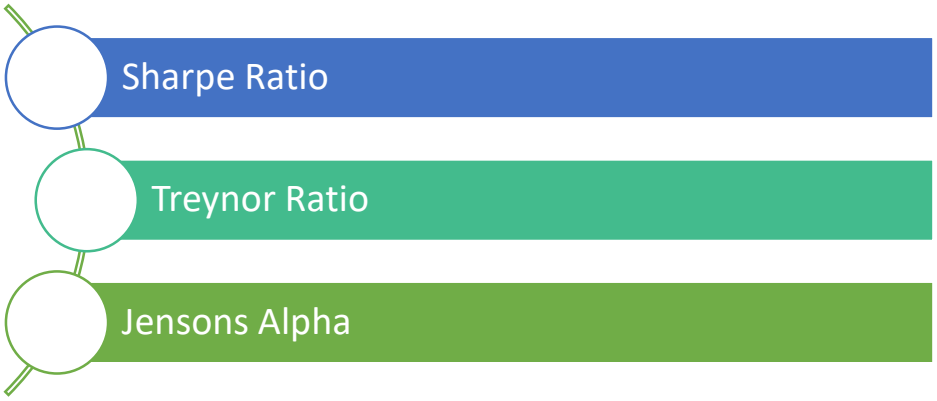
Assume Sunidhi had invested a notional amount of Rs.2 lakhs equally in the equity fund and a conservative portfolio (of bonds) in the beginning of December 2008 and the total portfolio was being rebalanced each time the NAV of the fund increased or decreased by 15%.

You are required to determine the value of the portfolio for each level of NAV following the Constant Ratio Plan.

14. PORTFOLIO EVALUATION :

This process is concerned with assessing the performance of the portfolio over a selected period of time in terms of return and risk and it involves quantitative measurement of actual return realized and the risk borne by the portfolio over the period of investment. The objective of constructing a portfolio and revising it periodically is to maintain its optimal risk return characteristics. Various types of alternative measures of performance evaluation have been developed for use by investors and portfolio managers.

The following 3 ratios are used for portfolio Evaluations :



1. Sharpe Ratio :

Sharpe Ratio measures the Risk Premium per unit of Total Risk for a security or a portfolio of securities.

The formula is = $\frac{R-Rf}{\sigma}$

Example:
Let's assume that we look at a one year period of time where an index fund earned 11%
Treasury bills earned 6%
The standard deviation of the index fund was 20%
Therefore S = 11-6/.20 = 25%

The Sharpe ratio is an appropriate measure of performance for an overall portfolio particularly when it is compared to another portfolio, or another index such as the S&P 500, Small Cap index, etc. That said however, it is not often provided in most rating services.

Example:
Consider two Portfolios A and B. Let return of A be 30% and that of B be 25%. On the outset, it appears that A has performed better than B. Let us now incorporate the risk factor and find out the Sharpe ratios for the portfolios. Let risk of A and B be 11% and 5% respectively. This means that the standard deviation of returns - or the volatility of returns of A is much higher than that of B.
If risk free rate is assumed to be 8%,
Sharpe ratio for portfolio A= (30-8)/11=2% and
Sharpe ratio for portfolio B= (25-8)/5=3.4%

Higher the Sharpe Ratio, better is the portfolio on a risk adjusted return metric. Hence, our primary judgment based solely on returns was erroneous. Portfolio B provides better risk

adjusted returns than Portfolio A and hence is the preferred investment. Producing healthy returns with low volatility is generally preferred by most investors to high returns with high volatility. Sharpe ratio is a good tool to use to determine a portfolio that is suitable to such investors.

2. Treynor Ratio :

This ratio is same as Sharpe ratio with only difference that it measures the Risk Premium per unit of Systematic Risk (β) for a security or a portfolio of securities.

The formula is $\frac{R-Rf}{\sigma}$

Treynor ratio is based on the premise that unsystematic or specific risk can be diversified and hence, only incorporates the systematic risk (beta) to gauge the portfolio's performance. It measures the returns earned in excess of those that could have been earned on a riskless investment per unit of market risk assumed.

In above example if beta of Portfolio A and B are 1.5 and 1.1 respectively,
Treynor ratio for Portfolio A= (30-8)/1.5=14.67%
Treynor ratio for Portfolio B= (25-8)/1.1= 15.45%

While Sharpe ratio measures total risk (as the degree of volatility in returns captures all elements of risk - systematic as well as unsystemic), the Treynor ratio captures only the systematic risk in its computation.

When one has to evaluate the funds which are sector specific, Sharpe ratio would be more meaningful. This is due to the fact that unsystematic risk would be present in sector specific funds. Hence, a truer measure of evaluation would be to judge the returns based on the total risk.

3. Jensons Alpha :

This is the difference between a portfolio's actual return and those that could have been made on a benchmark portfolio with the same risk- i.e. beta. It measures the ability of active management to increase returns above those that are purely a reward for bearing market risk. Caveats apply however since it will only produce meaningful results if it is used to compare two portfolios which have similar betas.

Question 47 :

Consider the following data:

Year	R_m	R_p
1	16	20
2	15	22
3	18	24
4	19	21
5	16	15

The risk free rate is 10% per annum. You are required to evaluate the performance of the mutual fund portfolio by using:

1. Sharper's Model
2. Treynor's Model
3. Jenson's Alpha

CHP - 12

Risk Management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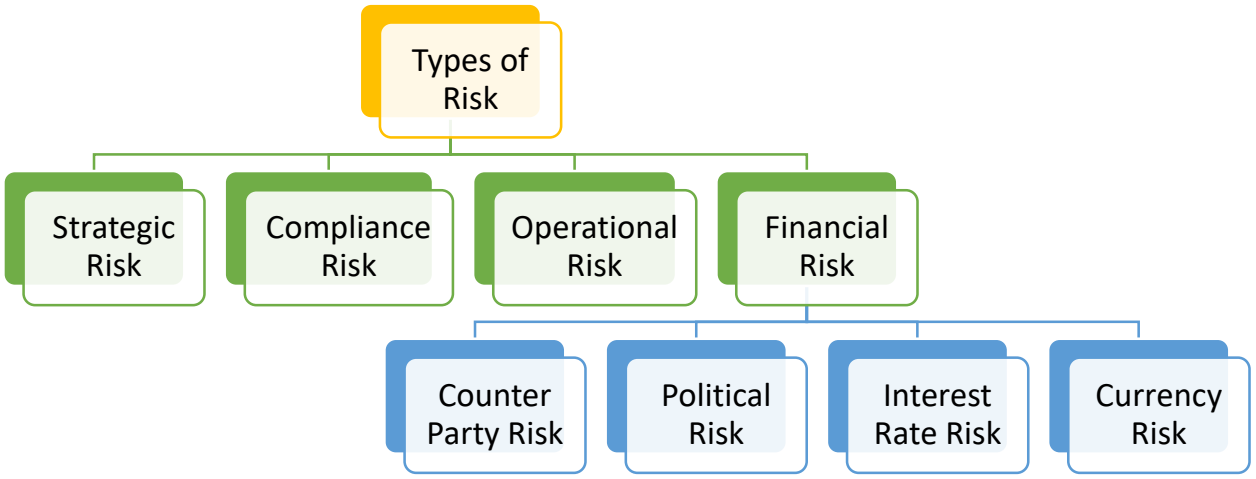
Risk management is:
'A process of understanding and managing the risks that the entity is inevitably subject to in attempting to achieve its corporate objectives. For management purposes, risks are usually divided into categories such as operational, financial, legal compliance, information and personnel. One example of an integrated solution to risk management is enterprise risk management.'

CHAPTER DESIGN

1. TYPES OF RISK
2. EVALUATION OF FINANCIAL RISK
3. VALUE AT RISK (VAR)
4. EVALUATION OF APPROPRIATE METHOD FOR THE IDENTIFICATION AND MANAGEMENT OF FINANCIAL RISK

1. TYPES OF RISK :



1. Strategic Risk :

A successful business always needs a comprehensive and detailed business plan. Everyone knows that a successful business needs a comprehensive, well-thought-out business plan. But it's also a fact of life that, if things changes, even the best-laid plans can become outdated if it cannot keep pace with the latest trends. This is what is called as strategic risk. So, strategic risk is a risk in which a company's strategy becomes less effective and it struggles to achieve its goal. It could be due to technological changes, a new competitor entering the market, shifts in customer demand, increase in the costs of raw materials, or any number of other large-scale changes.

We can take an example of "KODAK" the leader in the market for cameras. They were able to develop digital cameras by 1975. But it considered this development as a threat to the core business and therefore it did not develop it. However the technology involved with digital camera was finally found by others and was developed – which actually pushed "Kodak" out of the business.

I also remember – the speech by CEO of Nokia – when it was taken over by Microsoft – he said – "The problem with nokia was not that we did anything wrong – the problem was we didn't do anything". Nokia ruled the market for mobile phone manufacturing, but I feel they were so much engrossed in manufacturing and increasing the sales number that they never thought of bringing anything new. Finally Smart phone were discovered by that left High and Dry.

However, another example – a positive one – is that of Xerox – the company which invented photocopier. When lazer printer were developed, Xerox was quick to lap up this opportunity and made necessary changes. Infact they were ready for strategic Risk and they not only survived but also increased the profits.

2. Compliance Risk :

Compliance Risk is also known as Integrity Risk. Every business needs to comply with rules and regulations. For example with the advent of Companies Act, 2013, and continuous updating of SEBI guidelines, each business organization has to comply with plethora of rules, regulations and guidelines. Non compliance leads to penalties in the form of fine and imprisonment.

However, when a company ventures into a new business line or a new geographical area, the real problem then occurs. For example, a company pursuing cement business likely to venture into sugar business in a different state. But laws applicable to the sugar mills in that state are different. So, that poses a compliance risk. If the company fails to comply with laws related to a new area or industry or sector, it will pose a serious threat to its survival.

For example : The Reserve Bank of India has imposed a monetary penalty aggregating Rs. 3 crore on Union Bank of India for non-compliance with the regulatory direction on 'know-your-customer' (KYC) norms.

3. Operational Risk :

This type of risk relates to internal risk. It also relates to failure on the part of the company to cope with day to day operational problems. Operational risk relates to 'people' as well as 'process'. We will take an example to illustrate this. For example, an employee paying out Rs.1,00,000 from the account of the company instead of Rs.10,000.

This is a people as well as a process risk. An organization can employ another person to check the work of that person who has mistakenly paid Rs 1,00,000 or it can install an electronic system that can flag off an unusual amount.

4. Financial Risk :

Financial Risk is referred as the unexpected changes in financial conditions such as prices, exchange rate, Credit rating, and interest rate etc. Though political risk is not a financial risk in direct sense but same can be included as any unexpected political change in any foreign country may lead to country risk which may ultimately result in financial loss.

Accordingly, the broadly Financial Risk can be divided into following categories.

A. Counter Party Risk :

This risk occurs due to non-honoring of obligations by the counter party which can be failure to deliver the goods for the payment already made or vice-versa or repayment of borrowings and interest etc. Thus, this risk also covers the credit risk i.e. default by the counter party.

B. Political Risk :

Generally this type of risk is faced by and overseas investors, as the adverse action by the government of host country may lead to huge loses. This can be on any of the following form.

- Confiscation or destruction of overseas properties.
- Rationing of remittance to home country.
- Restriction on conversion of local currency of host country into foreign currency.
- Restriction as borrowings.
- Invalidation of Patents
- Price control of products

C. Interest Rate Risk :

This risk occurs due to change in interest rate resulting in change in asset and liabilities. This risk is more important for banking companies as their balance sheet's items are more interest sensitive and their base of earning is spread between borrowing and lending rates.

As we know that the interest rates are two types i.e. fixed and floating. The risk in both of these types is inherent. If any company has borrowed money at floating rate then with increase in floating the liability under fixed rate shall remain the same. This fixed rate, with falling floating rate the liability of company to pay interest under fixed rate shall comparatively be higher.

D. Currency Risk :

This risk mainly affects the organization dealing with foreign exchange as their cash flows changes with the movement in the currency exchange rates. This risk can be affected by cash flow adversely or favorably. For example, if rupee depreciates vis-à-vis US$ receivables will stand to gain vis-à-vis to the importer who has the liability to pay bill in US$. The best case we can quote Infosys (Exporter) and Indian Oil Corporation Ltd. (Importer).

2. EVALUATION OF FINANCIAL RISK :

The financial risk can be evaluated from different point of views as follows:

A. From stakeholder's point of view: Major stakeholders of a business are equity shareholders and they view financial gearing i.e. ratio of debt in capital structure of company as risk since in event of winding up of a company they will be least prioritized. Even for a lender, existing gearing is also a risk since company having high gearing faces more risk in default of payment of interest and principal repayment.

B. From Company's point of view: From company's point of view if a company borrows excessively or lend to someone who defaults, then it can be forced to go into liquidation.

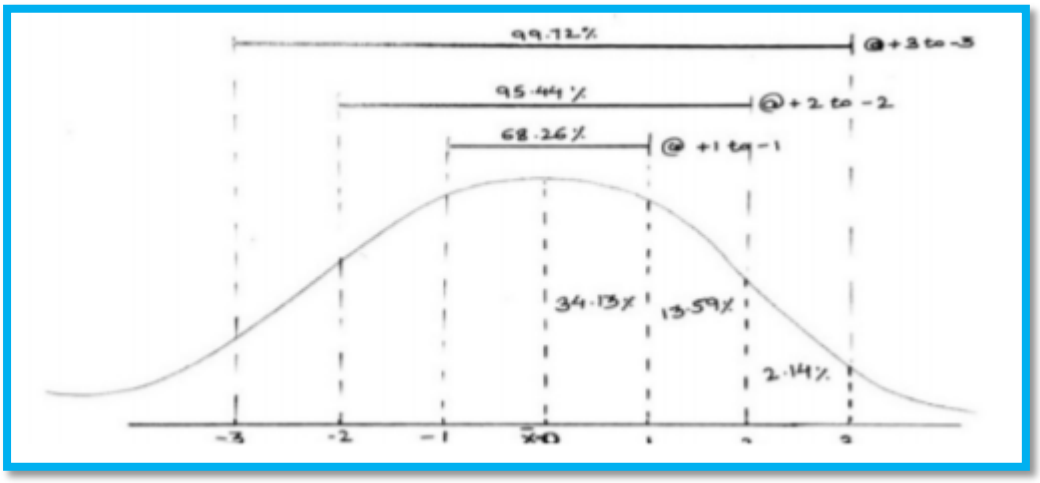
C. From Government's point of view : From Government's point of view, the financial risk can be viewed as failure of any bank or (like Lehman Brothers) down grading of any financial institution leading to spread of distrust among society at large. Even this risk also includes willful defaulters. This can also be extended to sovereign debt crisis.

3. VALUE AT RISK (VAR) :

Before we study the concept of VAR, its important to Know the Basics of Standard normal Distribution

Features

- Bell shaped curve
- Symmetrical to Mean
- Extends from - to + infinity
- The area under the curve is 1
- Mean = 0
- SD = 1
- Area to the left = 50% and to the right = 50%



1. Area in the center is larger and keeps decreases as we go away from the mean, i.e the probability of the return closer to the mean is greater this probability keeps on decreasing as we move from the mean

2. Area to the left and the right to mean = 0 at SD = 1 is 34.13% respectively. This will make total area at +/- 1 SD under the curve at 68.26%

3. Area to the left and the right of the mean from 1 SD to 2 SD is 13.59%, taking the total to 47.72% from Mean = 0 to SD = 2 to the left and the right respectively. The total area under the curve from -2 SD to 2 SD will be 95.44%

> **Note :** At SD +/- 1.96 area under the curve will be 95%

4. Area to the left and the right of the mean from 2 SD to 3 SD is 2.14%, taking the total to 49.86% from Mean = 0 to SD = 3 to the left and the right respectively. The total area under the curve from -3 SD to 3 SD will be curve%

> **Note :** At SD +/- 2.58 area under the curve will be 99%

Question 1 :

Calculate mean and standard deviation from the following Information

Years	Return
1	16%
2	18%
3	15%
4	16%
5	15%
6	16%
7	21%
8	18%
9	15%
10	12%

Question 2 :

Calculate the mean and standard deviation from the following information

Market Condition	Return	Probability
Very Good	25	0.2
Good	22	0.3
Average	18	0.3
Bad	16	0.1
Very Bad	14	0.1

Question 3 :

An IQ test was conducted for 1000 students. The results were collated and had a Mean of 100 and SD of 15. Calculate assuming standard normal distribution

1. What % of students will have a score between 85 to 115.
2. What % of students will have a score between 70 to 130
3. What % of students will have a score between 55 to 145

Question 4 :

Taking the data from Question no 3, calculate

1. What % of students will have a score above 115
2. What % of students will have a score above 130
3. What % of students will have a score above 145

Question 5 :

Continuing with Question 3, calculate

1. What % of students will have a score below 85
2. What % of students will have a score below 70
3. What % of students will have a score below 55

Question 6 :

Continuing with Question 3, calculate

1. What % of students will have an IQ above 85
2. What % of students will have an IQ below 115
3. What % of students will have an IQ above 70
4. What % of students will have an IQ below 130

DEFINITION :

VAR is a statistical technique used to measure and quantify the level of financial risk within a firm or investment portfolio over a specific time frame.

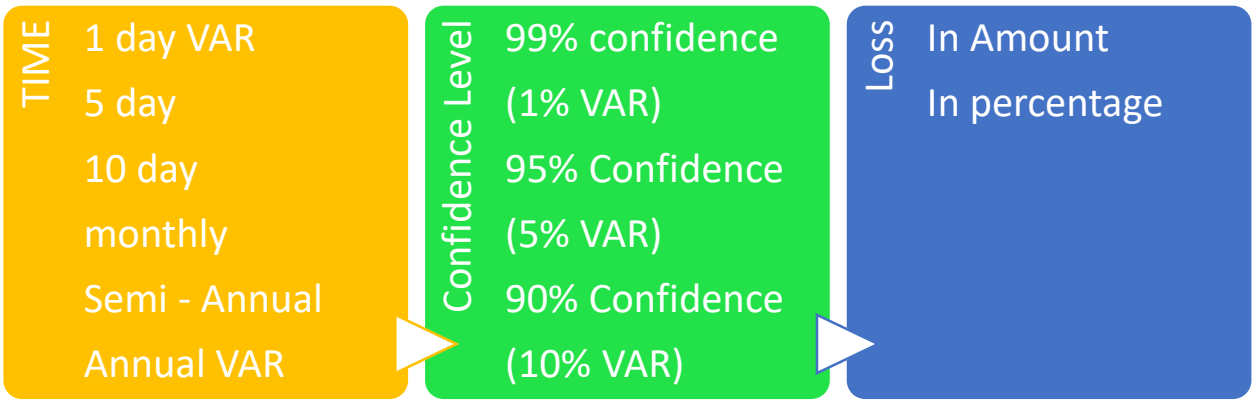
(i) What is worst case scenario?

(ii) What will be loss?

FEATURES OF VAR :

Following are the main features of VAR

1. Components of Calculations : VAR calculation is based on following three components :



2. **Statistical Method :** It is a type of statistical tool based on Standard Deviation.
3. **Time Horizon:** VAR can be applied for different time horizons say one day, one week, one month and so on.
4. **Probability :** Assuming the values are normally attributed, probability of maximum loss can be predicted.
5. **Control Risk :** Risk can be controlled by selling limits for maximum loss.
6. **Z Score:** Z Score indicates how many standard Deviations is away from Mean value of a population. When it is multiplied with Standard Deviation it provides VAR

Denotations :

VAR can be described as

- 1 % VAR ---- 99% Confidence level
- 5 % VAR ---- 95% Confidence Level
- 10 % VAR ---- 90% Confidence Level

Interpretations :

Consider 5 % VAR = Rs. 15000

- It means that there is 95% chance that the loss will not exceed Rs. 15000
- It means that there is 5% chance that the loss will 15000 or more

Question 7 :

What do mean by 1% daily VAR = Rs. 50,000

Z Scores :

We should remember the following standard Z Scores

- 10% VAR = -1.28
- 5% VAR = -1.65
- 1% VAR = - 2.33

VAR Conversions :

VAR can converted for

1. Time Basis
2. % Basis (Confidence Level)

1. **Time Basis :** VAR can be converted from 1 day to longer period by multiplying daily VAR with Square root of days we need the answer for.

2. VAR can also be converted for different levels i.e. a. From VAR 1% to VAR 5% b. From VAR at 95% confidence Level to VAR at 99% confidence level by simple cross multiplication

Question 8 :

Consider Daily VAR Rs. 17000

Calculate :

1. Weekly VAR
2. 10 Day VAR
3. Monthly VAR
4. Semi Annual VAR
5. Annual VAR

Question 9 :

If VAR 10% = Rs.1,00,000, then calculate VAR 5%

Question 10 :

If VAR at 95% confidence level is Rs.21,500, then calculate VAR at 99% confidence level.

Calculation of VAR :

With all logics in place lets now calculate and VAR and understand the numbers

Question 11 :

Suppose you hold Rs.2 crore shares of X Ltd. whose market price standard deviation is 2% per day. Assuming 252 trading days a year, determine maximum loss level over the period of 1 trading day and 10 trading days with 99% confidence level.

Question 12 :

Consider a portfolio consisting of a Rs.200,00,000 investment in share XYZ and a Rs.200,00,000 investment in share ABC. The daily standard deviation of both shares is 1% and that the coefficient of correlation between them is 0.3. You are required to determine the 10- day 99% value at risk for the portfolio?

4. IDENTIFICATION AND MANAGEMENT OF FINANCIAL RISK :

As we have classified financial risk in 4 categories, we shall discuss identification and management of each risk separately under same category.

1. Counter Party Risk :

The various hints that may provide counter party risk are as follows:

(a) Failure to obtain necessary resources to complete the project or transaction undertaken.
(b) Any regulatory restrictions from the Government.
(c) Hostile action of foreign government.
(d) Let down by third party.
(e) Have become insolvent.

The various techniques to manage this type of risk are as follows:

(1) Carrying out Due Diligence before dealing with any third party.
(2) Do not over commit to a single entity or group or connected entities.
(3) Know your exposure limits.
(4) Review the limits and procedure for credit approval regularly.
(5) Rapid action in the event of any likelihood of defaults.
(6) Use of performance guarantee, insurance or other instruments.

2. Political Risk :

Since this risk mainly relates to investments in foreign country, company should assess country

(1) By referring political ranking published by different business magazines.
(2) By evaluating country's macro-economic conditions.
(3) By analysing the popularity of current government and assess their stability.
(4) By taking advises from the embassies of the home country in the host countries.
(5) Further, following techniques can be used to mitigate this risk.
    (i) Local sourcing of raw materials and labour.
    (ii) Entering into joint ventures
    (iii) Local financing
    (iv) Prior negotiations

From the following actions by the Governments of the host country this risk can be identified:

1. Insistence on resident investors or labour.
2. Restriction on conversion of currency.
3. Repatriation of foreign assets of the local govt.
4. Price fixation of the products.

3. Interest Rate Risk :

Generally, interest rate Risk is mainly identified from the following:

1. Monetary Policy of the Government.
2. Any action by Government such as demonetization etc.

3. Economic Growth
4. Release of Industrial Data
5. Investment by foreign investors
6. Stock market changes

4. Currency Risk :

Just like interest rate risk the currency risk is dependent on the Government action and economic development. Some of the parameters to identity the currency risk are as follows:

(1) Government Action: The Government action of any country has visual impact in its currency. For example, the UK Govt. decision to divorce from European Union i.e. Brexit brought the pound to its lowest since 1980's.

(2) Nominal Interest Rate: As per interest rate parity (IRP) the currency exchange rate depends on the nominal interest of that country.

(3) Inflation Rate: Purchasing power parity theory discussed in later chapters impact the value of currency.

(4) Natural Calamities: Any natural calamity can have negative impact.

(5) War, Coup, Rebellion etc.: All these actions can have far reaching impact on currency's exchange rates.

(6) Change of Government: The change of government and its attitude towards foreign investment also helps to identify the currency risk. Management of Currency Risk is covered under the chapter of FOREX.

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Securitization


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CHAPTER DESIGN

1. INTRODUCTION
2. CONCEPT AND DEFINITION
3. PARTICIPANTS
4. PROCESS / MECHANISM
5. BENEFITS OF SECURITIZATION
6. PROBLEMS OF SECURITIZATION
7. SECURITIZATION INSTRUMENTS
8. PRICING
9. SECURITIZATION IN INDIA

1. INTRODUCTION :

Some companies or firms who are involved in sending the money or making credit sale must have a huge balance of receivables in their Balance Sheet. Though they have a huge receivable but still they may face liquidity crunch to run their business. One way may to adopt borrowing route, but this results in change debt equity ratio of the company which may not be acceptable to some stakeholders but also put companies to financial risk which affects the future borrowings by the company. To overcome this problem the term 'securitization' was coined.

2. CONCEPT AND DEFINITION :

The process of securitization typically involves the creation of pool of assets fromthe illiquid financial assets, such as receivables or loans which are marketable. In other words,it is the process of repackaging or rebundling of illiquid assets into marketable securities. These assets can be automobile loans, credit card receivables, residential mortgages or any other form of future receivables.

Features of securitization :

The securitization has the following features:

(i) **Creation of Financial Instruments :** The process of securities can be viewed as process of creation of additional financial product of securities in market backed by collaterals.

(ii) **Bundling and Unbundling :** When all the assets are combined in one pool it is bundling and when these are broken into instruments of fixed denomination it is unbundling.

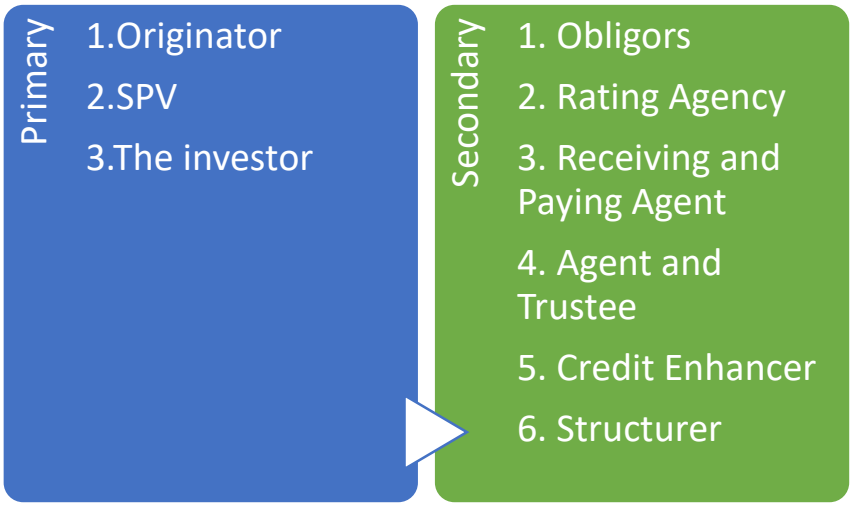
(iii) **Tool of Risk Management :** In case of assets are securitized on non-recourse basis, then securitization process acts as risk management as the risk of default is shifted.

(iv) **Structured Finance :** In the process of securitization, financial instruments are tailor structured to meet the risk return trade of profile of investor, and hence, these securitized instruments are considered as best examples of structured finance.

(v) **Trenching :** Portfolio of different receivable or loan or asset are split into several parts based on risk and return they carry called 'Trenche'. Each Trench carries a different level of risk and return.

(vi) **Homogeneity :** Under each trenche the securities are issued of homogenous nature and even meant for small investors the who can afford to invest in small amounts.

3. PARTICIPANTS :



1. Primary Participants :

Primary Participants are main parties to this process. The primary participants in the process of securitization are as follows:

a) **Originator :** It is the initiator of deal or can be termed as securitizer. It is an entity which sells the assets lying in its books and receives the funds generated through the sale of such assets. The originator transfers both legal as well as beneficial interest to the Special Purpose Vehicle (discussed later).

b) **Special Purpose Vehicle :** Also, called SPV is created for the purpose of executing the deal. Since issuer originator transfers all rights in assets to SPV, it holds the legal title of these assets. It is created especially for the purpose of securitization only and normally could be in form of a company, a firm, a society or a trust.

c) **The Investors :** Investors are the buyers of securitized papers which may be an individual, an institutional investor such as mutual funds, provident funds, insurance companies, mutual funds, Financial Institutions etc.

2. Secondary Participants :

Besides the primary participants other parties involved into the securitization process are as follows:

(a) **Obligors :** Actually they are the main source of the whole securitization process. They are the parties who owe money to the firm and are assets in the Balance Sheet of Originator. The amount due from the obligor is transferred to SPV and hence they form the basis of securitization process and their credit standing is of paramount importance in the whole process.

(b) **Rating Agency :** Since the securitization is based on the pools of assets rather than the originators, the assets have to be assessed in terms of its credit quality and credit support available.

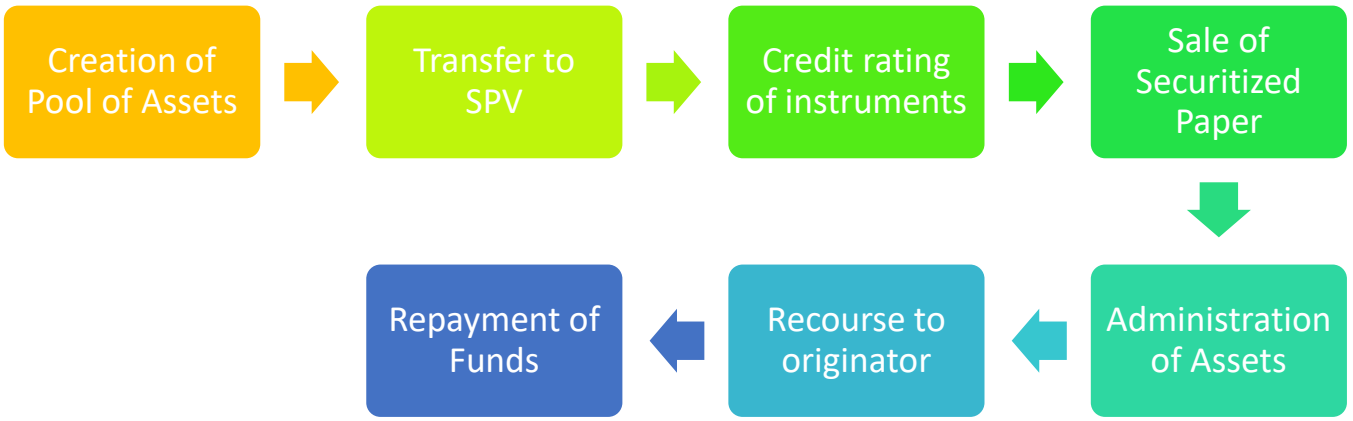
(c) **Receiving and Paying agent (RPA) :** Also, called Servicer or Administrator, it collects the payment due from obligor(s) and passes it to SPV. It also follow up with defaulting borrower and if required initiate appropriate legal action against them. Generally, an originator or its affiliates acts as servicer.

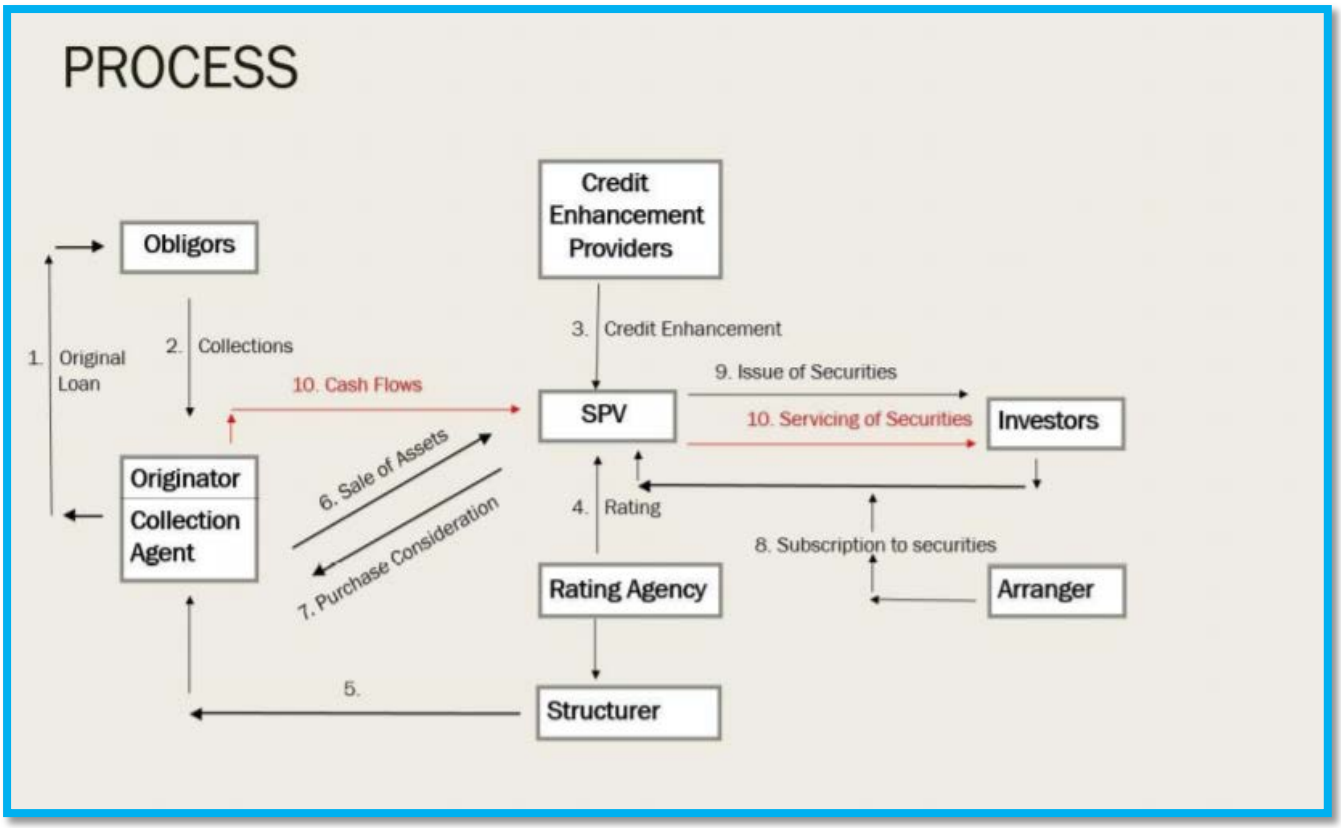
(d) **Agent or Trustee :** Trustees are appointed to oversee that all parties to the deal perform in the true spirit of terms of agreement. Normally, it takes care of interest of investors who acquires the securities.

(e) **Credit Enhancer :** Since investors in securitized instruments are directly exposed to performance of the underlying and sometime may have limited or no recourse to the originator, they seek additional comfort in the form of credit enhancement. In other words, they require credit rating of issued securities which also empowers marketability of the securities.

(f) **Structure :** It brings together the originator, investors, credit enhancers and other parties to the deal of securitization. Normally, these are investment bankers also called arranger of the deal. It ensures that deal meets all legal, regulatory, accounting and tax laws requirements.

4. PROCESS / MECHANISM :





5. BENEFITS OF SECURITIZATION :

1. From the angle of originator :

Originator (entity which sells assets collectively to Special Purpose Vehicle) achieves the following benefits from securitization.

(i) **Off – Balance Sheet Financing :** When loan/receivables are securitized it release a portion of capital tied up in these assets resulting in off Balance Sheet financing leading to improved liquidity position which helps expanding the business of the company.

(ii) **More specialization in main business :** By transferring the assets the entity could concentrate more on core business as servicing of loan is transferred to SPV. Further, in case of non- recourse arrangement even the burden of default is shifted.

(iii) **Helps to improve financial ratios :** Especially in case of Financial Institutions and Banks, it helps to manage Capital –To-Weighted Asset Ratio effectively.

(iv) **Reduced borrowing Cost :** Since securitized papers are rated due to credit enhancement even they can also be issued at reduced rate as of debts and hence the originator earns a spread, resulting in reduced cost of borrowings.

2. From the angle of investor :

Following benefits accrues to the investors of securitized securities.

(i) **Diversification of Risk :** Purchase of securities backed by different types of assets provides the diversification of portfolio resulting in reduction of risk.

(ii) **Regulatory requirement :** Acquisition of asset backed belonging to a particular industry say micro industry helps banks to meet regulatory requirement of investment of fund in industry specific.

(iii) **Protection against default :** In case of recourse arrangement if there is any default by any third party then originator shall make good the least amount. Moreover, there can be insurance arrangement for compensation for any such default.

6. PROBLEMS OF SECURITIZATION :

- **Stamp Duty :** Stamp Duty is one of the obstacle in India. Under Transfer of Property Act, 1882, a mortgage debt stamp duty which even goes upto 12%in some states of India and this impeded the growth of securitization in India. It should be noted that since pass through certificate does not evidence any debt only able to receivable, they are exempted from stamp duty. Moreover, in India, recognizing the special nature of securitized instruments in some states has reduced the stamp duty on them.
- **Taxation :** Taxation is another area of concern in India. In the absence of any specific provision relating to securitized instruments in Income Tax Act experts' opinion differ a lot. Some are of opinion that in SPV as a trustee is liable to be taxed in a representative capacity then other are of view that instead of SPV, investors will be taxed on their share of income. Clarity is also required on the issues of capital gain implications on passing payments to the investors.
- **Accounting :** Accounting and reporting of securitized assets in the books of originator is another area of concern. Although securitization is slated to an off-balance sheet instrument but in true sense receivables are removed from originator's balance sheet. Problem arises especially when assets are transferred without recourse.
- **Lack of standardization :** Every originator follows own format for documentation and administration have lack of standardization is another obstacle in growth of securitization.
- **Inadequate Debt Market :** Lack of existence of a well-developed debt market in India is another obstacle that hinders the growth of secondary market of securitized or asset backed securities.
- **Ineffective Foreclosure laws :** For last many years there are efforts are going on for effective foreclosure but still foreclosure laws are not supportive to lending institutions and this makes securitized instruments especially mortgaged backed securities less attractive as lenders face difficulty in transfer of property in event of default by the borrower.

7. SECURITIZATION INSTRUMENTS :

1. Pass Through Certificates (PTCs) :

As the title suggests originator (seller of eh assets) transfers the entire receipt of cash in form of interest or principal repayment from the assets sold. Thus, these securities represent direct claim of the investors on all the assets that has been securitized through SPV. Since all cash flows are transferred the investors carry proportional beneficial interest in the asset held in the trust by SPV.

It should be noted that since it is a direct route any prepayment of principal is also proportionately distributed among the securities holders. Further, due to these

characteristics on completion of securitization by the final payment of assets, all the securities are terminated simultaneously. Skewness of cash flows occurs in early stage if principals are repaid before the scheduled time.

2. Pay Through Security (PTS) :

As mentioned earlier, since, in PTCs all cash flows are passed to the performance of the securitized assets. To overcome this limitation and limitation to single mature there is another structure i.e. PTS. In contrast to PTC in PTS, SPV debt securities backed by the assets and hence it can restructure different tranches from varying maturities of receivables.

In other words, this structure permits desynchronization of servicing of securities issued from cash flow generating from the asset. Further, this structure also permits the SPV to reinvest surplus funds for short term as per their requirement.

Since, in Pass Through, all cashflow immediately in PTS incase of early retirement of receivables plus cash can be used for short term yield. This structure also provides the freedom to issue several debt trances with varying maturities.

3. Stripped Securities :

Stripped Securities are created by dividing the cash flows associated with underlying securities into two or more new securities. Those two securities are as follows:

(i) Interest Only (IO) Securities

(ii) Principle Only (PO) Securities

As each investor receives a combination of principal and interest, it can be stripped into two portion of Interest and Principle. Accordingly, the holder of IO securities receives only interest while PO security holder receives only principal. Being highly volatile in nature these securities are less preferred by investors.

In case yield to maturity in market rises, PO price tends to fall as borrower prefers to postpone the payment on cheaper loan s. Whereas if interest rate in market falls, the borrower tends to repay the loans as they prefer to borrow fresh at lower rate of interest. In contrast, value of IO's securities increases when interest rate goes up in the market as more interest is calculated on borrowings. However, when interest rate due to prepayments of principals, IO's tends to fall. Thus, from the above, it is clear that it is mainly perception of investors that determines the prices of IOs and POs

8. PRICING :

Pricing of securitized instruments in an important aspect of securitization. While pricing the instruments, it is important that it should be acceptable to both originators as well as to the investors. On the same basis pricing of securities can be divided into following two categories:

1. From Originator's Angle :

From originator's point of view, the instruments can be priced at a rate at which originator has to incur an outflow and if that outflow can be amortized over a period of time by investing the amount raised through securitization.

2. From Investor's Angle :

From an investor's angle security price can be determined by discounting best estimate of expected future cash flows using rate of yield to maturity of a security of comparable security with respect to credit quality and average life of the securities. This yield can also be estimated by referring the yield curve available for marketable securities, though some adjustments is needed on account of spread points, because of credit quality of the securitized instruments.

9. SECURITIZATION IN INDIA :

1. First securitisation deal in India was between Citibank and GIC Mutual Funds in 1991 for Rs. 160 million
2. L & T raised Rs. 4090 million through the securitization of future lease rentals to raise capital for its power plant in 1992
3. Securitization of air craft receivable by Jet Airways for Rs. 16000 million in 2001 through off shore SPV.
4. India's largest securitization deal by ICICI Bank of Rs. 19299 Million in 2007. The underlying Asset was Auto Loan receivables
5. As per report of Crisal securitization transaction in India scored to the highest level of Rs. 70,000 crore in financial year 2016

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Startup Finance


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CHAPTER DESIGN

1. STRATEGIC FINACIAL DECISION MAKING FRAME WORK
2. SOME INNOVATIVE WAYS TO FINANCE A START UP
3. PITCH PRESENTATION
4. MODES OF FINANCING A START UP
5. STARTUP INDIA INITIAIVE

1. STRATEGIC FINACIAL DECISION MAKING FRAME WORK :

Startup financing means some initial infusion of money needed to turn an idea (by starting a business) into reality. While starting out, big lenders like banks etc. are not interested in a startup business. The reason is that when you are just starting out, you're not at the point yet where a traditional lender or investor would be interested in you. So that leaves one with the option of selling some assets, borrowing against one's home, asking loved ones i.e. family and friends for loans etc. But, that involves a lot of risk, including the risk of bankruptcy and strained relationships with friends and family.

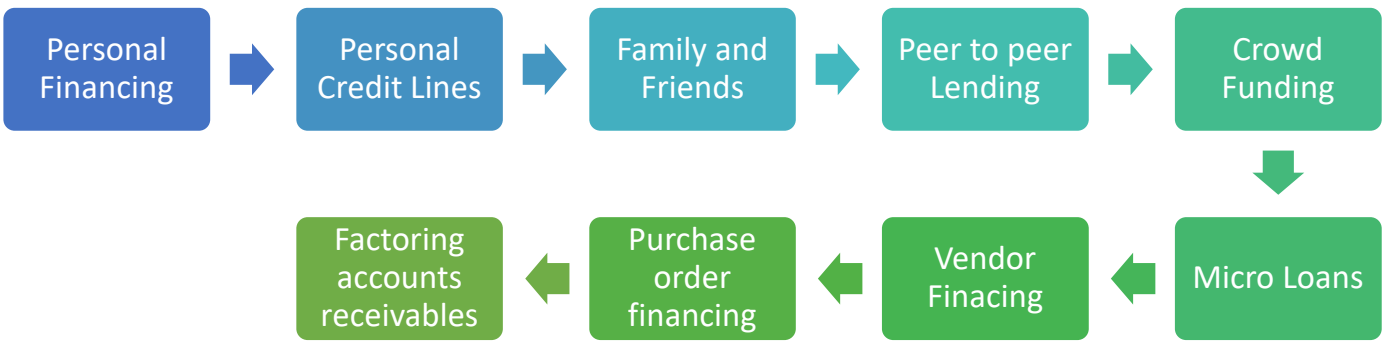
So, the pertinent question is how to keep loans from family and friends strictly business like. This is the hard part behind starting a business -- putting so much at risk. But doing so is essential. It's what sets entrepreneurs apart from people who collect regular salaries as employees.

A good way to get success in the field of entrepreneurship is to speed up initial operations as quickly as possible to get to the point where outside investors can see and feel the business venture, as well as understand that a person has taken some risk reaching it to that level.

Some businesses can also be bootstrapped (attempting to found and build a company from personal finances or from the operating revenues of the new company).They can be built up quickly enough to make money without any help from investors who might otherwise come in and start dictating the terms. In order to successfully launch a business and get it to a level where large investors are interested in putting their money, requires a strong business plan. It also requires seeking advice from experienced entrepreneurs and experts -- people who might invest in the business sometime in the future.

2. SOME INNOVATIVE WAYS TO FINANCE A STARY UP :

Every startup needs access to capital, whether for funding product development, acquiring machinery and inventory, or paying salaries to its employee. Most entrepreneurs think first of bank loans as the primary source of money, only to find out that banks are really the least likely benefactors for startups. So, innovative measures include maximizing non-bank financing. Here are some of the sources for funding a startup:



(i) **Personal financing :** It may not seem to be innovative but you may be surprised to note that most budding entrepreneurs never thought of saving any money to start a business. This is important because most of the investors will not put money into a deal if they see that you have not contributed any money from your personal sources.

(ii) **Personal credit lines :** One qualifies for personal credit line based on one's personal credit efforts. Credit cards are a good example of this. However, banks are very cautious while granting personal credit lines. They provide this facility only when the business has enough cash flow to repay the line of credit.

(iii) **Family and friends :** These are the people who generally believe in you, without even thinking that your idea works or not. However, the loan obligations to friends and relatives should always be in writing as a promissory note or otherwise.

(iv) **Peer-to-peer lending :** In this process group of people come together and lend money to each other. Peer to peer to lending has been there for many years. Many small and ethnic business groups having similar faith or interest generally support each other in their start up endeavors.

(v) **Crowd funding :** Crowd funding is the use of small amounts of capital from a large number of individuals to finance a new business initiative. Crowd funding makes use of the easy accessibility of vast networks of people through social media and crowd funding websites to bring investors and entrepreneurs together.

(vi) **Microloans :** Microloans are small loans that are given by individuals at a lower interest to a new business ventures. These loans can be issued by a single individual or aggregated across a n

(vii) **Vendor Financing :** Vendor financing is the form of financing in which a company lends money to one of its customers so that he can buy products from the company itself. Vendor financing also takes place when many manufacturers and distributors are convinced to defer payment until the goods are sold. This means extending the payment terms to a longer period for e.g. 30 days payment period can be extended to 45 days or 60 days. However, this depends on one's credit worthiness and payment of more money.

(viii) **Purchase Order Financing :** The most common scaling problem faced by startups is the inability to find a large new order. The reason is that they don't have the necessary cash to produce and deliver the product. Purchase order financing companies often advance the required funds directly to the supplier. This allows the transaction to complete and profit to flow up to the new business.

(ix) **Factoring Accounts Receivables :** In this method, a facility is given to the seller who has sold the good on credit to fund his receivables till the amount is fully received. So, when the goods are sold on credit, and the credit period (i.e. the date upto which payment shall be made) is for example 6 months, factor will pay most of the sold amount upfront and rest of the amount later. Therefore, in this way, a startup can meet his day to day expenses.

3. PITCH PRESENTATION :

Pitch deck presentation is a short and brief presentation (not more than 20 minutes) to investors explaining about the prospects of the company and why they should invest into the startup business. So, pitch deck presentation is a brief presentation basically using PowerPoint to provide a quick overview of business plan and convincing the investors to put some money into the business. Pitch presentation can be made either during face to face meetings or online meetings with potential investors, customers, partners, and co-founders. Here, some of the methods have been highlighted below as how to approach a pitch presentation:

(i) **Introduction :** To start with, first step is to give a brief account of yourself i.e. who are you? What are you doing? But care should be taken to make it short and sweet. Also, use this opportunity to get your investors interested in your company. One can also talk up the most interesting facts about one's business, as well as any huge milestones one may have achieved.

(ii) **Team :** The next step is to introduce the audience the people behind the scenes. The reason is that the investors will want to know the people who are going to make the product or service successful. Moreover, the investors are not only putting money towards the idea but they are also investing in the team. Also, an attempt should be made to include the background of the promoter, and how it relates to the new company. Moreover, if possible, it can also be highlighted that the team has worked together in the past and achieved significant results.

(iii) **Problem :** Further, the promoter should be able to explain the problem he is going to solve and solutions emerging from it. Further the investors should be convinced that the newly introduced product or service will solve the problem convincingly. For instance, when Facebook was launched in 2004, it added some new features which give it a more professional and lively look in comparison to Orkut which was there for some time. It

enabled Facebook to become an instant hit among the people. Further, customers have no privacy while using Orkut. However, in Facebook, you can view a person's profile only if he adds you to his list. These simple yet effective advantages that Facebook has over Orkut make it an extremely popular social networking site.

(iv) **Solution :** It is very important to describe in the pitch presentation as to how the company is planning to solve the problem. For instance, when Flipkart first started its business in 2007, it brought the concept of e- commerce in India. But when they started, payment through credit card was rare. So, they introduced the system of payment on the basis of cash on delivery which was later followed by other ecommerce companies in India. The second problem was the entire supply chain system. Delivering goods on time is one of the most important factors that determine the success of an ecommerce company. Flipkart addressed this issue by launching their own supply chain management system to deliver orders in a timely manner. These innovative techniques used by Flipkart enabled them to raise large amount of capital from the investors.

(v) **Marketing/Sales :** This is a very important part where investors will be deeply interested. The market size of the product must be communicated to the investors. This can include profiles of target customers, but one should be prepared to answer questions about how the promoter is planning to attract the customers. If a business is already selling goods, the promoter can also brief the investors about the growth and forecast future revenue

(vi) **Projections or Milestones :** It is true that it is difficult to make financial projections for a startup concern. If an organization doesn't have a long financial history, an educated guess can be made. Projected financial statements can be prepared which gives an organization a brief idea about where is the business heading? It tells us that whether the business will be making profit or loss?

(vii) **Competition :** Every business organization has competition even if the product or service offered is new and unique. It is necessary to highlight in the pitch presentation as to how the products or services are different from their competitors. If any of the competitors have been acquired, there complete details like name of the organization, acquisition prices etc. should be also be highlighted.

(viii) **Business Model :** The term business model is a wide term denoting core aspects of a business including purpose, business process, target customers, offerings, strategies, infrastructure, organizational structures, sourcing, trading practices, and operational processes and policies including culture.

(ix) **Financing :** If a startup business firm has raised money, it is preferable to talk about how much money has already been raised, who invested money into the business and what they did about it. If no money has been raised till date, an explanation can be made regarding how much work has been accomplished with the help of minimum funding that the company is managed to raise. It is true that investors like to see entrepreneurs who have invested their own money. If a promoter is pitching to raise capital he should list how much he is looking to raise and how he intend to use the funds.

4. MODES OF FINANCING A START UP :

1. Boot Strapping :

An individual is said to be boot strapping when he or she attempts to found and build a company from personal finances or from the operating revenues of the new company.

A common mistake made by most founders is that they make unnecessary expenses towards marketing, offices and equipment they cannot really afford. So, it is true that more money at the inception of a business leads to complacency and wasteful expenditure. On the other hand, investment by startups from their own savings leads to cautious approach. It curbs wasteful expenditures and enable the promoter to be on their toes all the time.

Five Sources of Bootstrap Financing :

1. Factoring :

Factoring means to sell your receivables – money you are to receive from your consumers – to a buyer, be it a financing company or otherwise, and raising capital (read immediate money) from the buyer against such receivables. The profit you were to make on the products being sold must be factored into the sale price of your receivables, as the receivables from the consumer as well as the responsibility to collect the same will be that of the buyer's.

2. Trade Credit :

Create a detailed financial plan explaining to the supplier how you will pay it, and try to get trade credit of 30, 60 or 90 days from your suppliers. This is usually the practice with businesses, however being a new venture, receiving trade credit would be a bit challenging, but not impossible – a matter of negotiation.

3. Lease and Mortgage :

Instead of spending capital on purchasing infrastructure at the very onset of your new venture, lease it. Churn some revenue with the infrastructure, and then consider buying the same. You can do the same with furniture and even with employees. Lastly, real estate is a good type of bootstrap financing too. You can try to borrow money from real estate equity to use for your business. You may also borrow money against your personal properties, as real estate mostly always appreciates with time and is therefore considered safe by lenders.

4. Customer Credit :

You can use your consumers' letters of credit to purchase or acquire material you require from your supplier. That way, you do not need to pay the supplier immediately, and the supplier is also reassured that it will get the money due to it since you already have consumers willing to pay for, and in a sense vouch for, the product.

5. Yard Sale, Auction, On-the-side-Consulting :

While bootstrapping, it is not uncommon for entrepreneurs to organize yard sales and auctions to raise money for their business. In fact, in 1975, Steve Jobs and Steve

Wozniak sold their Volkswagen microbus and Hewlett-Packard calculator, respectively, to raise the capital of $ 1350 with which they began working on Apple I and went on to incorporate Apple Computer Inc. in 1977. You may also offer your services in the profession/ sector in which you work as a part time consultant, thereby ensuring a small but constant inflow of funds.

Raising funds is not the easiest thing to do for a startup, in fact, in some way it can be the litmus test of your concept, your hard work and your ability to convert that concept into a value adding product or service. Bootstrap financing has its own challenges – and its own benefits – and could be the smarter way to begin your venture. As Tableau explicated by example, raising capital can assume importance but you should not depend on it. Instead, assess how best you may bootstrap your business, raise funds through bootstrap financing, and conduct fundraising only when the time is right to do so.

Advantages of Bootstrapping :

1. Retaining Control :

To bootstrap is to reduce reliance on external sources for finance and capital, and it is one of the most effective ways to ensure a positive cash flow. Your control of the company and your equity are not diluted, allowing you the freedom to manage operations, products, marketing – everything, in fact, as you deem fit. Investor influence is absent – so you may retain your vision and culture.

2. Ensures Efficiency :

Let's face it, if you are spending your own money, and are fully aware of the limitations of that supply, you will be extra careful about how you spend it. And you will squeeze every bit that you can out of every penny, developing a resourcefulness that you may well not have had before. You suddenly become efficient with your money not because you should be, but because you must be.

3. Increases Awareness and Involvement :

(Please note that this should not be construed to mean that if you raise capital from outside your company you are not aware or involved with your venture.) However, while bootstrapping, you will be involved with every single aspect of your venture. You will automatically be required to be more aware and informed, and to cultivate a wide skill-set.

4. More Time to Work :

Time is money! Every hour that you do not need to spend chasing venture capitalists and other fund-doling entities, you will end up spending on more important aspects such as product development, finding and managing marketing avenues, sales, consumer interaction etc.

5. More Profits for You :

The math is, you do not need to give back the money you never took, nor do you have to part with what you earned. Yes, it means more profit for you, whenever you get to the point of making profits.

6. Exposure to Alternatives :

When you avoid the much-taken path of fund raising, various options of bootstrap financing present themselves to you, such as asset re-financing, trade credit, factoring as also old fashioned ways of raising funds such as yard sales, auctions, consulting on the side – you get creative to raise the money your venture needs.

2. Angel Investor :

Despite being a country of many cultures and communities traditionally inclined to business and entrepreneurship, India still ranks low on comparative ratings across entrepreneurship, innovation and ease of doing business. The reasons are obvious. These include our old and outdated draconian rules and regulations which provides a hindrance to our business environment for a long time. Other reasons are redtapism, our time consuming procedures, and lack of general support for entrepreneurship. Off course, things are changing in recent times.

As per Investopedia, Angel investors invest in small startups or entrepreneurs. Often, angel investors are among an entrepreneur's family and friends. The capital angel investors provide may be a one-time investment to help the business propel or an ongoing injection of money to support and carry the company through its difficult early stages.

Angel investors provide more favorable terms compared to other lenders, since they usually invest in the entrepreneur starting the business rather than the viability of the business. Angel investors are focused on helping startups take their first steps, rather than the possible profit they may get from the business. Essentially, angel investors are the opposite of venture capitalists.

Angel investors are also called informal investors, angel funders, private investors, seed investors or business angels. These are affluent individuals who inject capital for startups in exchange for ownership equity or convertible debt. Some angel investors invest through crowdfunding platforms online or build angel investor networks to pool in capital.

Angel investors typically use their own money, unlike venture capitalists who take care of pooled money from many other investors and place them in a strategically managed fund. Though angel investors usually represent individuals, the entity that actually provides the fund may be a limited liability company, a business, a trust or an investment fund, among many other kinds of vehicles.

Angel investors who seed startups that fail during their early stages lose their investments completely. This is why professional angel investors look for opportunities for a defined exit strategy, acquisitions or initial public offerings (IPOs).

3. Venture Capital Funds :

1. Definition :

Venture Capital is "Equity support to Fund a new concept that involve a higher risk and at the same time, have a high growth and profit.

Venture Capital is "It broadly implies an investments of long term, equity finance in high risk projects with high rewards possibilities''

2. Features :

(i) **Long time horizon** : The fund would invest with a long time horizon in mind. Minimum period of investment would be 3 years and maximum period can be 10 years.

(ii) **Lack of liquidity** : When VC invests, it takes into account the liquidity factor. It assumes that there would be less liquidity on the equity it gets and accordingly it would be investing in that format. They adjust this liquidity premium against the price and required return.

(iii) **High Risk** : VC would not hesitate to take risk. It works on principle of high risk and high return. So, high risk would not eliminate the investment choice for a venture capital.

(iv) **Equity Participation** : Most of the time, VC would be investing in the form of equity of a company. This would help the VC participate in the management and help the company grow. Besides, a lot of board decisions can be supervised by the VC if they participate in the equity of a company.

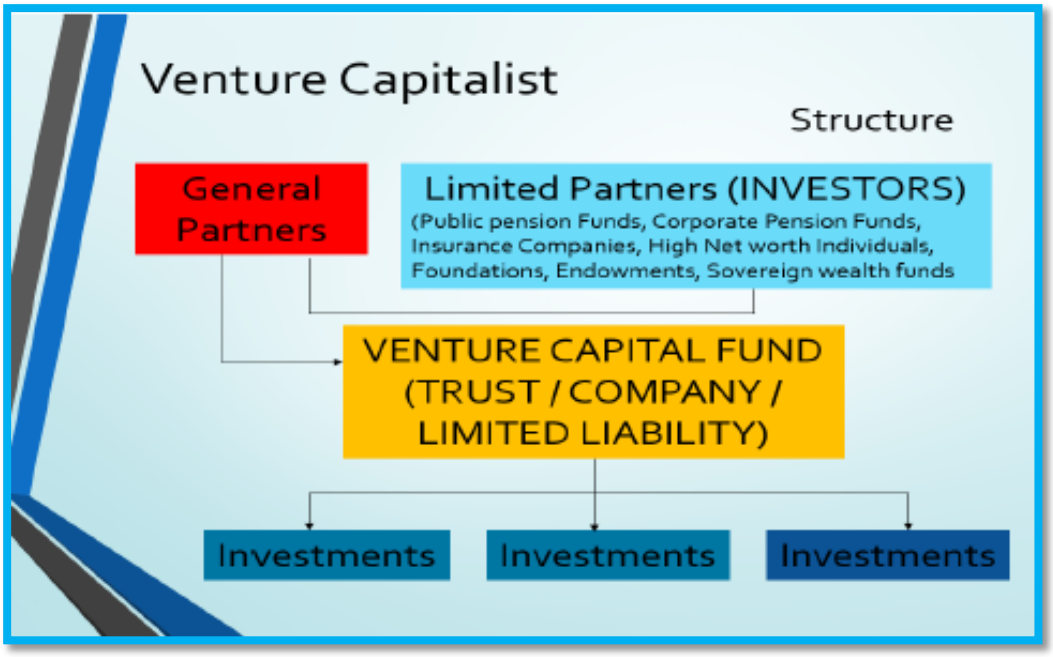
(v) **High Tech Project** : VC are generally found to be investing in high tech projects.

(vi) **Participation in Management** : Unlike traditional bank finance – venture capitalist may play active role in the management of the firms they invest in.

3. Evolution :

- 1970 – GOI set up a committee to tackle the issue of lack of funding to start ups
- 1988 – Controller of Capital Issue – Was very restrictive
- 1995 – Abolition of CCI – Foreign finance companies were allowed to invest in India
- 1996 – New set of guidelines were issued to counter the charge that it favoured foreign players and did not give any inventive to the domestic individuals
- 1997 – IT revolution got the venture capital of the hook – however dotcom bust left many crying and the surviving once started financing at much later stage – leaving risky see capital and start up financing to a few daring ones.

4. Structure :



5. Participants in Venture Capital Firms :

1. **General Partners :** They are the executives of the firm. They are like working partners
2. **Limited Partners :** They only invest in the fund. They don't look after the management of the fund.
3. **Venture Partners :** They bring in deals and gets income on the deals they bring in.
4. **Entrepreneur in Residence :** They are people with expertise in specific field. They are engaged by VC firms to look into certain specific deals.

6. Structure of Venture Capital Fund in India :

Three main types of fund structure exist: one for domestic funds and two for offshore ones:

(a) **Domestic Funds** : Domestic Funds (i.e. one which raises funds domestically) are usually structured as: i) a domestic vehicle for the pooling of funds from the investor, and ii) a separate investment adviser that carries those duties of asset manager. The choice of entity for the pooling vehicle falls between a trust, a company or limited liability. With the trust form prevailing due to its operational flexibility.

(b) **Offshore Funds** : Two common alternatives available to offshore investors are: the "offshore structure" and the "unified structure".

(c) **Offshore structure** : Under this structure, an investment vehicle (an LLC or an LP organized in a jurisdiction outside India) makes investments directly into Indian portfolio companies. Typically, the assets are managed by an offshore manager, while the investment advisor in India carries out the due diligence and identifies deals.

(d) **Unified Structure** : When domestic investors are expected to participate in the fund, a unified structure is used. Overseas investors pool their assets in an offshore vehicle that invests in a locally managed trust, whereas domestic investors directly contribute to the trust. This is later device used to make the local portfolio investments.

7. Advantages of bringing VC in the Company :

- It injects long- term equity finance which provides a solid capital base for future growth.
- The venture capitalist is a business partner, sharing both the risks and rewards. Venture capitalists are rewarded with business success and capital gain.
- The venture capitalist is able to provide practical advice and assistance to the company based on past experience with other companies which were in similar situations.
- The venture capitalist also has a network of contacts in many areas that can add value to the company.
- The venture capitalist may be capable of providing additional rounds of funding should it be required to finance growth.
- Venture capitalists are experienced in the process of preparing a company for an initial public offering (IPO) of its shares onto the stock exchanges or overseas stock exchange such as NASDAQ.
- They can also facilitate a trade sale.

8. Stages of funding for VC :

1. **Seed Money** : Low level financing needed to prove a new idea.
2. **Start-up**: Early stage firms that need funding for expenses associated with marketing and product development.
3. **First-Round**: Early sales and manufacturing funds.
4. **Second-Round**: Working capital for early stage companies that are selling product, but not yet turning in a profit.
5. **Third Round**: Also called Mezzanine financing, this is expansion money for a newly profitable company.

6. **Fourth-Round**: Also called bridge financing, it is intended to finance the "goingpublic" process. Risk in each stage is different. An indicative Risk matrix is given below:

Risk in each stage is different. An indicative Risk matrix is given below:

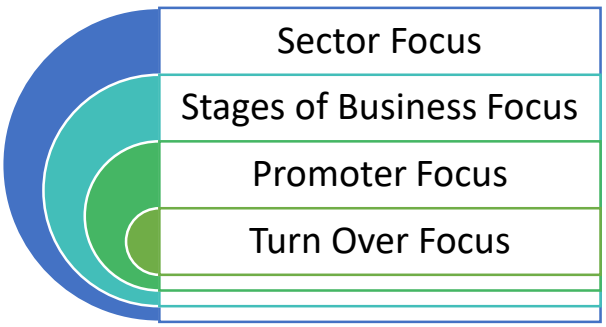
Financial Stage	Period (Funds locked in years)	Risk Perception	Activity to be financed
Seed Money	7-10	Extreme	For supporting a concept or idea or R&D for product development
Start Up	5-9	Very High	Initializing prototypes operations or developing
1st Stage	3-7	High	Start commercials marketing production and
2nd Stage	3-5	Sufficiently high	Expand market and growing working capital need
3rd Stage	1-3	Medium	Market expansion, acquisition & product development for profit making company
4th stage		Low	Facilitating public issue

9. VC Investment Process :

The entire VC Investment process can be segregated into the following steps:

1. **Deal Origination** : VC operates directly or through intermediaries. Mainly many practicing Chartered Accountants would work as intermediary and through them VC gets the deal.

   Before sourcing the deal, the VC would inform the intermediary or its employees about the following so that the sourcing entity does not waste time:



   Here the company would give a detailed business plan which consists of business model, financial plan and exit plan. All these aspects are covered in a document which is called Investment Memorandum (IM). A tentative valuation is also carried out in the IM.

2. **Screening :** Once the deal is sourced the same would be sent for screening by the VC. The screening is generally carried out by a committee consisting of senior level people of the VC. Once the screening happens, it would select the company for further processing.
3. **Due Diligence :** The screening decision would take place based on the information provided by the company. Once the decision is taken to proceed further, the VC would now carry out due diligence. This is mainly the process by which the VC would try to verify the veracity of the documents taken. This is generally handled by external bodies, mainly renowned consultants. The fees of due diligence are generally paid by the VC. However, in many cases, this can be shared between the investor (VC) and Investee (the company) depending on the veracity of the document agreement.
4. **Deal Structuring :** Once the case passes through the due diligence it would now go through the deal structuring. The deal is structured in such a way that both parties win. In many cases, the convertible structure is brought in to ensure that the promoter retains the right to buy back the share. Besides, in many structures to facilitate the exit, the VC may put a condition that promoter has also to sell part of its stake along with the VC. Such a clause is called tag- along clause.
5. **Post Investment Activity :** In this section, the VC nominates its nominee in the board of the company. The company has to adhere to certain guidelines like strong MIS, strong budgeting system, strong corporate governance and other covenants of the VC and periodically keep the VC updated about certain mile-stones. If milestone has not been met the company has to give explanation to the VC. Besides, VC would also ensure that professional management is set up in the company.
6. **Exit plan :** At the time of investing, the VC would ask the promoter or company to spell out in detail the exit plan. Mainly, exit happens in two ways: one way is 'sell to third party(ies)'. This sale can be in the form of IPO or Private Placement to other VCs. The second way to exit is that promoter would give a buy back commitment at a pre agreed rate (generally between IRR of 18% to 25%). In case the exit is not happening in the form of IPO or third party sell, the promoter would buy back. In many deals, the promoter buyback is the first refusal method adopted i.e. the promoter would get the first right of buyback.

5. STARTUP INDIA INITIAIVE :

Startup India scheme was initiated by the Government of India on 16th of January, 2016. The definition of startup was provided which is applicable only in case of Government Schemes.

Startup means an entity, incorporated or registered in India:

- Not prior to five years,
- With annual turnover not exceeding Rs 25 crore in any preceding financial year, and
- Working towards innovation, development, deployment or commercialization of new products, processes or services driven by technology or intellectual property.

Provided that such entity is not formed by splitting up, or reconstruction, of a business already in existence. Provided also that an entity shall cease to be a Startup if its turnover for the previous financial years has exceeded Rs 25 crore or it has completed 5 years from the date of incorporation/ registration. Provided further that a Startup shall be eligible for tax benefits only after it has obtained certification from the Inter-Ministerial Board, setup for such purpose.

Thanks ….

Be hope that you will find this helpful. If you would like to discuss any of the points please speak to us through the following channel.

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