CA FINAL

SFM FULL REVISION

PROF. RAHUL MALKAN

NOV. 20   MAY 21

CA-FINAL

SFM – FULL REVISION

INDEX

CHP - 1

Financial Policy & Corporate Strategy

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.
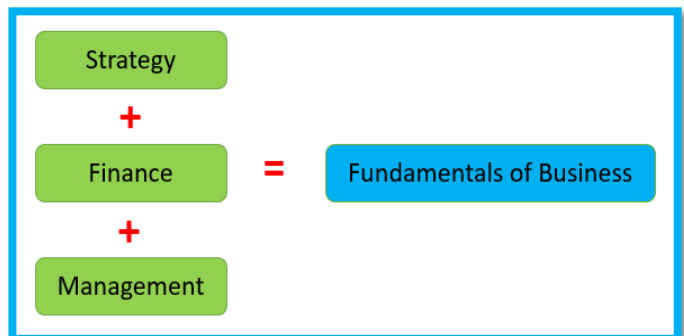
2. FUNCTIONS OF STRATEGIC FINANCIAL MANAGEMENT :

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:

Financial Resources (FR)

Financial Tools (FT)
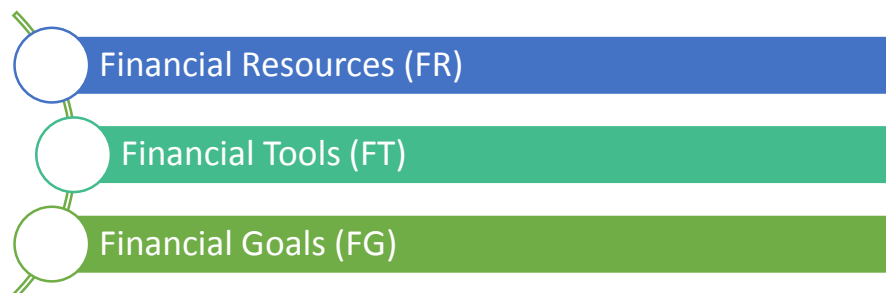
Financial Goals (FG)

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.

Financial Planning

$$FR + FT = FG$$
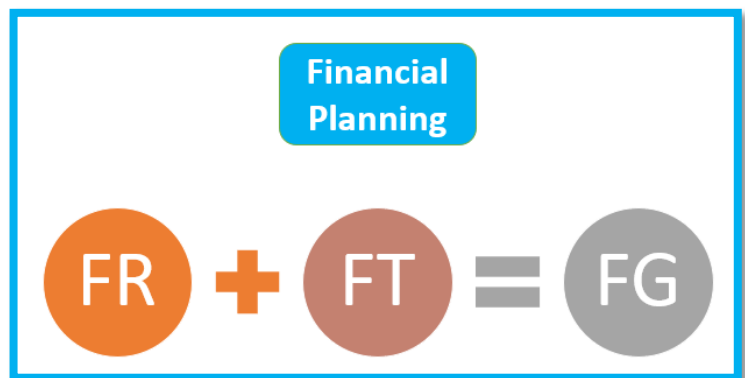
Outcomes of the financial planning are the financial objectives, financial decision-making and financial measures for the evaluation of the corporate performance. Financial objectives are to be decided at the very outset so that rest of the decisions can be taken accordingly. The objectives need to be 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.

$$\textbf{SGR = ROE x (1- Dividend payment ratio)}$$

Sustainable growth models assume that the business wants to:

- maintain a target capital structure without issuing new equity;
- maintain a target dividend payment ratio; and
- increase sales as rapidly as market conditions allow.

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 ….

contact@rahulmalkan.com

www.rahulmalkan.com

rahulmalkan

rahulmalkan

rahulmalkan79

CHP - 2

Security Analysis

CHAPTER DESIGN

1.   **INTRODUCTION**

2.   **BASICS OF STOCK MARKETS**

3.   **FUNDAMENTAL ANALYSIS**

    (A)   **ECONOMIC ANALYSIS**

    (B)   **INDUSTRY ANALYSIS**

    (C)   **COMPANY ANALYSIS**

4.   **TECHNICAL ANALYSIS**

    (A)   **THEORIES OF TECHNICAL ANALYSIS**

    (B)   **CHARTING TECHNIQUES**

    (C)   **MARKET INDICATORS**

    (D)   **PRICE PATTERNS**

    (E)   **DATA ANALYSIS**

    (F)   **EFFICIENT MARKET THEORY**

    (G)   **SUPPORTERS AND DISTRACTORS OF TECHNICAL ANALYSIS**
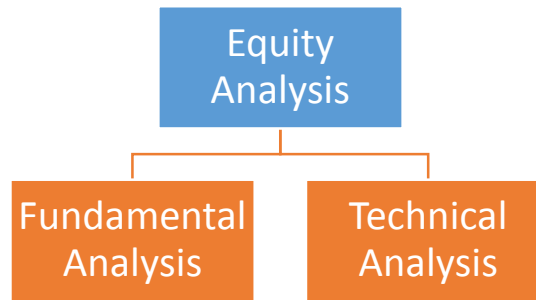
1. INTRODUCTION :

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.
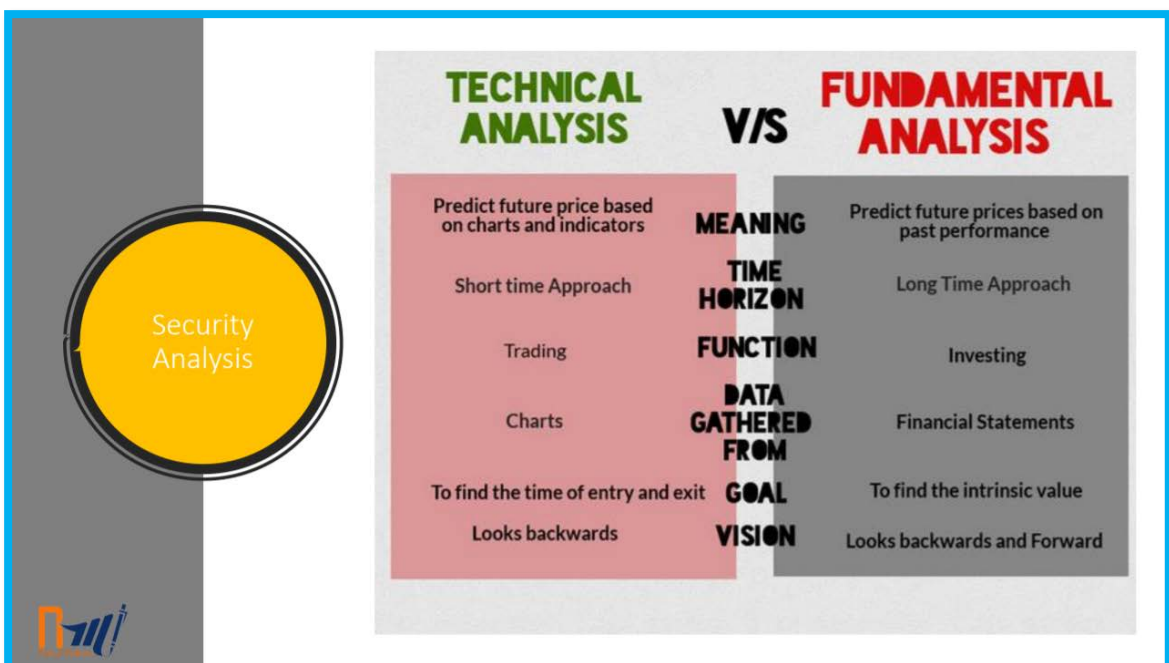
3. FUNDAMENTAL ANALYSIS

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.
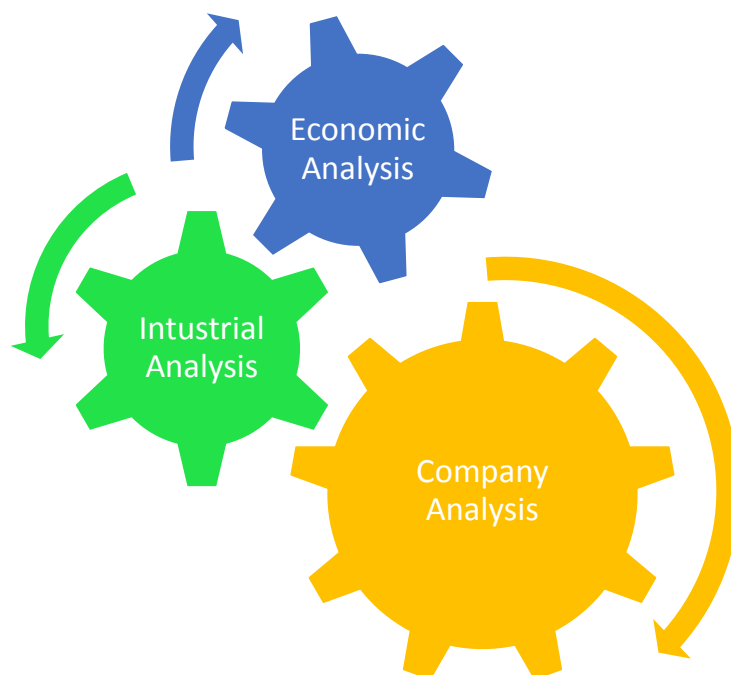
3. (A) ECONOMIC ANALYSIS :

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.

3. (B) 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

3. (C) 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

4. 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.

```
                          ┌──────────────┐
                          │  Technical   │
                          │  Analysis    │
                          └──────────────┘
┌──────────┬──────────┬──────────┬──────────┬──────────┬──────────┬──────────┐
│Principals│ Theories │ Charting │  Market  │Support and│  Price  │   Data   │
│          │          │Techniques│Indicators│Resistance │ Patterns │ Analysis │
└──────────┴──────────┴──────────┴──────────┴──────────┴──────────┴──────────┘
```
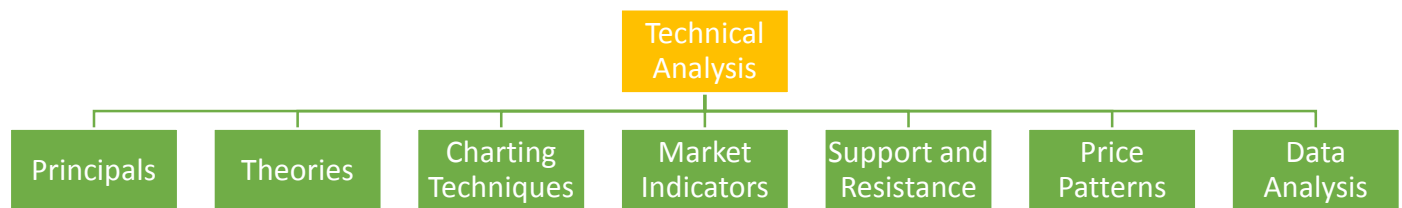
Principals :

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

4. (A) 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

EliteMarkets.com -The Dow Theory
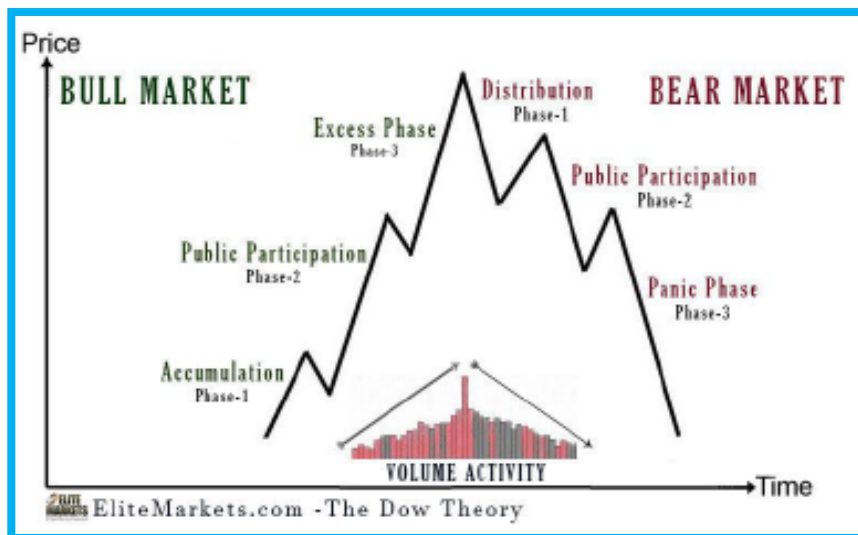
2. **THE ELLIOT WAVE THEORY :**
1. Created by Ralph Elliot in 1934
2. Based on Research on share price movement for 75 years
3. There are 2 types of movement
   a. Impulsive movement
   b. Corrective movement
4. Impulsive movement – Towards basic movement – 5 cycles
5. Corrective Movement – Opposite to basic movement – 3 cycles
6. The complete cycle is the 8 wave cycle
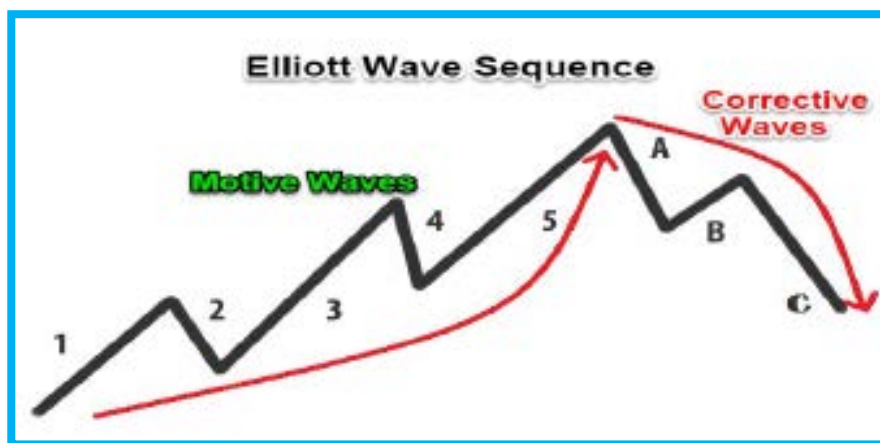
3. **THE RANDOM WALK THEORY :**
1. Share price cannot be predicted
2. No underlying factor
3. There are ups and downs, but no relation can be drawn

4. (B) CHARTING TECHNIQUES :

1.   Bar Chart :

Total Cost for One Year of Civil Engineering Education
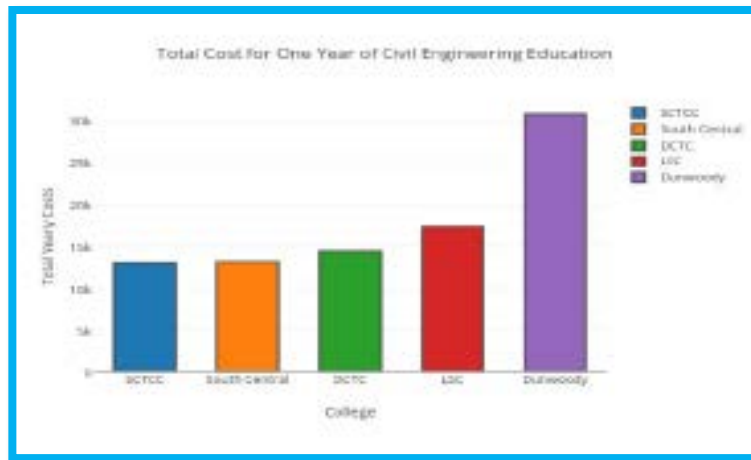
2.   Line Chart :
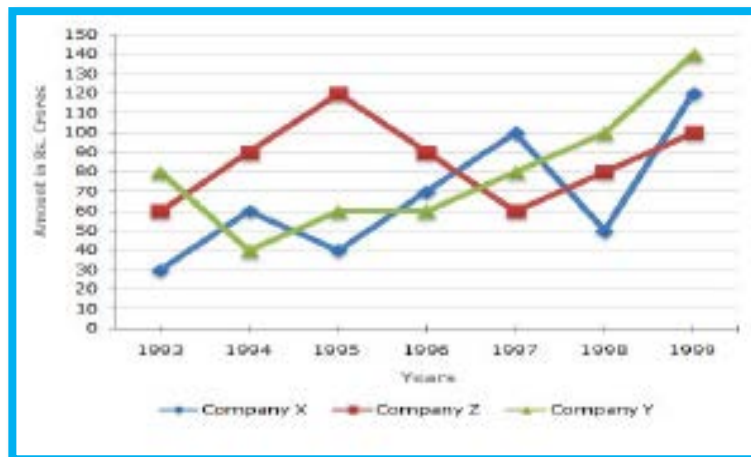
3.   Candle Stick Chart

4.   Point and Figure Chart
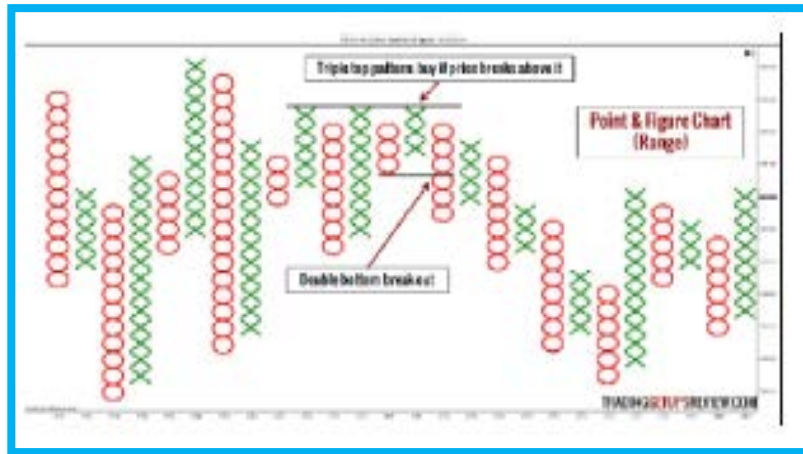
4. (C) MARKET INDICATORS :

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.

4. (D) PRICE PATTERNS :

1.   **Channel :**
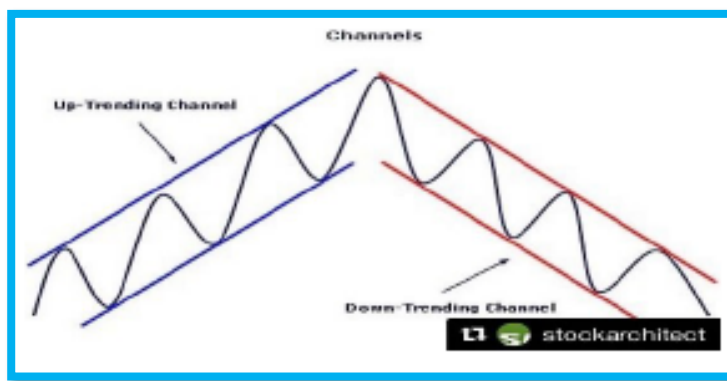
2.   **Wedge :**

3.   **Head and Shoulders :**
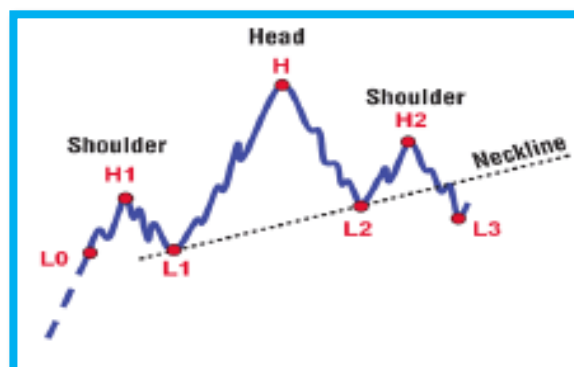
4.   Triangle or Coil Formation :
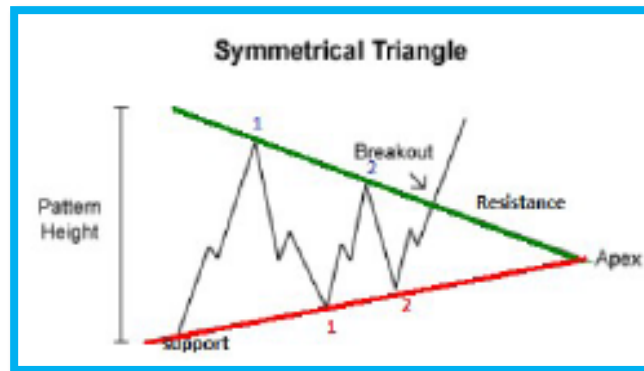
5.   Flags and Pennats Form :
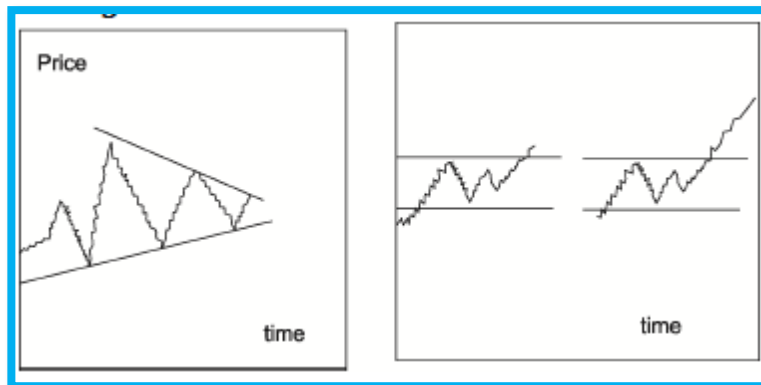
6.   Double Top Form :

7.   Double Bottom Form :
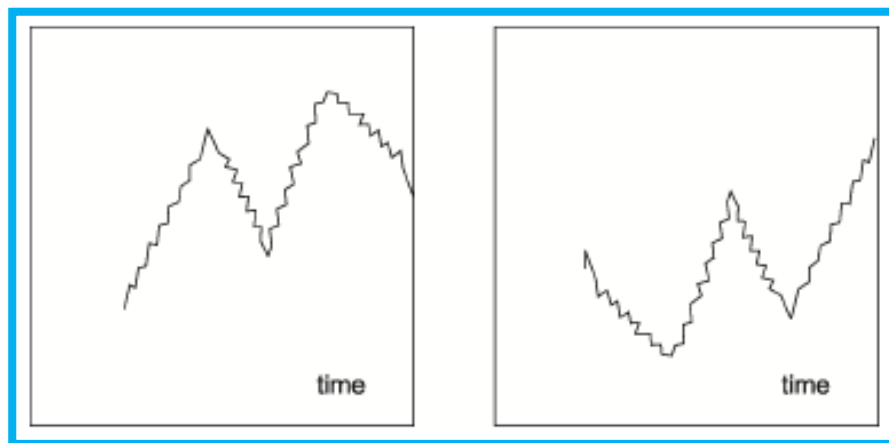
8.   GAP :

4. (E) 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 $= \dfrac{2}{n+1}$

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.

4. (F) 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 <u>all past data on prices and volumes</u>

8. Semi Strong form of efficiency exists when market has already absorbed <u>past data on prices and volume</u> and also <u>all publicly available information.</u>

9. Strong form of efficiency exists when markets has absorbed <u>all past data on prices and volumes</u> and <u>all public</u> and <u>private information</u>.

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.

4. (G) 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….

CHP - 3

Equity and Corporate Valuations

```
                                    Equity Valuations

              Absolute Model        Relative              Accounting
                                    Valuyations           Approach

  Dividend Model    Earnings based    Free cash Flow        Intrinsic Value
                    model             Model

    Constant Dividend                   Free Cash Flow for    Yield Value
                                        Firm

    Constant Growth                     Free Cash Flow for    Fair Value
                                        Equity

  Fluctuating Growth
```

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 :

A.   Absolute Valuation models
B.   Relative valuations Models

A.   **Absolute Valuation Models :**
         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. "
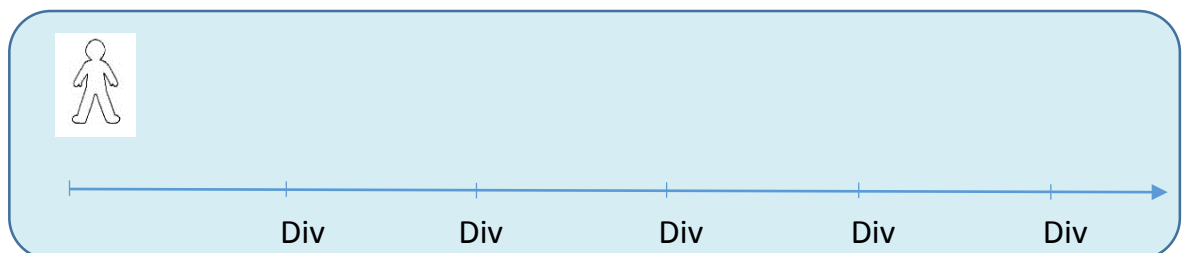
$$\text{PV of Perpetual Cash Flow} = \frac{Cash\ Flow}{Rate} = \frac{CF}{R}$$

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 :

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

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 :

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) :

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

Question 4 : Rm
Rm purchase 91 day T – bill for 97. Calculate Rf ?

2. β (Beta) :

Beta can be calculated for

a.   Listed company

b.   Unlisted company

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

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

| Beta of Proxy Firm (Pure Play firm) | De-everage $\beta u = \frac{\beta l}{1+\frac{D}{E}(1-t)}$ | Re-leverage $\beta l = \beta u \times 1 + \frac{D}{E}(1\text{-}t)$ |
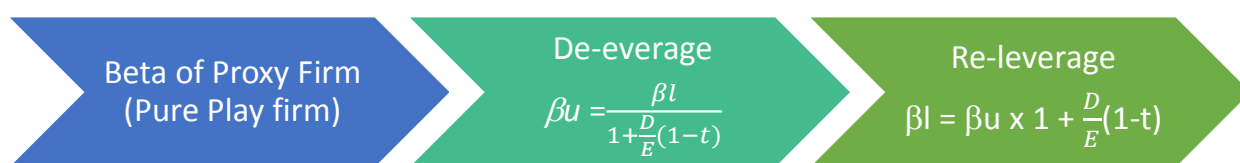
Note

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 :

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

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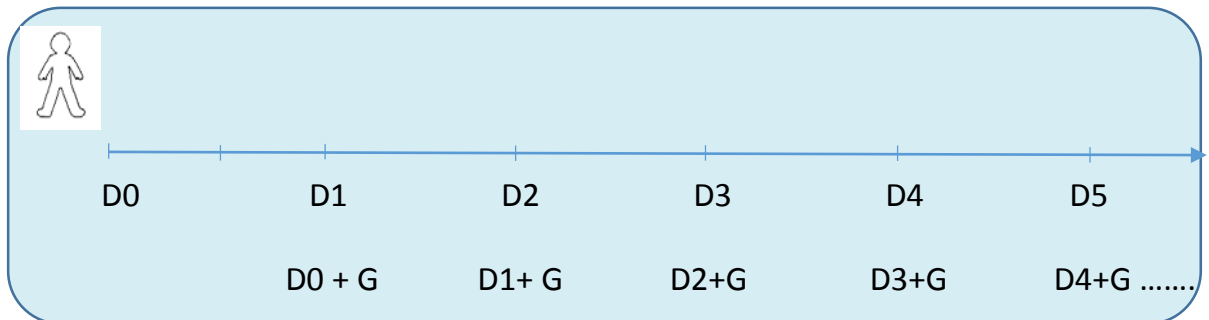
Growth

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

$$A = P(1 + r)^n$$

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

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

$$D1 = D0(1+g)$$

$$G = br \text{ or } P(1 + r)^n$$

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

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

$$\text{Listed Co } \beta = \frac{COVxm}{\sigma^2 m}$$

$$Rm = Div + Growth$$

Unlisted Company
1. Proxy firm
2. Deleverage
3. Releverage
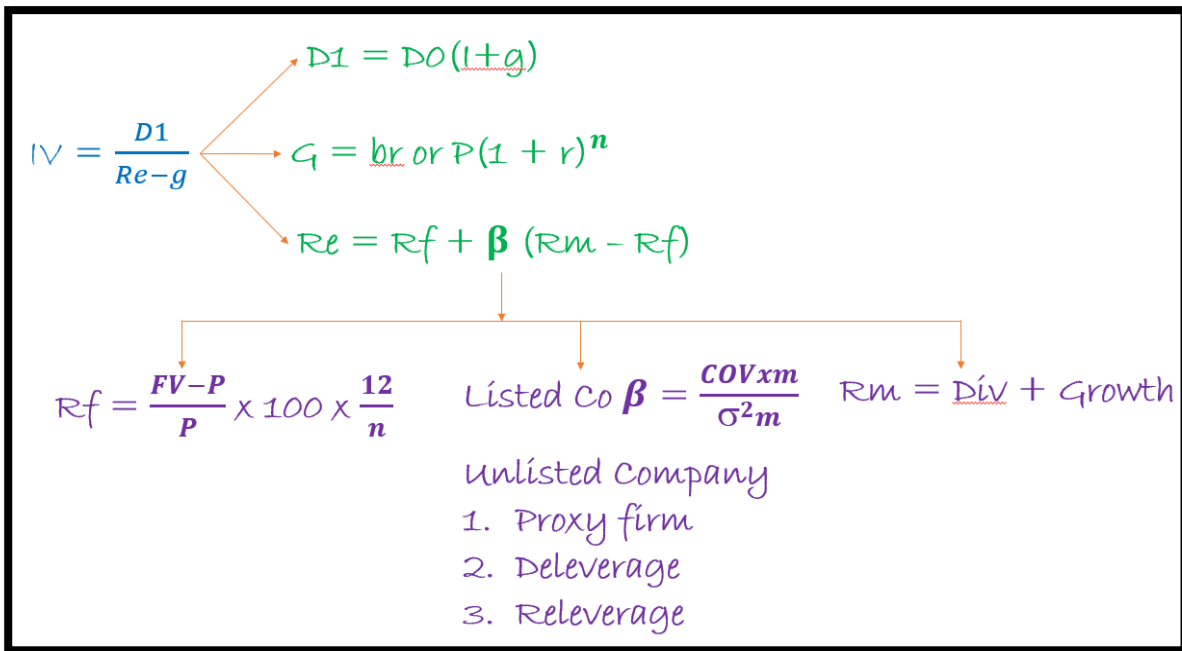
Question 8 : A company

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 : 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 G increases IV increases and vice versa

→ IV --- Re = Inverse Relation i.e Re increases IV decreases and vice versa
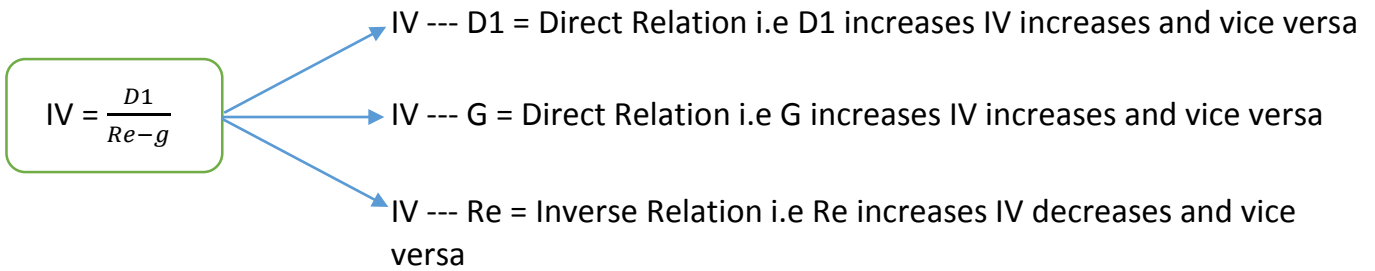
Question 11: Voyage Ltd.

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.

3. Fluctuating Growth Approach :

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

Stage 1 = PV of D1 to D5   Stage 2 : PV from D6 to infinity

D0   D1   D2   D3   D4   D5

Stage 1
Stage 2
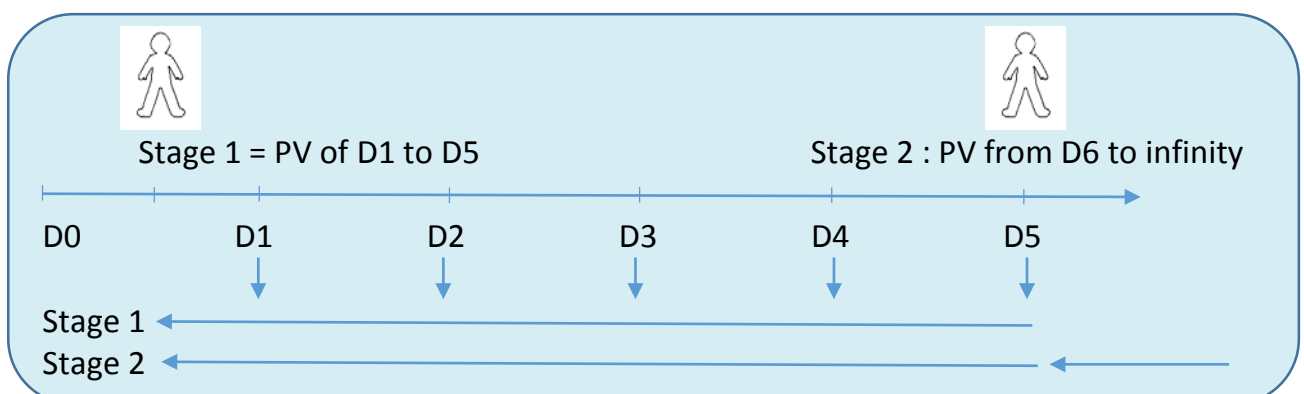
Question 12 : RM

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 13 : 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

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

Calculate NOPAT(Net operating profit after tax)

NOPAT = EBIT (1 - t)

Calculate NI (Net Investments)

NI = Capital Spending - Depreciation + Δ working capital

Calculate FCFF (Free cash flow for firm)

FCFF = NOPAT - NI

Discounting rate to be used should be

KC = Wt average cost of Equity + Wt average cost of debt

Calculate Value of firm = Vf = $\dfrac{FCFF1}{Kc - g}$
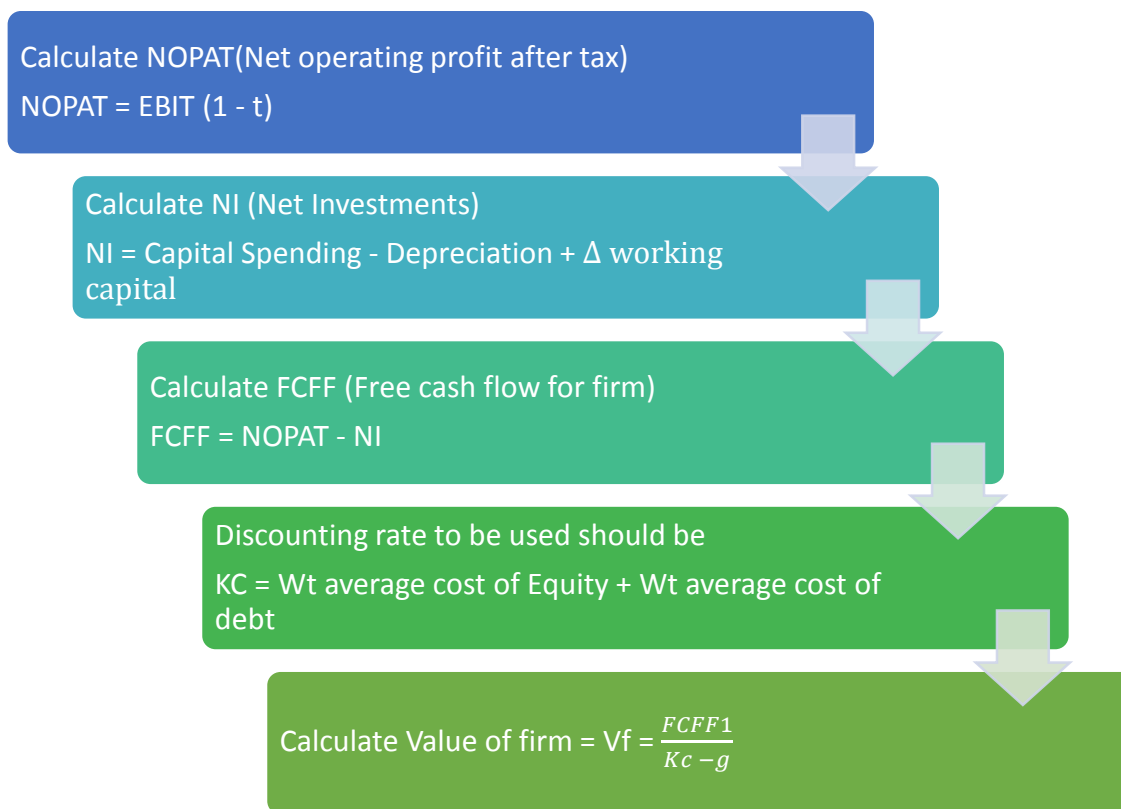
Cost of Capital

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 14 :

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 15 :

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 16 : 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	Rs.600 Crores

in COGS & Operating Expenses)

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

B.   Free cash flow for Equity (FCFE Model)

Calculate PAT(Profit after tax)

Calculate NI (Net Investments)

NI = [Capital Spending - Depreciation + Δ working capital][1-debt]

Calculate FCFE (Free cash flow for firm)

FCFE = PAT - NI

Discounting rate to be used should be Ke

Calculate Value of Equity = Ve = $\dfrac{FCFE1}{Ke - g}$

Question 17 :

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

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 = $\dfrac{FCFF/FCFE}{Kc/Ke}$
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 18 : 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%.

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

Question 19 : 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 20 : 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 21 : AB Limited's

AB Limited's shares are currently selling at Rs.130 per share. There are 10,00,000 shares outstanding. The firm is planning to raise Rs.2 crores to Finance new project.

Required

What is the ex-right price of shares and value of a right, if.

(i)   The firm offers one right share for every two shares held.

(ii)   The firm offers one right share for every four shares held.

(iii)   How does the shareholder's wealth change from (i) to (ii)? How does right issue increase shareholder's wealth.

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 22 : 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 23 : RK. Ltd.

You are interested in buying some equity stocks of RK Ltd. The company has 3 divisions operating in different industries. Division A captures 10% of its industries sales which is forecasted to be Rs.50 crore for the industry. Division B and C captures 30% and 2% of their respective industry's sales, which are expected to be Rs.20 crore and Rs.8.5 crore respectively. Division A traditionally had a 5% net income margin, whereas divisions B and C had 8% and 10% net income margin respectively. RK Ltd. has 3,00,000 shares of equity stock outstanding, which sell at Rs.250.

The company has not paid dividend since it started its business 10 years ago. However from the market sources you come to known that RK Ltd. will start paying dividend in 3 years time and the pay-out ratio is 30%. Expecting this dividend, you would like to hold the stock for 5 years. By analyzing the past financial statements, you have determined that RK Ltd's required rate of return is 18% and that P/E ratio of 10 for the next year and on ending P/E ratio of 20 at the end of the fifth year are appropriate.

Required :

(i)   Would you purchase RK Ltd. equity at this time based on your one year forecast?

(ii)   If you expect earnings to grow @15% continuously, how much are you willing to pay for the stock of RK Ltd.?

Ignore taxation.

PV Factors are given below :

Years	1	2	3	4	5
PVIF @18%	0.847	0.718	0.609	0.516	0.437

Question 24 : VEE. Ltd.

The current EPS of M/s.VEE Ltd. is Rs.4. The company has shown an extraordinary growth of 40% in its earnings in the last few years. This high growth is likely to continue for the next 5 years after which growth rate in earnings will decline from 40% to 10% during the next 5 years and remain stable at 10% thereafter. The decline in the growth rate during the five year transition period will be equal to linear. Currently, the company's pay-out ratio is 10%. It is likely to remain the same for the next five years and from the beginning of the sixth year till the end of the 10th year, the pay-out will linearly increase and stabilize at 50% at the end of the 10th year. The post tax cost of capital is 17% and the PV factors are given below :

Years	1	2	3	4	5	6	7	8	9	10
PVIF @17%	0.855	0.731	0.625	0.534	0.456	0.390	0.333	0.285	0.244	0.209

You are require to calculate the intrinsic value of the company's stock based on expected dividend. If the current market price of the stock is Rs.125, suggest if it is advisable for the investor to invest in the company's stock or not.

Question 25 : Mr.X

Mr.X, a financial analyst, intends to value the business of PQR Ltd. In terms of the future cash generating capacity. He has projected the following after tax cash flows :

Year :	1	2	3	4	5
Cash flows (Rs. in lakhs)	1,760	480	640	860	1,170

It is further estimated that beyond 5th year, cash flows will perpetuate at a constant growth rate of 8% per annum, mainly on account of inflation. The perpetual cash flow is estimated to be Rs.10,260 lakh at the end of the 5th year.

Required :

(i)   What is the value of the firm in terms of expected future cash flows, if the cost of capital of the firm is 20%.

(ii)   The firm has outstanding debts of Rs.3,620 lakh and cash / bank balance of Rs.2,710 lakh.

Calculate the shareholder value per share if the number of outstanding shares is 151.50 lakh.

(iii)   The firm has received a takeover bid from XYZ Ltd. of Rs.225 per share. Is it a good offer?

[Given : PVIF at 20% for year 1 to Year 5 : 0.833, 0.694, 0.579, 0.482, 0.402]

Question 26 : X Ltd.

X Ltd. is a Shoes manufacturing company. It is all equity financed and has a paid-tip Capital of Rs.10,00,000 (Rs.10 per share)

X Ltd. has hired Swastika consultants to analyse the future earnings. The report of Swastika consultants states as follows:

(i)   The earnings and dividend will grow at 25% for the next two years.

(ii)   Earnings are likely to grow at the rate of 10% from 3rd year and onwards.

(iii)   Further, if there is reduction in earnings growth, dividend payout ratio will increase to 50%.

The other data related to the company are as follows:

Year	EPS (Rs.)	Net Dividend per share (Rs.)	Share Price (Rs.)
2010	6.30	2.52	63.00
2011	7.00	2.80	46.00
2012	7.70	3.08	63.75
2013	8.40	3.36	68.75
2014	9.60	3.84	93.00

You may assume that the tax rate is 30% (not expected to change in future) and post-tax cost of capital is 15%.

By using the Dividend Valuation Model, calculate

(a)   Expected Market Price per share

(b)   P/E Ratio.

Question 27 : SAM Ltd.

SAM Ltd. has just paid a dividend of Rs.2 per share and it is expected to grow @ 6% p.a. After paying dividend, the Board declared to take up a project by retaining the next three annual dividends. It is expected that this project is of same risk as the existing projects. The results of this project will start coming from the 4th year onward from now. The dividends will then be Rs.2.50 per share and will grow @ 7% p.a.

An investor has 1,000 shares in SAM Ltd. and wants a receipt of at least Rs.2,000 p.a. from this investment.

Show that the market value of the share is affected by the decision of the Board. Also show as to how the investor can maintain his target receipt from the investment for first 3 years and improved income thereafter, given that the cost of capital of the firm is 8%.

Question 28 :

The risk free rate of return is 5 percent. The expected rate of return on the market portfolio is 11 percent. The expected rate of growth in dividend of X Ltd. is 8 percent. The last dividend paid was Rs.2.00 per share. The beta of X Ltd. equity stock is 1.5

(i)   What is the present price of the equity stock of X Ltd.?

(ii)   How would the price change when

- The inflation premium increases by 3 percent?
- The expected growth rate decreases by 3 percent?
- The beta decreases to 1.3?

Question 29 : X Limited

X Limited, just declared a dividend of Rs.14.00 per share. Mr. B is planning to purchase the share of X Limited, anticipating increase in growth rate from 8% to 9%, which will continue for three years. He also expects the market price of this share to be Rs.360.00 after three years.

You are required to determine:

(i)   the maximum amount Mr. B should pay for shares, if he requires a rate of return of 13% per annum.

(ii)   the maximum price Mr. B will be willing to pay for share, if he is of the opinion that the 9% growth can be maintained indefinitely and require 13% rate of return per annum.

(iii)   the price of share at the end of three years, if 9% growth rate is achieved and assuming other conditions remaining same as in (ii) above.

Calculate rupee amount up to two decimal points.

	Year 1	Year 2	Year 3
FVIF @ 9%	1.090	1.188	1.295
FVIF @ 13%	1.130	1.277	1.443
FVIF @ 13%	0.885	0.783	0.693

Thanks….

CHP - 4

Bond Analysis and Valuations

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 :
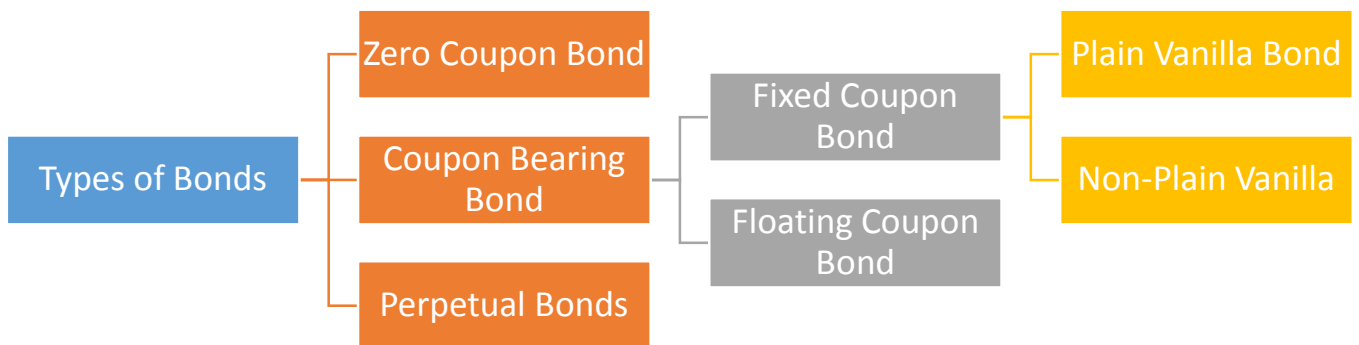
1. **Zero coupon bond / Deep Discount bond (ZCB / DDB) :**
   They are the bonds which does not provide any coupons. The are issued at discount and are redeemable at par. The investor earns the difference between the issue price and the redemption price.
   For eg : X Ltd issues 5 year bond at 65 redeemable 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.
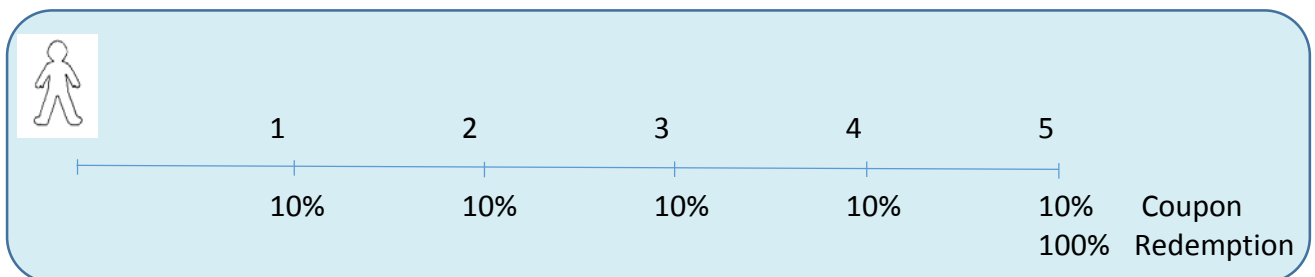
   b. **Non Plain Vanilla Bond :** In such bonds also the coupon rate is pre-decided, however the rate may differ over the year and even redemption can be done in parts.
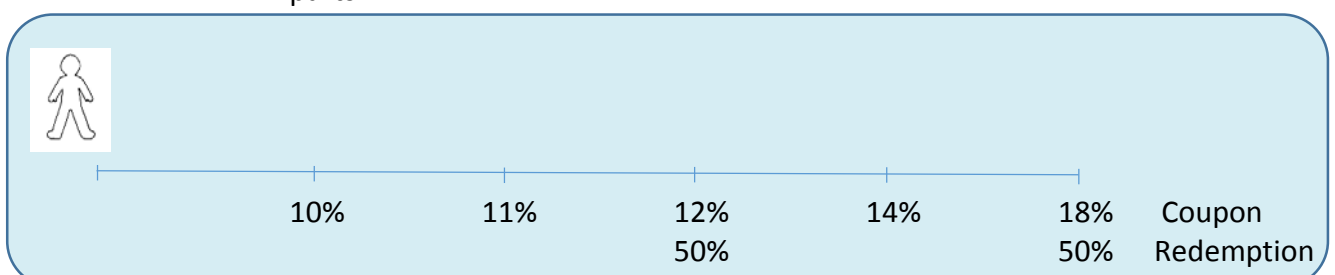
Note : Even if the rates at which coupon are paid varies, still they are referred as fixed coupon bearing bond because the rates are pre-decided at the time of issue

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).

Current yield $= \dfrac{Coupon}{Market\ Price}$

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.

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 $= \dfrac{C+(FV-P)/n}{(FV+P)/2}$

Question 3 : 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 4 :
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.   ZCB / DDB :
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 5 :

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 6 : 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 7 :

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 $= \dfrac{Coupon}{YTM}$

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
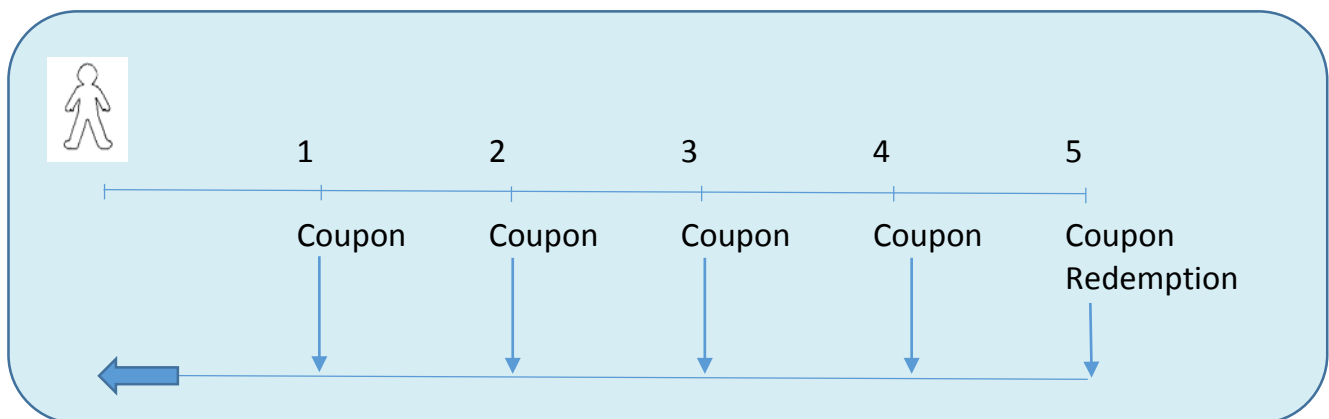
NOTE: DISCOUNTING RATE SHOULD BE YTM AND NOT COUPON RATE

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 8 :

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 9 :

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 10 :
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 11 :
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 12 :
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%.

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 13 :

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.

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 = $\dfrac{Coupon}{YTM}$
	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 14 :

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 :

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 $= \dfrac{D}{1+YTM}$

2. Effective Duration $= \dfrac{P2-P1}{2 \; x \; P0 \; x \; \varDelta y}$

Question 15 :

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 16 :

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.

8. INTEREST IMMUNIZATION :

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 17 :

A pension fund has a following liability structure

Years	Liability
3	1000 cr
5	2600 cr
6	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.

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"

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

Question 18 : 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 19 :

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 :

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	XXX	XXX
- Tax shield on Amortization of Discount / Floatation cost	XXX	XXX
	XXX	XXX
Savings in cost	XXX	
X PVIFA (__%,n)	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 20 : 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?

11. CONVERTIBLE DEBENTURES :
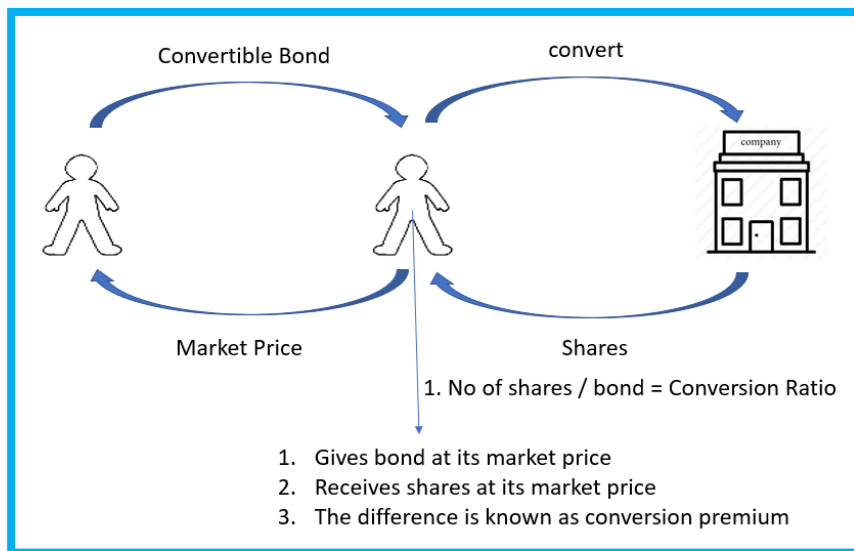
1.   Conversion Ratio :
The number of shares that each bond is converted into is known as conversion ratio.

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.

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

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 21 : 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.

Question 22 : M/s. SK Ltd.

The nominal value of 10% Bonds issued at par by M/s. SK Ltd. is Rs.100. The bonds are redeemable at Rs.110 at the end of year 5.

(i)   Determine the value of bond if required yield is :

(a)   8%   (b)   9%   (c)   10%   (d)   11%

(ii)   When will the value of the bond be highest?

Give below are Present Value Factors :

Year	1	2	3	4	5
PV Factor @8%	0.926	0.857	0.794	0.735	0.681
PV Factor @9%	0.917	0.842	0.772	0.708	0.650
PV Factor @10%	0.909	0.826	0.751	0.683	0.621
PV Factor @11%	0.901	0.812	0.731	0.659	0.593

Question 23 : A Ltd.

A Ltd. has issued convertible bonds, which carries a coupon rate of 14%. Each bond is convertible into 20 equity shares of the company A Ltd. The prevailing interest rate for similar credit rating bond is 8%. The convertible bond has 5 years maturity. It is redeemable at par at Rs.100.

The relevant present value table is as follows.

Present values	t_1	t_2	t_3	t_4	t_5
$PVIF_{0.14, t}$	0.877	0.769	0.675	0.592	0.519
$PVIF_{0.08, t}$	0.926	0.857	0.794	0.735	0.681

You are required to estimate:

(Calculations be made upto 3 decimal places)

(i)   current market price of the bond, assuming it being equal to its fundamental value,

(ii)   minimum market price of equity share at which bond holder should exercise conversion option; and

(iii)   duration of the bond.

Question 24 :

The following data are available for three bonds A, B and C. These bonds are used by a bold portfolio manager to fund an outflow scheduled in 6 years. Current yield is 9%. All bonds have face value of Rs.100 each and will be redeemed at par. Interest is payable annually.

Bond	Maturity (Years)	Coupon Rate
A	10	10%
B	8	11%
C	5	9%

(i)   Calculate the duration of each bond.

(ii) The bond portfolio manager has been asked to keep 45% of the portfolio money in Bond A. Calculate the percentage amount to be invested in bonds B and C that need to be purchased to immunize the portfolio.

(iii) After the portfolio has been formulated, an interest rate change occurs, increasing the yield to 11%. The new duration of these bonds are : Bond A = 7.15 Years, Bond B = 6.03 Years and Bond C = 4.27 years.

Is the portfolio still immunized ? Why or why not ?

(iv) Determine the new percentage of B and C bonds that are needed to immunize the portfolio. Bond A remaining at 45% of the portfolio.

Present values be used as follows :

PV	T1	T2	T3	T4	T5
PVIF0.09	0.917	0.842	0.772	0.708	0.650

PV	T6	T7	T8	T9	T10
PVIF0.09	0.596	0.547	0.502	0.460	0.4224

Question 25 : Sabanam Ltd.

Sabanam Ltd. has issued convertible debentures with coupon rate 11%. Each debenture has an option to convert to 16 equity shares at any time until the date of maturity. Debentures will be redeemed at Rs.100 on maturity of 5 years. An investor generally requires a rate of return of 8% p.a. on a 5-year security. As an advisor, when will you advise the investor to exercise conversion for given market prices of the equity share of

(i)   Rs.5,

(ii) Rs.6

(iii) Rs.7.10.

Cumulative PV factor for 8% for 5 years   :   3.993

PV factor for 8% for year 5   :   0.681

Question 26 : Pet feed plc

Pet feed plc has outstanding, a high yield Bond with following features:

Face Value	£ 10,000
Coupon	10%
Maturity Period	6 Years
Special Feature	Company can extend the life of Bond to 12 years

Presently the interest rate on equivalent Bond is 8%.

(a)   If an investor expects that interest will be 8%, six years from now then how much he should pay for this bond now.

Now suppose, on the basis of that expectation, he invests in the Bond, but interest rate turns out to be 12%, six years from now, then what will be his potential loss/ gain if company extends the life of bond by another 6 years.

Thanks….

CHP - 5

Mergers And Acquisitions

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.

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

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 competing products) nor vertically (having relationship of buyer and supplier).

(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.

(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.

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 : 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 4 : Abhiman Ltd.

The following information relating to the acquiring Company Abhiman Ltd. and the target Company Abhishek Ltd. are available. Both the companies are promoted by Multinational company. Trident Ltd. The promoter's holding is 50% and 60% respectively in Abhiman Ltd and Abhishek Ltd:

	Abhiman Ltd	Abhishek Ltd
Share Capital (Rs)	200 lakh	100 lakh
Free Reserves and surplus (RS)	800 lakh	500 lakh
Paid up value per share (Rs)	100	10
Free float market capitalization(Rs)	500 lakh	156 lakh
P/E Ratio (times)	10	4

Trident Ltd .is interested to do justice to the shareholder of both Companies. For the swap ratio weights are assigned to different parameters by the Board of Directors as follows:

Book value   25%

EPS (Earning per share)   50%

Market Price   25%

1)   What is the swap ratio based on above weights?

2)   What is the book value, EPS and expected Market price of Abhiman Ltd after acquisition of Abhishek Ltd. (assuming P.E ratio of Abhiman Ltd remains unchanged and all assets and liabilities of Abhishek Ltd. are taken over at book value).

3)   Calculate :

a)   Promoter's revised holding in the Abhiman Ltd.

b)   Free float market capitalization.

c)   Also calculate No. share . Earning per share (EPS)and book value (B.V) if after acquisition of Abhishek Ltd.,Abhiman Ltd., decided to:

i)   Issue Bonus share in the ratio of 1 : 2 ; and

ii)   Split the stock (share) as Rs5 each fully paid.

Question 5 : 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.

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 6 : 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 7 : 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 8 : 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.

: PRACTISE QUESTIONS :

Question 9 : ABC Ltd.

ABC Ltd. is a company operating in the software industry. It is considering the acquisition of XYZ Ltd. which is also into software industry. The following information are available for the companies :

Particulars	ABC Ltd.	XYZ Ltd.
Earnings after tax (Rs.)	9,00,000	2,40,000
Number of equity shares	1,50,000	60,000
P/E ratio (No. of times)	14	10

ABC Ltd. is planning to offer a premium 25% over the market price of XYZ Ltd. Required :

(i)   What is the swap ratio based on current market price?

(ii)   Find the number of shares to be issued by ABC Ltd. to the shareholders of XYZ Ltd.

(iii)   Compute the new EPS of ABC Ltd. after merger and comment on the impact of merger.

(iv)   Determine the market price of the share when P/E ratio remains unchanged.

(v)   Compute the market price when P/E declines to 12 and comment on the results.

Figures are to be rounded off to 2 decimals.

Question 10 : Grape Fruit Company Ltd

The following is the Balance-sheet of Grape Fruit Company Ltd as at March 31st, 2011.

Liabilities	(Rs.in lakhs)	Assets	(Rs.in lakhs)
Equity shares of Rs.100 each	600	Land and Building	200
14% preference shares of Rs.100/- each	200	Plant and Machinery	300
13% Debentures	200	Furniture and Fixtures	50
Debenture interest accrued and payable	26	Inventory	150
Loan from bank	74	Sundry debtors	70
Trade creditors	340	Cash at bank	130
		Preliminary expenses	10
		Cost of issue of debentures	5
		Profit and Loss account	525
	1440		1440

The Company did not perform well and has suffered sizable losses during the last few years. However, it is felt that the company could be nursed back to health by proper financial restructuring. Consequently the following scheme of reconstruction has been drawn up:

(i)   Equity shares are to be reduced to Rs.25/- per share, fully paid up;

(ii)   Preference shares are to be reduced (with coupon rate of 10%) to equal number of shares of Rs.50 each, fully paid up.

(iii)   Debenture holders have agreed to forgo the accrued interest due to them. In the future, the rate of interest on debentures is to be reduced to 9 percent.

(iv)   Trade creditors will forego 25 percent of the amount due to them.

(v)   The company issues 6 lakh of equity shares at Rs.25 each and the entire sum was to be paid on application. The entire amount was fully subscribed by promoters.

(vi)   Land and Building was to be revalued at Rs.450 lakhs, Plant and Machinery was to be written down by Rs.120 lakhs and a provision of Rs.15 lakhs had to be made for bad and doubtful debts.

Required:

(i)   Show the impact of financial restructuring on the company's activities.

(ii)   Prepare the fresh balance sheet after the reconstructions is completed on the basis of the above proposals.

Question 11 : XYZ Ltd.

XYZ Ltd. wants to purchase ABC Ltd. by exchanging 0.7 of its share for each share of ABC Ltd. Relevant financial data are as follows:

Equity shares outstanding	10,00,000	4,00,000
EPS (Rs.)	40	28
Market price per share (Rs.)	250	160

(i)   Illustrate the impact of merger on EPS of both the companies.

(ii)   The management of ABC Ltd. has quoted a share exchange ratio of 1:1 for the merger. Assuming that P/E ratio of XYZ Ltd. will remain unchanged after the merger, what will be the gain from merger for ABC Ltd.?

(iii)   What will be the gain/loss to shareholders of XYZ Ltd.?

(iv)   Determine the maximum exchange ratio acceptable to shareholders of XYZ Ltd.

Question 12 : R Ltd. and S Ltd.

R Ltd. and S Ltd. operating in same industry are not experiencing any rapid growth but providing a steady stream of earnings. R Ltd.'s management is interested in acquisition of S Ltd. due to its excess plant capacity. Share of S Ltd. is trading in market at Rs.3.20 each. Other data relating to S Ltd. is as follows :

Balance Sheet of S Ltd.

Liabilities	Amt. (Rs.)	Assets	Amt. (Rs.)
Current Liabilities	1,59,80,000	Current Assets	2,48,75,000
Long Term Liabilities	1,28,00,000	Other Assets	94,00,000
Reserves and Surplus	2,79,95,000	Property Plants & Equipment	3,45,00,000
Share Capital (80 Lakhs shares of Rs.1.5 each)	1,20,00,000		
Total	**6,87,75,000**		**6,87,75,000**

Particulars	R Ltd. (Rs.)	S Ltd. (Rs.)	Combined Entity (Rs.)
Profit after Tax	86,50,000	49,72,000	1,21,85,000
Residual Net Cash Flows per year	90,10,000	54,87,000	1,85,00,000
Required return on equity	13.75%	13.05%	12.50%

You are required to compute the following :

(i)   Minimum price per share S Ltd. should accept from R Ltd.

(ii)   Maximum price per share R Ltd. shall be willing to offer to S Ltd.

(iii)   Floor value of per share S Ltd., whether it shall play any role in decision for its acquisition by R Ltd.

Question 13 :

Given is the following information :

	Day Ltd.	Night Ltd.
Net Earnings	Rs.5 crores	Rs.3.50 crores
No. of Equity Shares	10,00,000	7,00,000

The shares of Day Ltd. and Night Ltd. trade at 20 and 15 times their respective P/E ratios. Day Ltd. considers taking over Night Ltd. by paying Rs.55 crores considering that the market price of Night Ltd. reflects its true value. It is considering both the following options:

(i)   Takeover is funded entirely in cash.

(ii)   Takeover is funded entirely in stock.

You are required to calculate the cost of the takeover and advise Day Ltd. on the best alternative.

Question 14 : C Ltd. & D Ltd.

C Ltd. & D Ltd. are contemplating a merger deal in which C Ltd. will acquire D Ltd. The relevant information about the firms are given as follows:

	C Ltd.	D Ltd.
Total Earnings (E) (in millions)	Rs..96	Rs.30
Number of outstanding share (S) (in millions)	20	14
Earnings per share (EPS) (Rs.)	4.8	2.143
Price earning ratio (P/E)	8	7
Market Price per share (P) (Rs.)	38.4	15

(i)   What is the maximum exchange ratio acceptable to the shareholders of C Ltd., if the P/E ratio of the combined firm is 7?

(ii)   What is the minimum exchange ratio acceptable to the shareholders of D Ltd., if the P/E ratio of the combined form is 9?

Thanks…..

contact@rahulmalkan.com

www.rahulmalkan.com

rahulmalkan

rahulmalkan

rahulmalkan79

CHP - 6

Mutual Funds

CHAPTER DESIGN

1. INTRODUCTION

2. BASICS OF MUTUAL FUNDS

3. ADVANTAGES OF MUTUAL FUNDS

4. DISADVANTAGES OF MUTUAL FUNDS

5. NET ASSET VALUE

6. 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.

WORK FLOW OF MUTUAL FUND
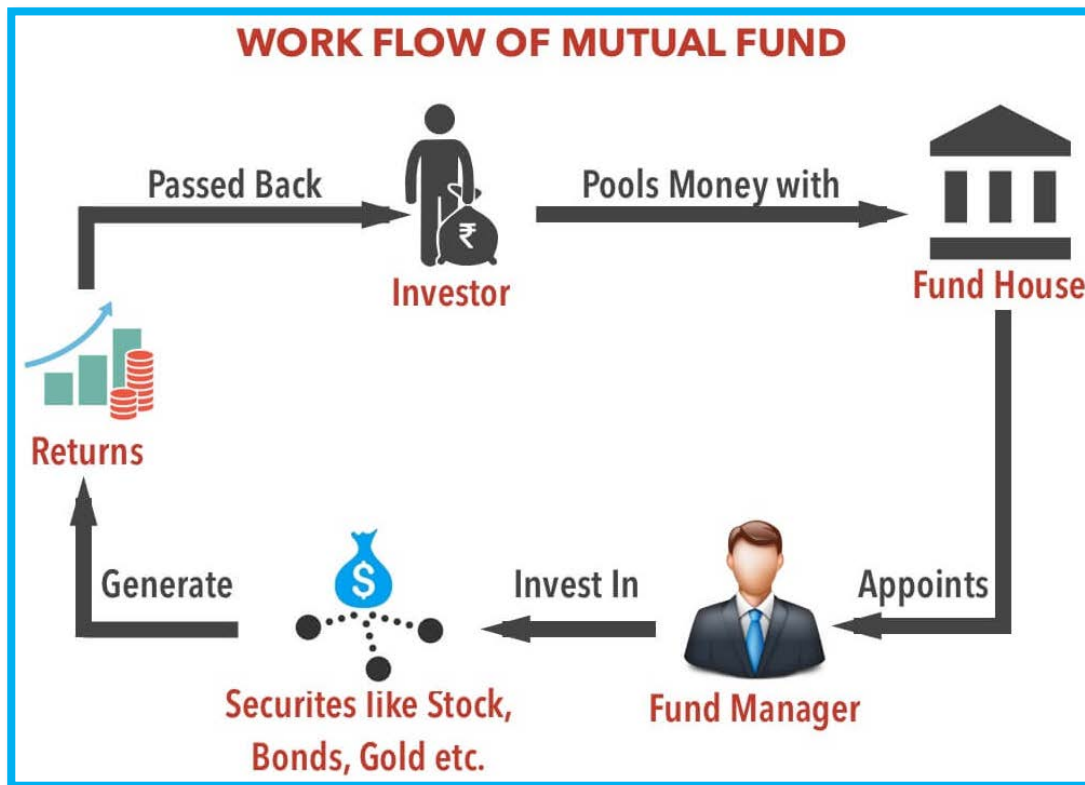
2. BASICS ON MUTUAL FUNDS :

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. 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.

4. 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.

5. 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 = $\dfrac{Net\ Assets}{No\ of\ Units\ Outstanding}$

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 :

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 3 :

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 4 :

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.

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 5 :
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 6 :
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 7 :
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?

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 8 : T Ltd.
T Ltd. has promoted an open-ended equity oriented scheme in 1999 with two plans—Dividend Reinvestment Plan (Plan-A) and a Bonus Plan (Plan-B); the face value of the units was Rs. 10 each. X and Y invested Rs. 5,00,000 each on 1.4.2001 respectively in Plan-A and Plan-B, when the NAV was Rs. 42.18 for Plan
- A and Rs. 35.02 for Plan - B. X and Y both redeemed their units on 31.3.2008. Particulars of dividend and bonus declared on the units over the period were as follows:

Date	Dividend	Bonus Ratio	NAV	
			Plan A	Plan B
15.09.2001	15	—	46.45	29.10
28.07.2002	—	1:6	42.18	30.05
31.03.2003	20	—	48.10	34.95
31.10.2003	—	1:8	49.60	36.00
15.03.2004	18	—	52.05	37.00
24.03.2005	—	1:11	53.05	38.10
27.03.2006	16	—	54.10	38.40
28.02.2007	12	1:12	55.20	39.10
31.03.2008	—	—	50.10	34.10

You are required to calculate the annual return for X and Y after taking into consideration the following information:
(i)   Securities transaction tax @ 2% on redemption.
(ii)   Liability of capital gains to income tax
        (a)   Long-term capital gain-exempt; and
        (b)   Short-term capital gains at 10% plus education cess at 3%.

Question 9 : 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 10 : 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 11 : 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?

: PRACTICAL QUESTIONS :

Question 12 : Mr.Alex

Mr.Alex, a practicing Chartered Accountant, can earn a return of 15 percent by investing in equity shares on his own. He is considering a recently announced equity based mutual fund scheme in which initial expenses are 6 percent and annual recurring expenses are 2 percent.

(i)   How much should the mutual fund earn to provide Mr.Alex a return of 15 percent per annum?

(ii)   Mr.Alex's current Annual Professional Income is Rs.40 Lakhs. His portfolio value is Rs.50 lakhs and now he is spending 10% of his time to manage his portfolio. If he spends this time on profession, his professional income will go up in same proportion. He is thinking to invest his entire portfolio into a Multicap Fund, assuming the fund's NAV will grow at 13% per annum (including dividend).

You are request to advise Mr.Alex, whether he can invest the portfolio into Multical Funds? If so, what is the net financial benefit?

Question 13 : ANP Plan

ANP Plan, a hedge fund currently has assets of Rs.20 crore. CA. X, the manager of fund charges fee of 0.10% of portfolio asset. In addition to it he charges incentive fee of 2%. The incentive will be linked to gross return each year in excess of the portfolio maximum value since the inception of fund. The maximum value the fund achieved so far since inception of fund about one and half year ago was Rs.21 crores.

You are required to compute the fee payable to CA. X, if return on the fund this year turns out to be

(a)   29%, (b)   4.5%, (c)   −1.8%

Question 14 : Vishnu Fund

The following particulars relating to Vishnu Fund Scheme :

	Particular	Value
		Rs. in Crores
1	Investments in Shares (at cost)	
	a. Pharmaceutical companies	79
	b. Construction Industries	31
	c. Service Sector Companies	56
	d. IT Companies	34
	e. Real Estate Companies	10
2	Investments in Bonds (Fixed Income)	
	a. Listed Bonds (8000, 14% Bonds of Rs.15,000 each)	12
	b. Unlisted Bonds	7
3	No. of Units outstanding (crores)	4.2
4	Expenses Payable	3.5
5	Cash and Cash equivalents	1.5
6	Market expectations on listed bonds	8.842%

Particulars relating to each sector are as follows :

Sector	Index on Purchase date	Index on Valuation date
Pharmaceutical companies	260	65
Construction Industries	210	450
Service Sector Companies	275	480
IT Companies	240	495
Real Estate Companies	255	410

You are required to calculate the following :

(i)   Net Asset Value of the fund

(ii)   Net Asset Value per unit

(iii)   If the period of consideration is 2 years, and the fund has distributed Rs.3 per unit per year as cash dividend, ascertain the Net return (Annualized).

(iv)   Ascertain the Expenses ratio.

Question 15 :

During the year 2017 an investor invested in a mutual fund. The capital gain and dividend for the year was Rs.3.00 per unit, which were re-invested at the year end NAV of Rs.23.75. The investor had a total units of 26,750 as at the end of the year. The NAV had appreciated by 18.75% during the year and there was an entry load of Rs.0.05 at the time when the investment was made.

The investor lost his records and wants to find out the amount of investment made and the entry load in the mutual fund.

Question 16 :

On 1st April, an open ended scheme of mutual fund had 300 lakh units outstanding with Net Assets Value (NAV) of Rs.18.75. At the end of April, it issued 6 lakh units at opening NAV plus 2% load, adjusted for dividend equalization. At the end of May, 3 Lakh units were repurchased at opening NAV less 2% exit load adjusted for dividend equalization. At the end of June, 70% of its available income was distributed.

In respect of April-June quarter, the following additional information are available:

	Rs.in lakhs
Portfolio value appreciation	425.47
Income of April	22.950
Income for May	34.425
Income for June	45.450

You are required to calculate

(i)   Income available for distribution;

(ii)   Issue price at the end of April;

(iii)   repurchase price at the end of May; and

(iv)   net asset value (NAV) as on 30th June.

Thanks....

CHP - 7

Forex

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

Forex

Part 1 Introduction to Forex	Part 2 Spot Rate & Forward Rate	Part 3 Exchange Rate Determination	Part 4 Other Related Concepts

Part 1 — Introduction to Forex
- Foreign Exchange Market
- Exchange Rate
- Exchange Rate Quotations
- Bid / Ask and Spread
- Currency Conversions
- Inverse Rates
- Cross Rates
- Arbitrage
- Two-way Arbitrage
- Overlapping
- Triangular Arbitrage
- TT Commissions

Part 2 — Spot Rate & Forward Rate
- Spot rate
- Forward Rate
- Forward Premium / Discount
- Swap rates
- Hedging
- Forward cover
- Fate of forward contracts

Part 3 — Exchange Rate Determination
- Interest Rate Parity Theory
  (a) Theory
  (b) Explanation to theory
  (c) IRP – Equation
  (d) IRP – Arbitrage
  (e) IRP – Hedge
- Purchasing Power Parity Theory
  (a) Theory
  (b) PPP – Equation
  (c) PPP – Arbitrage
- International Fisher Effect (IFE)

Part 4 — Other Related Concepts
- Currency Exposure
  a. Transaction Exposure
  b. Translation Exposure
  c. Economic Exposure
- Leading
- Lagging
- Borrowings
- Investments
- Nostro / Vostro / Loro

Rahul Malkan

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.

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.

4. **Bid / Ask and Spread :**
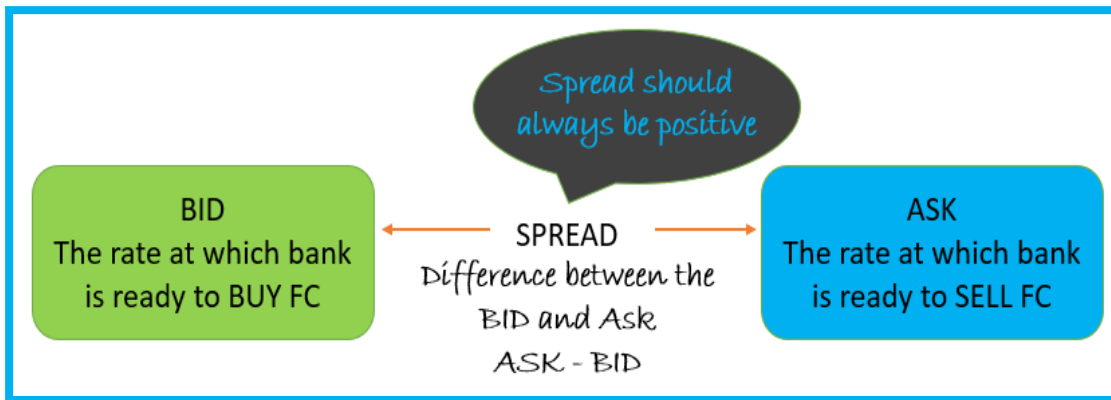
Consider Rs / $ rate is 75 / 76

- 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
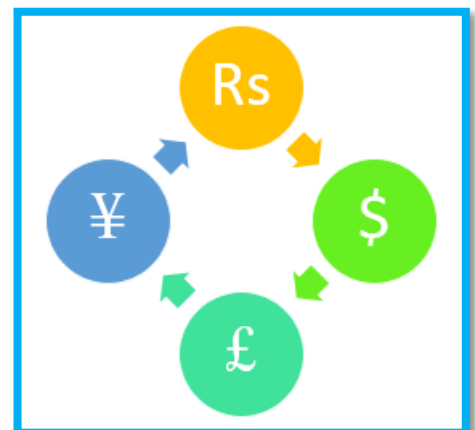
Step 1– Choice of Rate If the customer wants to Buy B – Then Y If the customer wants to Sell B – Then X
Step 2 – Divide / Multiple If the amount is given in B – then multiply If the amount is given in A – then Divide

Question 2 :

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 3 :

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.

6. Inverse Rates :

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

Question 4 :

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 5 :
Bank A in US and Bank B in UK provide the following quotations

| Bank A | $ / € | = 0.9250 / 0.9280 |

Bank A $ / €   = 0.9250 / 0.9280
Bank B   £ / €   = 0.6150 / 0.6230
Calculate implied $ / £ rate.

Question 6 :
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 7 :
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 8 :
An importer customer requested a bank to remit 25,00,000 Singapore $ (SGD) to the supplier. The inter bank market rates were as follows :

Mumbai US $ 1 = Rs. 65.21 / 65.71
London   1 £ = $ 1.7745/1.7785
                   1 £ = SGD 4.1280 / 4.1310

The bank wishes to retain an exchange margin of 0.125%. How many rupees the importer will have to pay?

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 9 :
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 10 :

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 11 :

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 12 :

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.

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 13 :
Spot rate $ 1 = Rs 50
Six month Forward $ 1 = Rs 52
Is $ at forward premium or discount. Calculate the forward premium or discount on $.

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 14 :

Spot rate 1$ = Rs 40.00 / 40.10

1 month forward   0.10 / 0.11

2 month forward   0.13 / 0.12

3 month forward   0.14 / 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

- Forward Cover
- Money Market Cover
- Call Cover
- Put Cover
- F+
- F-
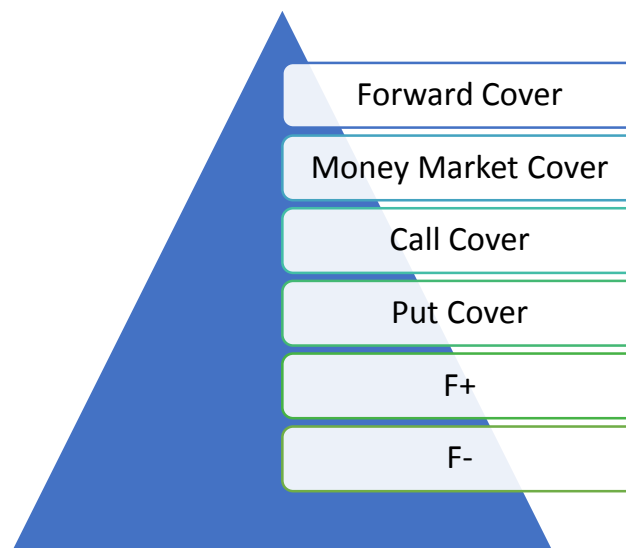
6. **Forward Cover :**

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 :

Exporter	FC Receivable	Fear of FC Falling	Sell FC Forward
Importer	FC Payable	Fear of FC Rising	Buy FC Forward
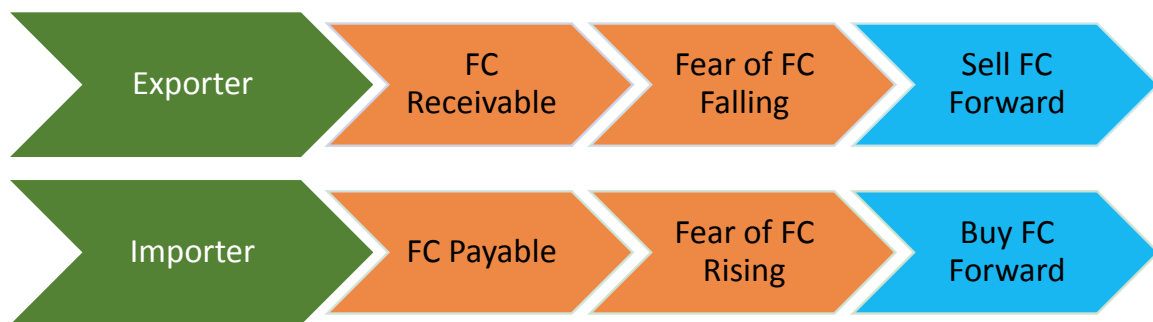
Question 15 :
US firm has € 40,000 receivable after 6 months. Spot Rate is $/€ 1.0427. 6 mf rate quoted by bank is $ 1.0527/€. How can he hedge his exposure?

Question 16 :
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 17 : 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 18 :

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.

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 :**

Delivery on Due Date

Early Delivery

Late Delivery
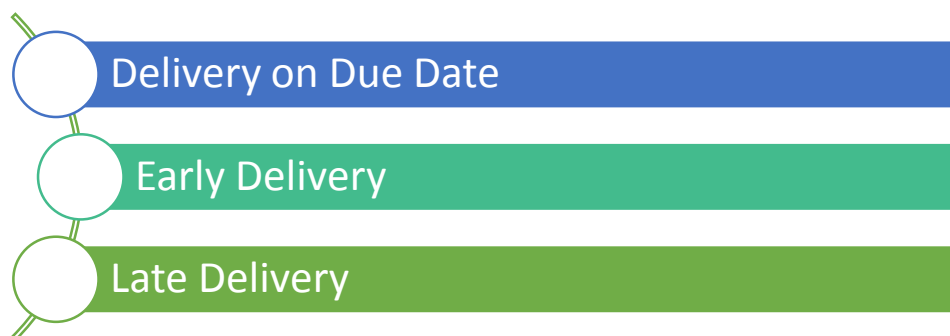
A.   Delivery on Due Date :

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 19 :

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.

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 20 : 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.   Cancellation of Forward Contract :

Cancellation on Due Date

Cancellation before due date

Cancellation after due date
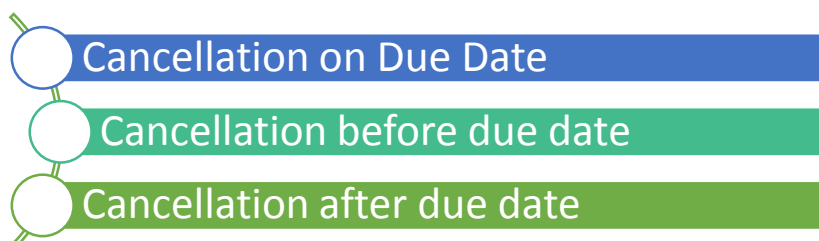
A. Cancellation on Due Date :

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 21 :

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 22 :

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.

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.   Extension of Forward Contract :

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.

Extension on Due Date

Extension before Due Date

Extension after Due Date
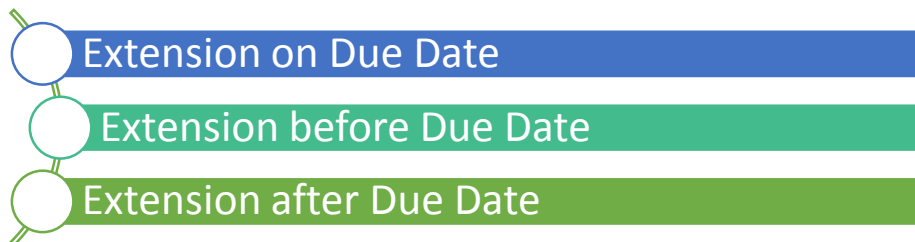
A.   Extension on Due Date :

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 23 :

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.

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 24 :

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.

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 25 :

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.63.8000/8200	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

Interest Rate Parity Theory (IRP)

Purchasing Power Parity Theory (PPP)

International Fisher Effect (IFE)
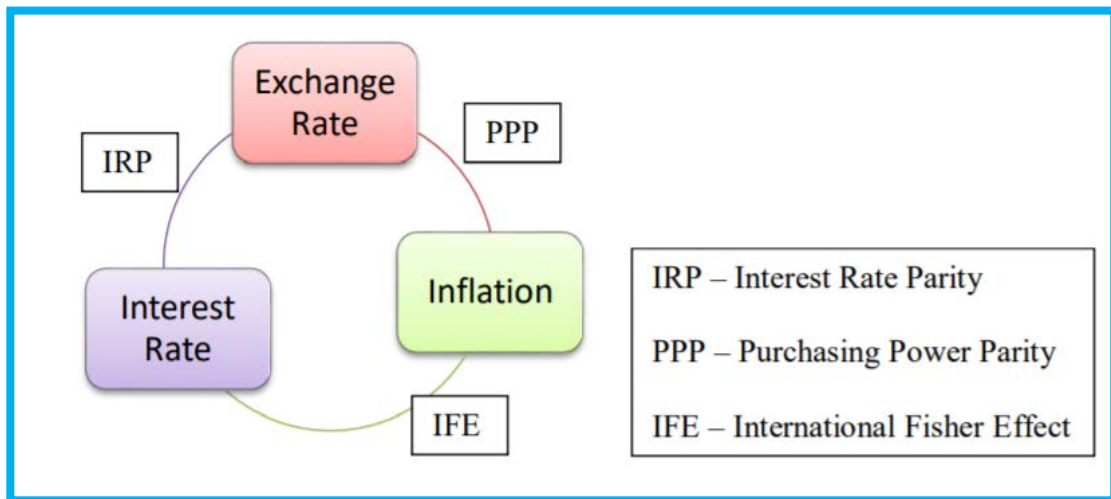
IRP – Interest Rate Parity

PPP – Purchasing Power Parity

IFE – International Fisher Effect

1. **Interest Rate Parity Theory :**
    Lets study the theory and related concepts as under

Theory

Explanation to Theory

IRP - Equation

IRP - Aribtriage

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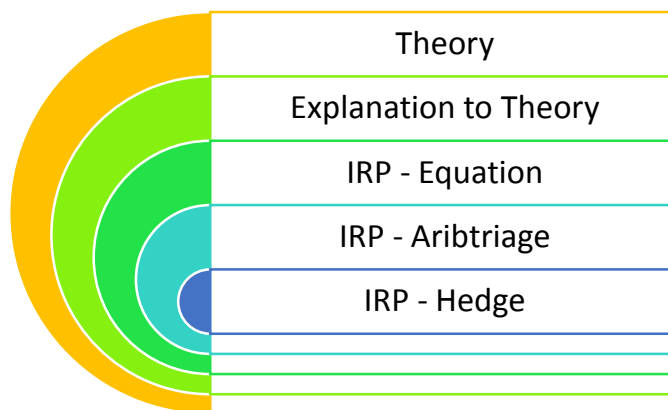
1. **Theory :**
    As per this theory, the exchange rate between currencies is directly affected by their interest rate differential. No one can borrow from one country and invest the same in other country and earn profit. It will be negated by difference exchange rate in spot market and forward market.

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 $= \dfrac{F}{S} = \dfrac{1+iA}{1+iB}$

Taking the above example

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

Question 26 :
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?

4. **IRP – Arbitrage :**
   IRP Arbitrage involves the following 4 steps
   1.   Borrow
   2.   Convert
   3.   Invest
   4.   Sell (Convert Back)
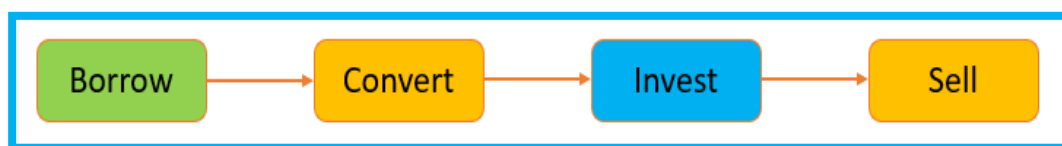
Note : We shall be asked to calculate the profit on Arbitrage. Since, every arbitrage has 2 paths selection of the path that shall give profit can be determined by comparing Actual F and F calculated as per IRP

- 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 27 :

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?

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
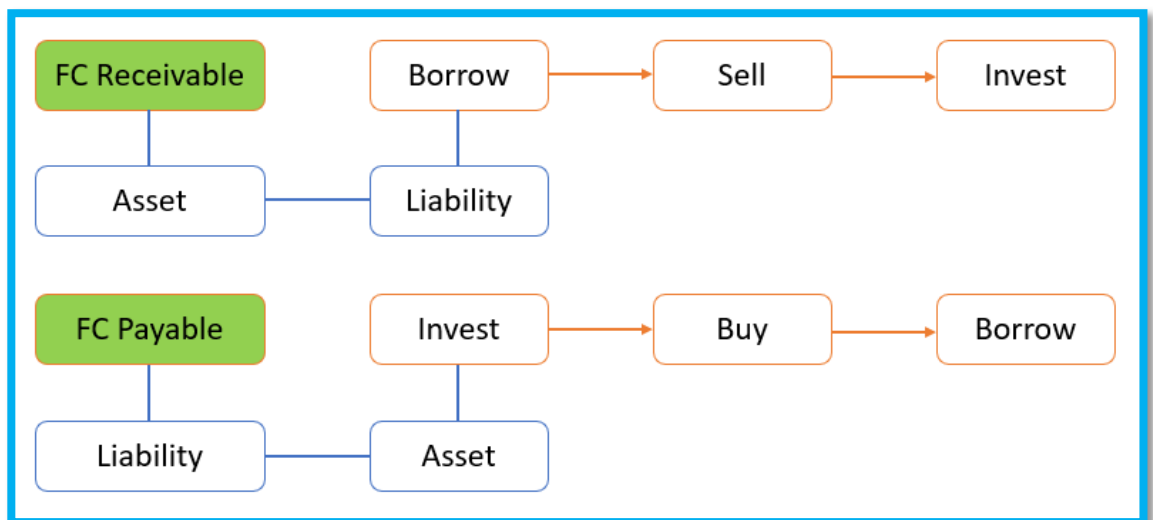
Question 28 :
US Firm has £ 50,000 payable after 3 months.

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 29 :
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.

2. **Purchasing Power Parity Theory :**
    Lets study the theory and related concepts as under
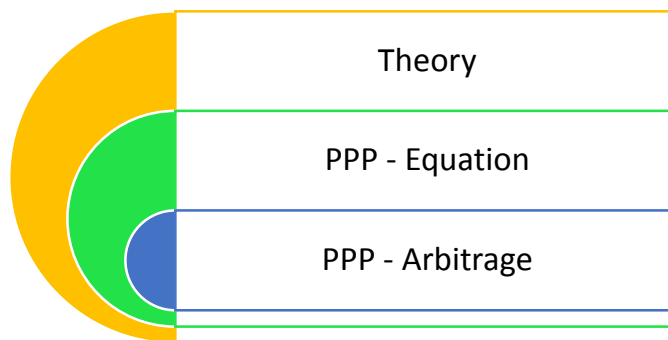
1. **Theory :**
    As per this theory, the exchange rate between currencies is directly affected by their inflation rate differential. No one can buy from one country and sell the same in other country and earn profit. It will be negated by difference exchange rate in spot market and forward market.

2. **IRP – Equation :**

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

Question 30 :
Spot rate = Rs 50 / $

Expected Inflation	- India ---- 8% p.a
	- US ---- 3% p.a

Find E(S) after 1 year and 3 yrs.

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 31 :

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 32 :

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 :**

Moment in time when exchange rate changes

Translation exposure

Accounting-based changes in consolidated financial statements caused by a change in exchange rates

Operating exposure

Change in expected cash flows arising because of an unexpected change in exchange rates

Transaction exposure

Impact of setting outstanding obligations entered into before change in exchange rates but to be settled after the change in exchange rates

Time

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 33 :

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 34 : 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 35 :

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 36 :

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.

4.   **Borrowing / Investing :**

It refers to borrowing / investment in foreign currency to gain from difference in exchange rate and interest rates.

Question 37 : 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 38 :

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 ---

| Rs./$ 50 | Rate Kiska Hai | $ KA |

Question 39 :

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.

Question 40 : A German subsidiary

A German subsidiary of an US based MNC has to mobilize 1,00,000 Euro's working capital for the next 12 months. It has the following options :

Loan from Germany Bank   :   @ 5% p.a.

Loan from US Parent Bank   :   @ 4% p.a.

Loan from Swiss Bank   :   @ 3% p.a.

Bank in Germany charge an additional 0.25% p.a. towards loan servicing. Loans from outside Germany attract withholding tax of 8% on interest payments. If the interest rates given above the market determined, examine which loan is the most attractive using interest rate differential.

Question 41 : An Indian importer

An Indian importer has to settle an import bill for $ 1, 30,000. The exporter has given the Indian exporter two options:

(i)   Pay immediately without any interest charges.

(ii)   Pay after three months with interest at 5 percent per annum.

The importer's bank charges 15 percent per annum on overdrafts. The exchange rates in the market are as follows:

Spot rate (Rs./$): 48.35 /48.36

3-Months forward rate (Rs./$): 48.81 /48.83

The importer seeks your advice. Give your advice.

Question 42 : K Ltd.

K Ltd. currently operates from 4 different buildings and wants to consolidate its operations into one building which is expected to cost ` 90 crores. The Board of K Ltd. had approved the above plan and to fund the above cost, agreed to avail an External Commercial Borrowing (ECB) of GBP 10 m from G Bank Ltd. on the following conditions:

• The Loan will be availed on 1st April, 2019 with interest payable on half yearly rest.

• Average Loan Maturity life will be 3.4 years with an overall tenure of 5 years.

• Upfront Fee of 1.20%.

• Interest Cost is GBP 6 months LIBOR + Margin of 2.50%.

• The 6 month LIBOR is expected to be 1.05%.

K Ltd. also entered into a GBP-INR hedge at 1 GBP = INR 90 to cover the exposure on account of the above ECB Loan and the cost of the hedge is coming to 4.00% p.a.

As a Finance Manager, given the above information and taking the 1 GBP = INR 90:

(i)   Calculate the overall cost both in percentage and rupee terms on an annual basis.

(ii)   What is the cost of hedging in rupee terms?

(iii)   If K Ltd. wants to pursue an aggressive approach, what would be the net gain/loss for K Ltd. if the INR depreciates/appreciates against GBP by 10% at the end of the 5 years assuming that the loan is repaid in GBP at the end of 5 years?

Ignore time value and taxes and calculate to two decimals.

Question 43 : Global Ltd.

On 1st January 2019 Global Ltd., an exporter entered into a forward contract with BBC Bank to sell US$ 2,00,000 on 31stMarch 2019 at Rs.71.50/$. However, due to the request of the importer, Global Ltd. received the amount on 28 February 2019. Global Ltd. requested the Bank to take delivery of the remittance on 2ndMarch 2019. The Inter-banking rates on 28thFebruary were as follows:

Spot Rate   Rs.71.20 / 71.25

One month premium   5/10

If Bank agrees to take early delivery then what will be the net inflow to Global Ltd. assuming that the prevailing prime lending rate is 15%. Assume 365 days in a year.

Question 44 :

On 19th January, Bank A entered into forward contract with a customer for a forward sale of US $ 7,000, delivery 20th March at Rs.46.67. on the same day, it covered its position by buying forward from the market due 19th March, at the rate of Rs.46.655. on 19th February, the customer approaches the bank and requests for early delivery of US $.

Rates prevailing in the interbank markets on that date are as under

Spot (Rs./$)   46.5725/5800

March   46.3550/3650

Interest on outflow of funds is 16% and on inflow of funds is 12%. Flat charges for early delivery are Rs.100.

What is the amount that would be recovered from the customer on the transaction?

Note: Calculation should be made on month's basis than on day's basis.

Question 45 :

Suppose you are a treasurer of XYZ plc in the UK. XYZ have two overseas subsidiaries, one based in Amsterdam and one in Switzerland. The Dutch subsidiary has surplus Euros in the amount of 725,000 which it does not need for the next three months but which will be needed at the end of that period (91 days). The Swiss subsidiary has a surplus of Swiss Francs in the amount of 998,077 that, again, it will need on day 91. The XYZ plc in UK has a net balance of £75,000 that is not needed for the foreseeable future.

Given the rates below, what is the advantage of swapping Euros and Swiss Francs into Sterling?

Spot Rate (€)   £0.6858   -   0.6869
91 day Pts   0.0037   0.0040
Spot Rate (£)   CHF 2.3295 - 2.3326
91 day Pts   0.0242   0.0228

Thanks....

International Finance Management

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

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%.

2. INTERNATIONAL WORKING CAPITAL MANAGEMENT :

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 :
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 3 : 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 4 : 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 5 :

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.

PRACTICE QUESTIONS

Question 6 : Odessa Limited

Odessa Limited has proposed to expand its operations for which it requires funds of $ 15 million, net of issue expenses which amount to 2% of the issue size. It proposed to raise the funds though a GDR issue. It considers the following factors in pricing the issue:

(i)   The expected domestic market price of the share is Rs.300

(ii)   3 shares underly each GDR

(iii)   Underlying shares are priced at 10% discount to the market price

(iv)   Expected exchange rate is Rs.60/$

You are required to compute the number of GDR's to be issued and cost of GDR to Odessa Limited, if 20% dividend is expected to be paid with a growth rate of 20%.

Question 7 : XYZ Ltd.

XYZ Ltd., a company based in India, manufactures very high quality modem furniture and sells to a small number of retail outlets in India and Nepal. It is facing tough competition. Recent studies on marketability of products have clearly indicated that the customer is now more interested in variety and choice rather than exclusivity and exceptional quality. Since the cost of quality wood in India is very high, the company is reviewing the proposal for import of woods in bulk from Nepalese supplier.

The estimate of net Indian (Rs.) and Nepalese Currency (NC) cash flows in Nominal terms for this proposal is shown below:

Net Cash Flow (in millions)

Year	0	1	2	3
NC	−25.000	2.600	3.800	4.100
Indian (Rs.)	0	2.869	4.200	4.600

The following information is relevant:

(i)   XYZ Ltd. evaluates all investments by using a discount rate of 9% p.a. All Nepalese customers are invoiced in NC. NC cash flows are converted to Indian (Rs.) at the forward rate and discounted at the Indian rate.

(ii)   Inflation rates in Nepal and India are expected to be 9% and 8% p.a. respectively. The current exchange rate is Rs.1= NC 1.6

Assuming that you are the finance manager of XYZ Ltd., calculate the net present value (NPV) and modified internal rate of return (MIRR) of the proposal.

You may use following values with respect to discount factor for Rs.1 @ 9%.

	Present Value	Future Value
Year 1	0.917	1.188
Year 2	0.842	1.090
Year 3	0.772	1

Question 8 : TG Ltd.

TG Ltd., a multinational company is planning to set up a subsidiary company in India (Where hitherto it was exporting) in view of growing demand for its product and completion from other MNCs. The initial project cost (consisting of plant and machinery including installation) is estimated to be US $ 500 million. The net working capital requirements are estimated at US $ 100 million. The company follows straight line method of depreciation. Presently, the company is exporting 2 million units every year at a unit price of US $ 100, its variable cost per unit being US $ 50.

The Chief Financial Officer has estimated the following operating cost and other data in respect of the proposed project :

(a)   Variable operating cost will be US $ 25 per unit of production.

(b)   Additional cash fixed cost will be US $ 40 million per annum.

(c)   Production and sales capacity of the proposed project in India will be 5 million units.

(d)   Expected useful life of the proposed plant is 5 years with no salvage value.

(e)   Existing working capital investment for production and sale of 2 million units through exports was US $ 20 million.

(f)   Export of the product in the coming year will decrease to 1.5 million units in case the company does not open subsidiary company in India, in view of the presence of competing MNCs that are in the process of setting up their subsidiaries in India.

(g)   Applicable Corporate Income Tax rate is 30%.

(h)   Required rate of return for such project is 12%.

Assume that there will be no variation in the exchange rate if two countries, all profits will be repatriated and there will be no withholding tax.

Estimate the Net Present Value (NPV) of the proposed project in India. Present Value Interest Factors (PVIF) @ 12% for 5 years are as under :

Year :	1	2	3	4	5
PVIF :	0.8929	0.7972	0.7118	0.6355	0.5674

(Compute your working to 4 decimals)

Question 9 :

A foreign based company is planning to set up a software development unit in India. Software developed at the Indian unit will be bought back by the foreign parent company at a transfer price of US $10 millions. The unit will remain in existence in India for one year; the software is expected to get developed within this time frame.

The foreign based company will be subject to corporate tax of 30 per cent and a withholding tax of 10 per cent in India and will not be eligible for tax credit in the US. The software developed will be sold in the US market for US $ 12.0 millions. Other estimates are as follows:

Rent for fully furnished unit with necessary hardware in India- Rs.20,00,000

Man power cost (80 software professional will be working for 10 hours each day)
= Rs.540 per man hour

Administrative and other costs - Rs.16,20,000

Advise the Foreign Company on the financial viability of the project. The rupee-dollar rate is Rs.65/$.

Assume: 365 days in a year

Question 10 : Opus Technologies Ltd.

Opus Technologies Ltd., an Indian IT company is planning to make an investment through a wholly owned subsidiary in a software project in China with a shelf life of two years. The inflation in China is estimated as 8 percent. Operating cash flows are received at the year end.

For the project an initial investment of Chinese Yuan (CN¥) 30,00,000 will be in a piece of land. The land will be sold after the completion of project at estimated value of CN¥ 35,00,000. The project also requires an office complex at cost of CN¥ 15,00,000 payable at the beginning of project. The complex will be depreciated on straight-line basis over two years to a zero salvage value. This complex is expected to fetch CN¥ 5,00,000 at the end of project.

The company is planning to raise the required funds through GDR issue in Mauritius. Each GDR will have 5 common equity shares of the company as underlying security which are currently trading at Rs.200 per share (Face Value = Rs.10) in the domestic market. The company has currently paid a dividend of 25% which is expected to grow at 10% p.a. The total issue cost is estimated to be 1 percent of issue size.

The annual sales is expected to be 10,000 units at the rate of CN¥ 500 per unit. The price of unit is expected to rise at the rate of inflation. Variable operating costs are 40 percent of sales. Current Fixed Operating costs is CN¥ 22,00,000 per year which is expected to rise at the rate of inflation.

The tax rate applicable in China for business income and capital gain is 25 percent and as per GOI Policy no further tax shall be payable in India. The current spot rate of CN¥ 1 is Rs.9.50. The nominal interest rate in India and China is 12% and 10% respectively and the international parity conditions hold.

You are required to

(a)   Identify expected future cash flows in China and determine NPV of the project in CN¥.

(b)   Determine whether Opus Technologies should go for the project or not, assuming that there neither there is any restriction nor any charges/taxes payable on the transfer of funds from China to India.

Question 11 : XY Limited

XY Limited is engaged in large retail business in India. It is contemplating for expansion into a country of Africa by acquiring a group of stores having the same line of operation as that of India.

The exchange rate for the currency of the proposed African country is extremely volatile. Rate of inflation is presently 40% a year. Inflation in India is currently 10% a year.

Management of XY Limited expects these rates likely to continue for the foreseeable future. Estimated projected cash flows, in real terms, in India as well as African country for the first three years of the project are as follows:

	Year – 0	Year – 1	Year – 2	Year – 3
Cash Flows in Indian Rs. (000)	-50,000	-1,500	-2,000	-2,500
Cash flows in African Rands (000)	-2,00,000	+50,000	+70,000	+90,000

XY Ltd. assumes the year 3 nominal cash flows will continue to be earned each year indefinitely. It evaluates all investments using nominal cash flows and a nominal discounting rate. The present exchange rate is African Rand 6 to Rs.1.

You are required to calculate the net present value of the proposed investment considering the following:

(i)   African Rand cash flows are converted into rupees and discounted at a risk adjusted rate.

(ii)   All cash flows for these projects will be discounted at a rate of 20% to reflect it's high risk.

(iii)   Ignore taxation.

	Year - 1	Year - 2	Year - 3
PVIF @ 20%	833	694	579

Thanks ….

CHP - 9

Interest Rate Risk

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:

Asset & Liability Management (ALM)

Forward Rate Agreement (FRA)

(B) Modern Methods : These methods can further be classified in following categories:

Interest Rate Futures (IRF)

Interest Rate Options (IRO)

Interest Rate Swaps
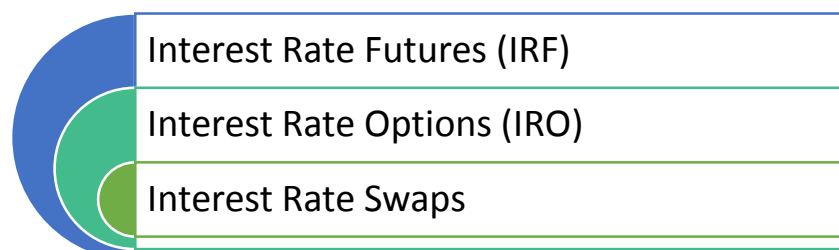
2. **Forward Rate Agreement :**

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.

Concepts
- Meaning
- FRA - Quotation
- FRA - Pay off
- FRA - Valuations
- FRA - Arbitrage
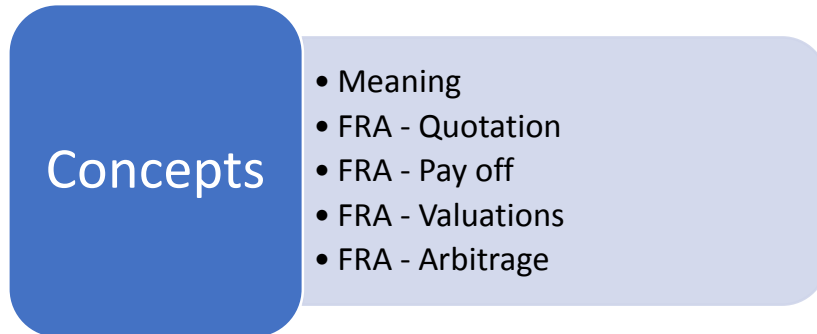
1. **Meaning :**
- Forward rate is the contract to borrow or invest a specified amount of money @ specified rate of interest at a specified point of time in future for a specified period.
- We use this agreement to hedge and also to speculate.
- One should remember that a promise to borrow is a nothing 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.

$$FRA = \frac{Larger\ Period}{Smaller\ Period}$$

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 :

Path 1
Borrow / Invest

Path 2
Invest / Borrow
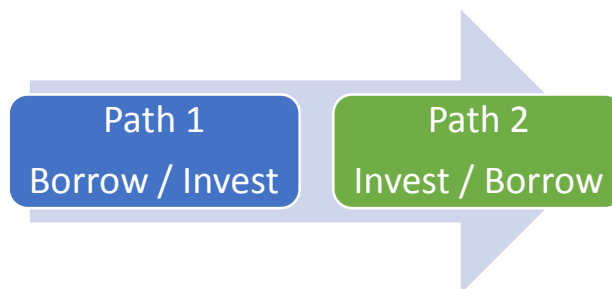
Question 1 :
RM buys 500 Cr 6 x 9 FRA at 10% / 11%. The rate turns out to be 12.5%. Calculate the amount of pay off.

Question 2 :
9 month LIBOR ---- 10%
6 month LIBOR ---- 11%
What should be the price of 6 x 9 FRA?

Question 3 :
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 4 :

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 5 :

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:

Call Option

Floor Option

Interest Rate Collars
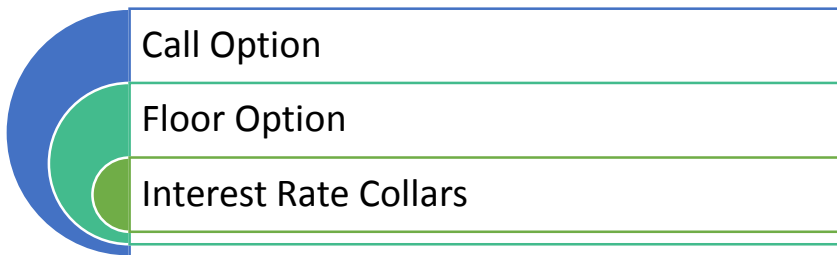
Note : All the above is studied in Derivatives

5. **Interest Rate Swaps :**

Covered in Derivatives

Thanks....

✉
contact@rahulmalkan.com

🌐
www.rahulmalkan.com

f
rahulmalkan

▶
rahulmalkan

📷
rahulmalkan79

Derivative

Derivative
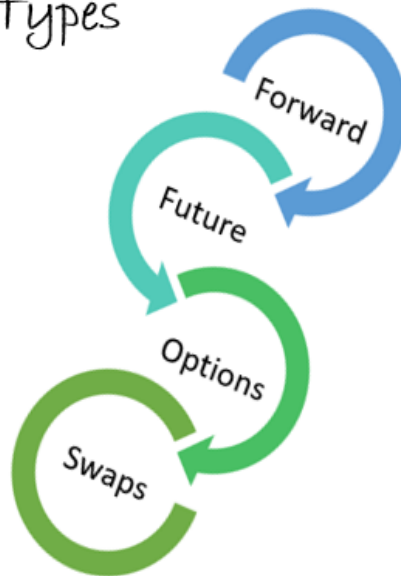
- Forward Contract
- Futures Contract
  - Introduction
  - Features
  - Difference between forward & futures
  - Trading in futures
    (a) Margins
    (b) Settlements
  - Future – Valuation
    (a) Cost of Cary Model
    (b) Contango Market
    (c) Backwardation Market
    (d) Convergence
  - Futures - Arbitrage
    (a) Explanation
    (b) Practical questions
  - Futures – Hedging
  - Future & Beta Management
- Options
  - Meaning
  - Features
  - Parties
  - Types of Options
  - Moneyness of Option
  - Option Trading
  - Strategies using Option
  - Option Hedging
  - Option Valuations
- Swaps
  - Plain Vanilla Swap
  - Overnight Index Swap (OIS)
  - Two Party Swap
  - Two Party Swap
  - Swap Quotation
  - CAPS / FLOOR / COLLAR
  - Currency Swaps
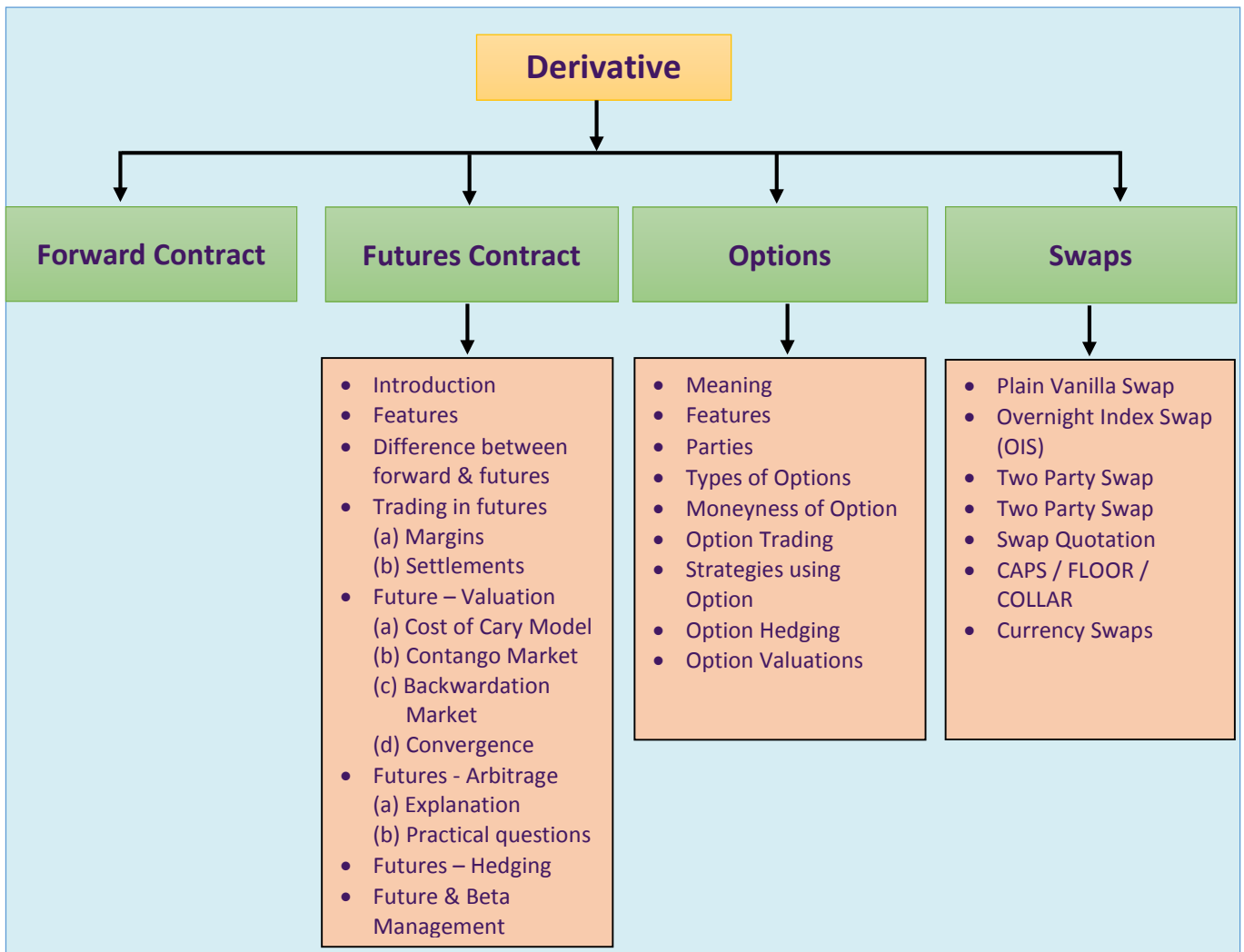
INTRODUCTION :

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**.
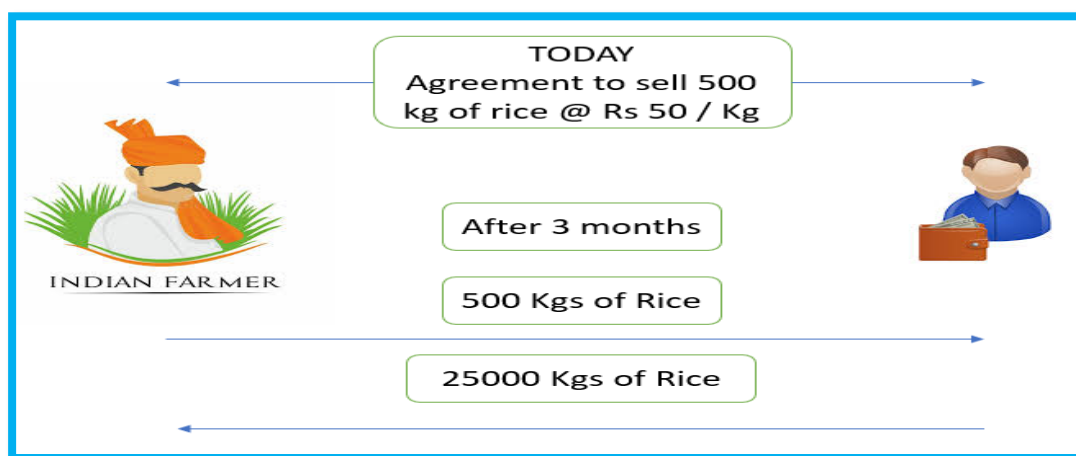
A forward contract is an agreement between a buyer and a seller obligating the seller to deliver a specified asset of specified quality and quantity to the buyer on a specified date at a specified place and the buyer, in turn, is obligated to pay to the seller a pre-negotiated price in exchange of the delivery.

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

- Close out
- Physical Delivery
- Cash Settlement
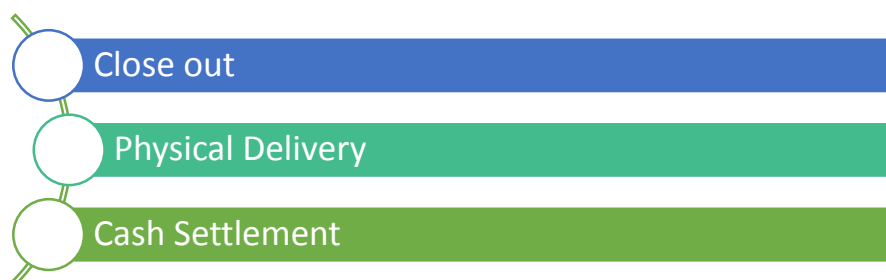
Question 1 :

On 15th July pound futures for maturity August end are traded on the International Monetary Market (IMM) at $1.2450 (lot size pound 62,500). A trader bullish on $ against pound takes a position in 14 futures contract. Initial margin is $1000 per lot & maintenance $ 750 per lot.

Future price for subsequent days happen to be –

Days	Future Price
16th	1.2420
17th	1.2490
18th	1.2520
19th	1.2430

He squares off his position on 19th. Show the margin balance each day and compute the overall profit/loss.

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

Interest Saved

Storage Cost Saved

Monetary Benefit Foregone

Convenience Yield Foregone
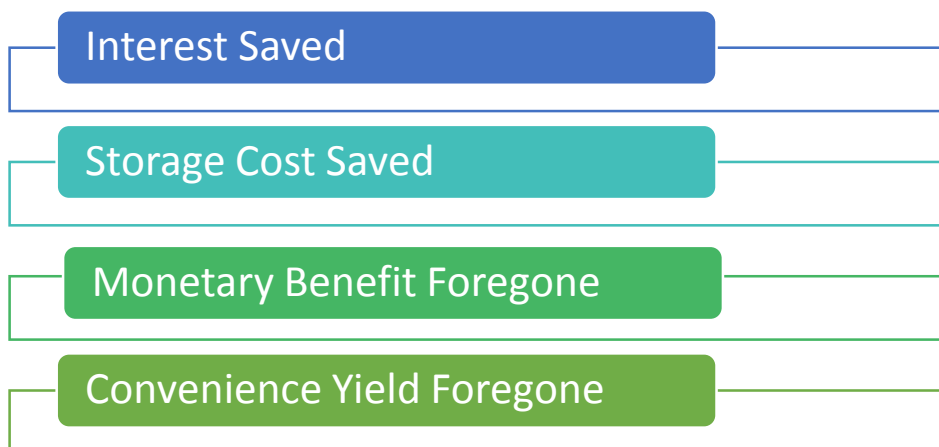
where : NCC = interest saved + storage cost saved – monetary benefit (eg. dividend) foregone – convenience yield forgone

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.

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 :

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.

6.   **Futures – Arbitrage :**

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 4 :
Stock price of RM = 640
R_f = 10%
Dividend yield = 1 %
3mf pp' = 780
Show the process of arbitrage (lot size 500)

Question 5 :
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)

7. **Futures – Hedging :**
There are 3 main purpose of entering into futures contract

Speculate → Arbitrage → Hedge

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

FC Receivable	• Sell FC Futures OR Buy HC Futures
FC Payable	• Buy FC Futures OR • Sell HC Futures
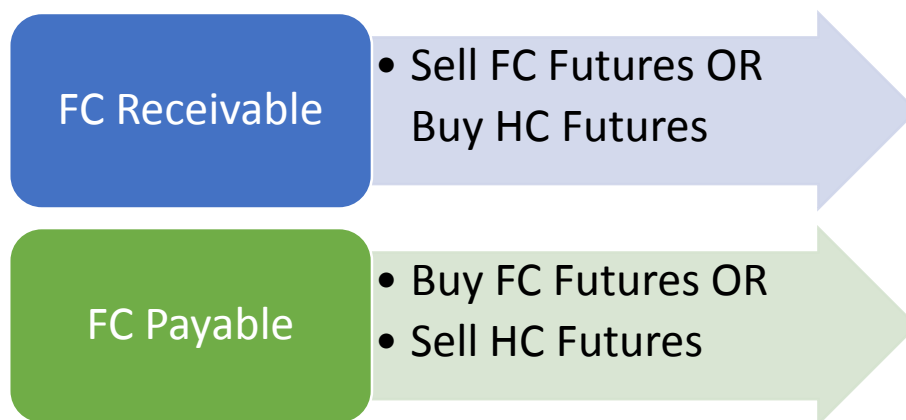
Steps to Execute the Hedge

Decide the strategy → Calculate the No of Contracts →

Final settlement
1. Square off the futures
2. Settle margin on futures
3. Settle the exposure
4. Net of 1, 2, and 3
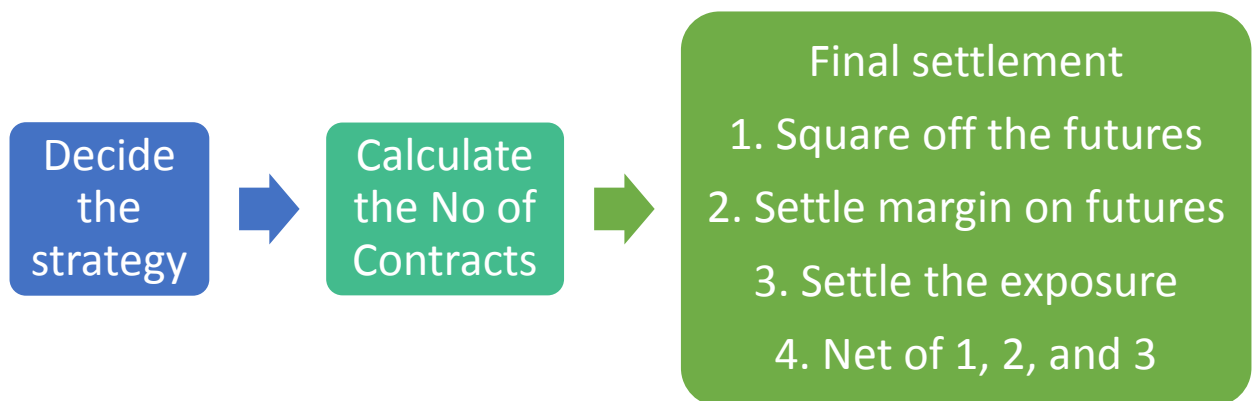
Question 6 :

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 7 : 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.

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 = $\dfrac{V_p \lfloor \beta_t - \beta_p \rfloor}{F \times M \times \beta_f}$

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 8 :

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)

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.
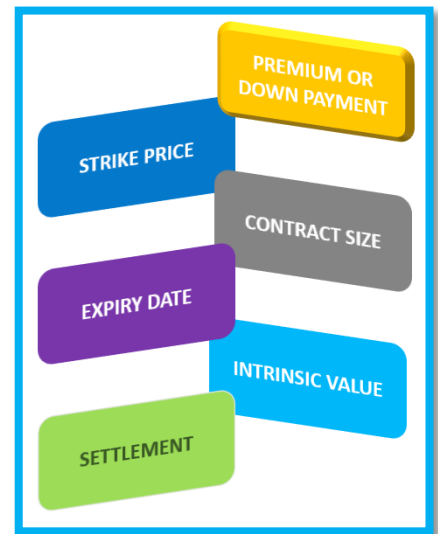
3. Parties to options :

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 :**
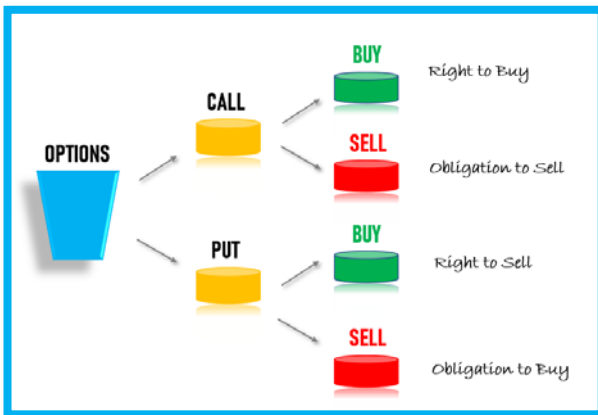
Call options :

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
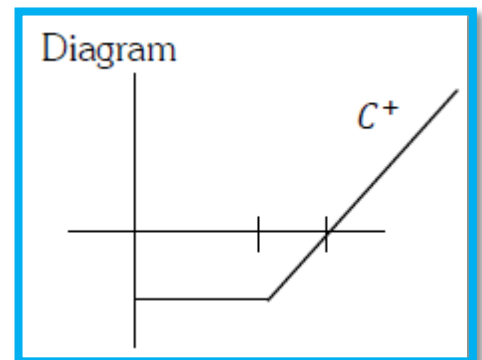
2. **C – :**
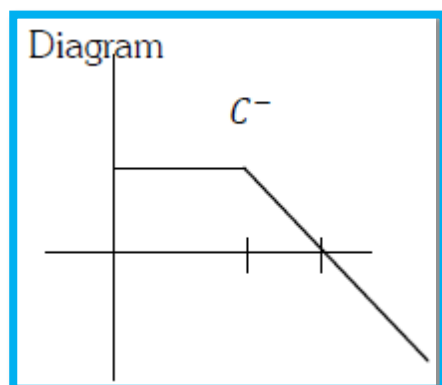
  1. He is Seller of Call
  2. He has Obligation to Sell
  3. He has Obligation to pay up side
  4. Pay off will be Negative
  5. He will receive premium

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

Diagram

P^+
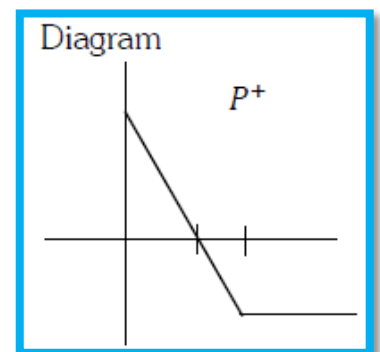
2.   **P – :**
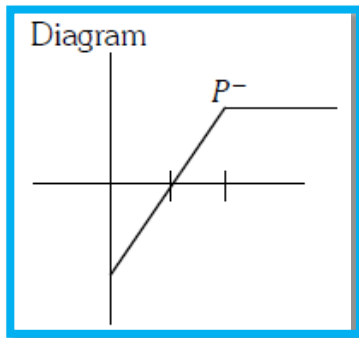
1. He is Seller of Put
2. He has Obligation to Buy
3. He has Obligation to pay down side
4. Pay off will be Negative
5. He will receive Premium

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 9 : 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 10 :

SHORT PUT(P-) at E - 850, Maturity 3m & Premium Received. = Rs. 105

a)   1000   b)   700

Question 11 :

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

> Combination Strategy

> Spread Strategy

> Synthetic Strategy

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.

Question 12 : 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 13 : 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. [−, +]

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 15 :

Consider the following information

E	Call Premium
5500	390
5700	240
6000	125

Design a spread strategy to profit from massive movements in Nifty ?

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
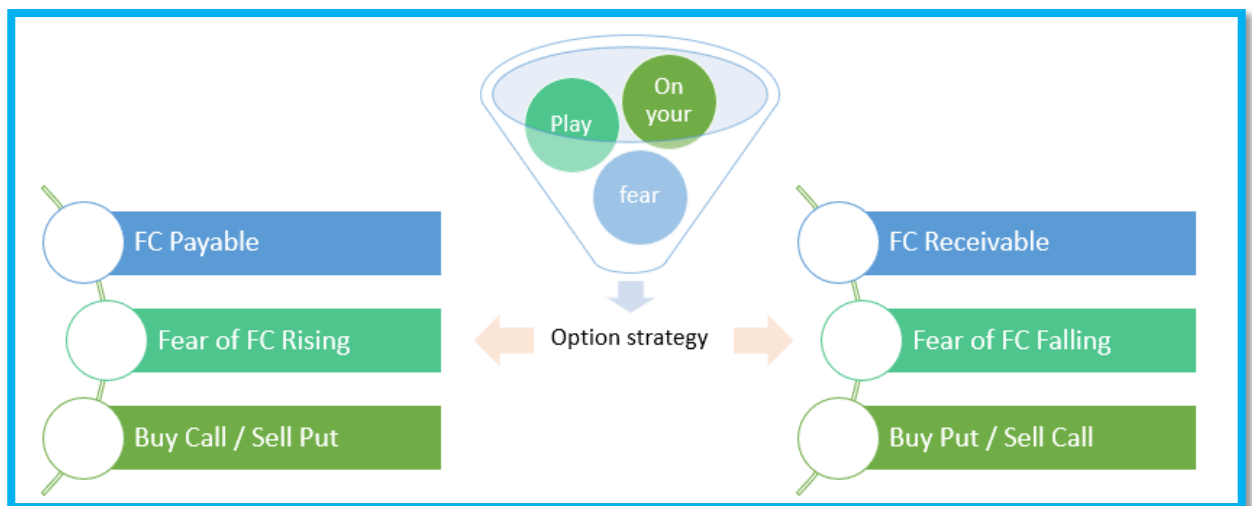
Steps to Present the Answer

Decide the strategy → Calculate Expected Pay off → Calculate Expected Spot → Final Settlement

Question 16 : 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 17 : A Ltd. of UK

A Ltd. of UK has imported some chemical worth of USD 3,64,897 from one of the US suppliers. The amount is payable in six months time. The relevant spot and forward rates are

Spot Rates   USD 1.5617 – 1.5673

6 month forward rate   USD 1.5455 – 1.5609

The borrowing rates in UK and US are 7% and 6% respectively and deposit rates are 5.5% and 4.5% respectively.

Currency options are available under which contract is for GBP 12,500. The option premium for GBP at a strike price of USD 1.70/GBP is USD 0.037 (call option) and USD 0.096 (Put option) for 6 months period.

The company has 3 choices

(i)	Forward cover	(ii)	Money Market Cover
(iii)	Currency Options		

Which of the alternatives is preferable by the company?

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.

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 :**

$$\text{"So = N x C + PV Of Lower of EP or LP"}$$

Where

SO	• Current Price
N	• Number of Options
C	• Value of Call
PV	• Present Value
EP	• Exercise Price
LP	• Lower Possible Price

Steps :

Calculate the spread between 2 possible prices

Calculate the spread between 2 possible payofs

Calculate the no. of options

Calculate the value of call by using the equation
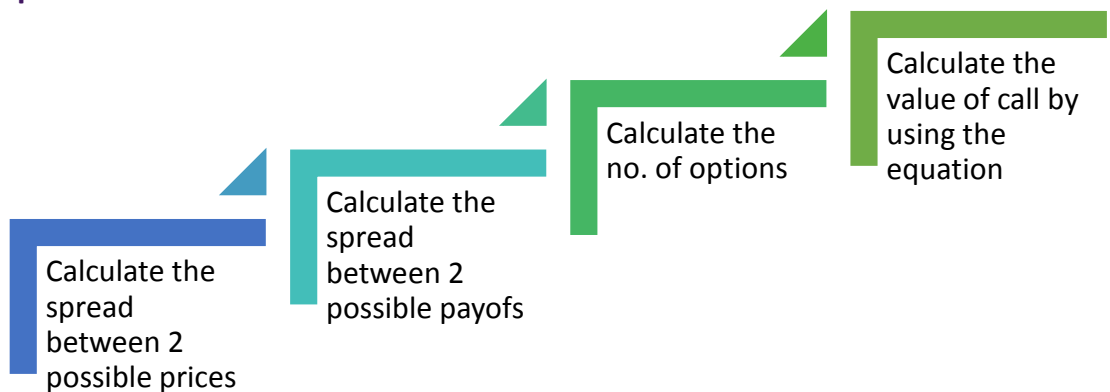
Question 18 :
A stock with current price of 400, Strike price 440 (1 year), Rf = 10%. Probable MP at the end of the year is 360 / 480.

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 19 :
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 20 :
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)

Model

SP = ?

CP = ?

P → US = ? PO = ?

1-p → DS = ? PO = ?

CP = ?
SP = ?
US = ?
U = ?
DS = ?
D = ?
Rf = ?
R = ?
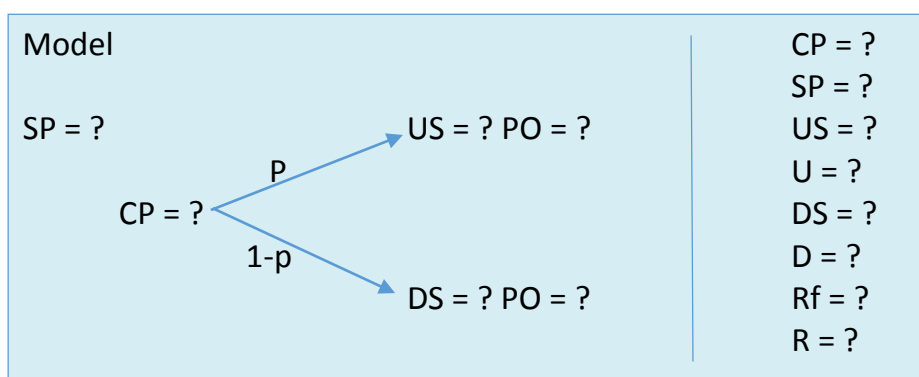
✎ **Question 21 :**

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 22 :

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 23 :

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 24 : 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 <u>mathematical model</u> 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 :

		Where,
1.	$Vc = S \times N(d1) - \dfrac{E}{e^{rt}} \times N(d2)$	Vc = Value of Cell
2.	$Vp = Vc + \dfrac{E}{e^{rt}} - S$	Vp = Value of Put S = Current Price
3.	$d1 = \dfrac{Ln\left(\dfrac{S}{E}\right) + \left[r + \dfrac{\sigma^2}{2}\right]t}{\sigma\sqrt{t}}$	E = Exercise Price Ln = Natural Log t = time (in years)
4.	$d2 = d1 - \sigma\sqrt{t}$	r = Rf (continuous compounding σ = Standard deviation

Steps :

Question 25 :

S = 415 , E = 400. Calculate $\boldsymbol{Ln}\left(\dfrac{S}{E}\right)$.

Question 26 :

S = 415, E = 400. Calculate 3 month call option when Rf = 5%. Standard deviation is 0.22 or 22%. Calculate d1 and d2.

Question 27 :

Calculate N(d1) and N(d2) for the above d1 and d2.

Question 28 :

S = 415, E = 400. Calculate 3 month call ooption when rf = 5%. Standard deviation is 0.22 or 22%. Calculate Value of Call.

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

    Make them do the things that they don't want to do

    Swap

    Calculate effective cost and gain to each party
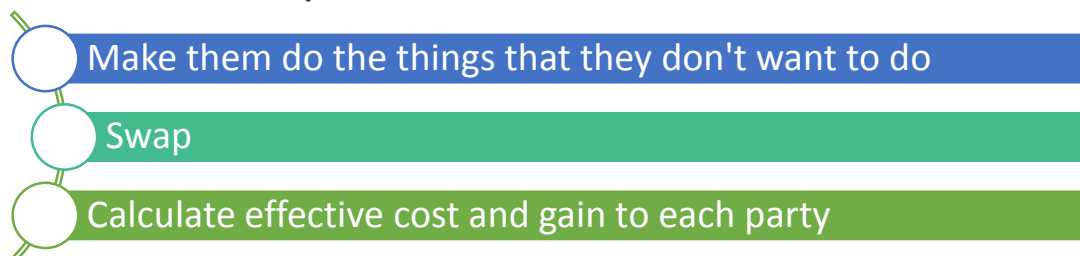
    Note : If the effective or gain is given to use then we should do step 1, then go to step 3 and then complete step 2

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 29 :

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 30 : 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 31 : 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 32 : 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 33 :

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 34 : 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 35 :

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 (%)	Quarters	3 month Mibor (%)
1	8.70	3	7.80
2	8.00	4	8.20

Question 36 :

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 37 : 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 38 : P Ltd.

P Ltd. is contemplating to borrow an amount of Rs.50 crores for a period of 3 months in the coming 6 months time from now. The current rate of interest is 8% per annum but it may go up in 6 months 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 8.30% per annum. Compute the effect of FRA and actual rate of interest cost to the company, if the actual rate of interest during consideration period happens to be (i) 8.60% p.a., or (ii) 7.80% p.a. (Show your working on the basis of months)

Question 39 : TM Fincorp

TM Fincorp has bought a 6X9 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 40 :

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.

Question 41 : R Ltd.

A future contract is available on R Ltd. that pays an annual dividend of Rs.4 and whose stock is currently priced at Rs.125. Each future contract calls for deliver of 1,000 shares to stock in one year, daily marking to market. The corporate treasury bill rate is 8%.

Require :

(i)   Given the above information, what should the price of one future contract be?

(ii)   If the company stock price decreases by 5%, what will be the price of one futures contact?

(iii) As a result of the company stock price decrease, will an investor that has a long position in one futures contract of R Ltd. realizes a gain or loss? What will be the amount of his gain or loss?

(Ignore margin and taxation, if any)

Question 42 : Kasi

On April 1, 2019, Kasi has a portfolio consisting of four securities as shown below:

Security	A	K	S	P
Market Price	Rs.48.5	Rs.332.68	Rs.13.99	Rs.292.82
No. of Shares	673	480	721	358
β Value	0.74	1.28	0.54	0.46

Cost of Capital is 16% p.a. compounded continuously. Kasi fears a fall in prices of shares in future. Accordingly, he approaches you for the advice to protect the interest of his Portfolio.

You can make use of the following information:

(i)   The current NIFTY Value is 9380.

(ii)   NIFTY Futures can be traded in units of 25 only.

(iii) Futures for September are currently quoted at 9540 and Futures for October are being quoted at 9820.

You are required to calculate:

The Beta of his Portfolio.

Theoretical Value of Futures for contracts expiring in September & October.

Given ($e^{0.067}$ = 1.0693, $e^{0.08}$ = 1.0833, $e^{0.093}$ = 1.0975)

The number of NIFTY Contract that he would have to sell, if he desires to hedge 150% of the Portfolio until October.

Question 43 :

BSE	30,000
Value of portfolio	Rs.60,60,000
Risk free interest rate	9% p.a.
Dividend yield on Index	6% p.a.
Beta of portfolio	1.5

We assume that a future contract on the BSE index with four months maturity is used to hedge the value of portfolio over next three months. One future contract is for delivery of 50 times the index.

Based on the above information calculate:

(i)   Price of future contract.

(ii) The gain on short futures position if index turns out to be 27,000 in three months.

Question 44 : Miss K

Miss K holds 10,000 shares of IBS Bank @ 2,738.70 when 1 month Index Future was trading @ 6,086 The share has a Beta (β) of 1.2. How many Index Futures should she short to perfectly hedge his position. A single Index Future is a lot of 50 indices.

Justify your result in the following cases:

(i)   when the Index zooms by 1%

(ii) when the Index plummets by 2%.

Question 45 :

From the following data for certain stock, find the value of a call option:

Price of stock now	=	Rs.80
Exercise price	=	Rs.75
Standard deviation of continuously compounded annual return	=	0.40
Maturity period	=	6 months
Annual interest rate	=	12%

Given

Number of S.D. from Mean, (z)	Area of the left or right (one tail)
0.25	0.4013
0.30	0.3821
0.55	0.2912
0.60	0.2743

$e^{0.12 \times 0.5}$ = 1.062

In 1.0667   = 0.0646

Question 46 : AB Ltd.'s

AB Ltd.'s equity shares are presently selling at a price of Rs.500 each. An investor is interested in purchasing AB Ltd.'s shares. The investor expects that there is a 70% chance that the price will go up to Rs.650 or a 305 chance that it will go down to Rs.450, three months from now. There is a call option on the shares of the firm that can be exercised only at the end of three months at an exercise price of Rs.550.

Calculate the following :

(i) If the investor wants a perfect hedge, what combination of the share and option should he select?

(ii) Explain how the investor will be able to maintain identical position regardless of the share price.

(iii) If the risk-free rate of return is 5% for the three months period, what is the value of the option at the beginning of the period?

(iv) What is the expected return on the option?

Question 47 : 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 48 : Ram Chemical

Ram Chemical is in production Line of Chemicals and considering a proposal of building new plant to produce pesticides. The Present Value (PV) of new proposal is Rs.150 crores (After considering scrap value at the end of life of project). Since this is a new product market, survey indicates following variation in Present Value (PV):

Condition Favorable in first year	PV will increase 30% from original estimate
Condition sluggish in first year	PV will decrease by 40% from original figures.

In addition Rama Chemical has a option to abandon the project at the end of Year and dispose it at Rs.100 crores. If risk free rate of interest is 8%, what will be present value of put option?

Question 49 : ABC

ABC, a US firm, will need £ 5,00,000 in 180 days. In this connection, the following information is available.

Spot Rate 1 £ = $ 2.00

180 day forward rate for 1 £ = $ 1.96 as on today.

Interest rate is as follows	**US**	**UK**
180 day deposit rate	5.0%	4.5%
180 day borrowing rate	5.5%	5.0%

A call option on £ that expires in 180 days has an exercise price of $ 1.97 and a premium of $ 0.04.

ABC Ltd. has forecasted the spot rates for 180 days as below :

Future Rate	**Probability**
$ 1.91	30%
$ 1.95	50%
$ 2.05	20%

Which of the following strategies will be cheaper for ABC Ltd.?

(i)   Forward Contract

(ii)   A Money Market Hedge

(iii)   A Call option Contract and

(iv)   No Hedging option

Question 50 :

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.

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 51 : A Inc.

A Inc. and B Inc. intend to borrow $200,000 and $200,000 in ¥ respectively for a time horizon of one year. The prevalent interest rates are as follows:

Company	¥ Loan	$ Loan
A Inc	5%	9%
B Inc	8%	10%

The prevalent exchange rate is $1 = ¥120.

They entered in a currency swap under which it is agreed that B Inc will pay A Inc @ 1% over the ¥ Loan interest rate which the later will have to pay as a result of the agreed currency swap whereas A Inc will reimburse interest to B Inc only to the extent of 9%. Keeping the exchange rate invariant, quantify the opportunity gain or loss component of the ultimate outcome, resulting from the designed currency swap.

Question 52 : A textile manufacturer

A textile manufacturer has taken floating interest rate loan of Rs.40,00,000 on 1st April, 2012. The rate of interest at the inception of loan is 8.5% p.a. interest is to be paid every year on 31st March, and the duration of loan is four years. In the month of October 2012, the Central bank of the country releases following projections about the interest rates likely to prevail in future.

(i) On 31st March, 2013, at 8.75%; on 31st March, 2014 at 10% on 31st March, 2015 at 10.5% and on 31st March, 2016 at 7.75%. Show how this borrowing can hedge the risk arising out of expected rise in the rate of interest when he wants to peg his interest cost at 8.50% p.a.

(ii) Assume that the premium negotiated by both the parties is 0.75% to be paid on 1st October, 2012 and the actual rate of interest on the respective due dates happens to be as: on 31st March, 2013 at 10.2%; on 31st March, 2014 at 11.5%; on 31st March, 2015 at 9.25%; on 31st March, 2016 at 8.25%. Show how the settlement will be executed on the perspective interest due dates.

Question 53 : 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:

7.75%, 8.15%, 8.12%, 7.95%, 7.98%, 8.15%.

If Derivative Bank received Rs.317 net on settlement, calculate Fixed rate and interest under both legs.

Notes:

I.   Sunday is Holiday.

II.   Work in rounded rupees and avoid decimal working.

Thanks....

contact@rahulmalkan.com

www.rahulmalkan.com

rahulmalkan

rahulmalkan

rahulmalkan79

Portfolio Management

PORTFOLIO MANAGEMENT

1. OBJECTIVES OF PORTFOLIO MANAGEMENT :

1. Security of Principal Investment

2. Consistency of Returns

3. Capital Growth

4. Marketability

5. Liquidity

6. Diversification Portfolio

7. Favourable Tax Status

OBJECTIVES OF FINANCIAL PORTFOLIO MANAGEMENT
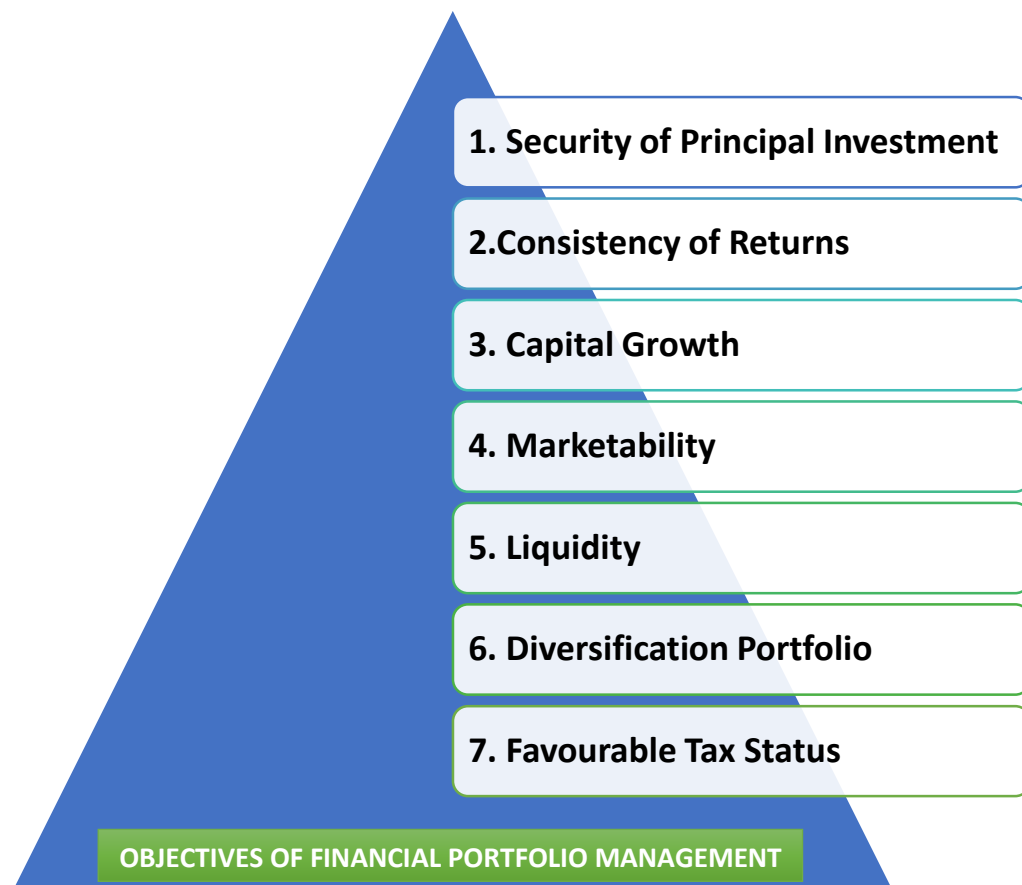
2. BASICS :

Before we go ahead to learn detailed version of portfolio management, lets clear some basics on securities

```
┌─────────────┐   ┌─────────────┐   ┌─────────────┐
│ 1. Return   │   │6. Correlation│──│ 7. Beta     │
└──────┬──────┘   └──────┬──────┘   └──────┬──────┘
┌──────┴──────┐   ┌──────┴──────┐   ┌──────┴──────┐
│ 2. Average  │   │5. Covariance│   │8. Expected  │
│   Return    │   │             │   │ Return (Re) │
└──────┬──────┘   └──────┬──────┘   └──────┬──────┘
┌──────┴──────┐   ┌──────┴──────┐   ┌─────────────┐
│ 3. Standard │──│4. Coefficient│   │  9. Alpha   │
│  Deviation  │   │ of Variation│   │             │
└─────────────┘   └─────────────┘   └─────────────┘
```
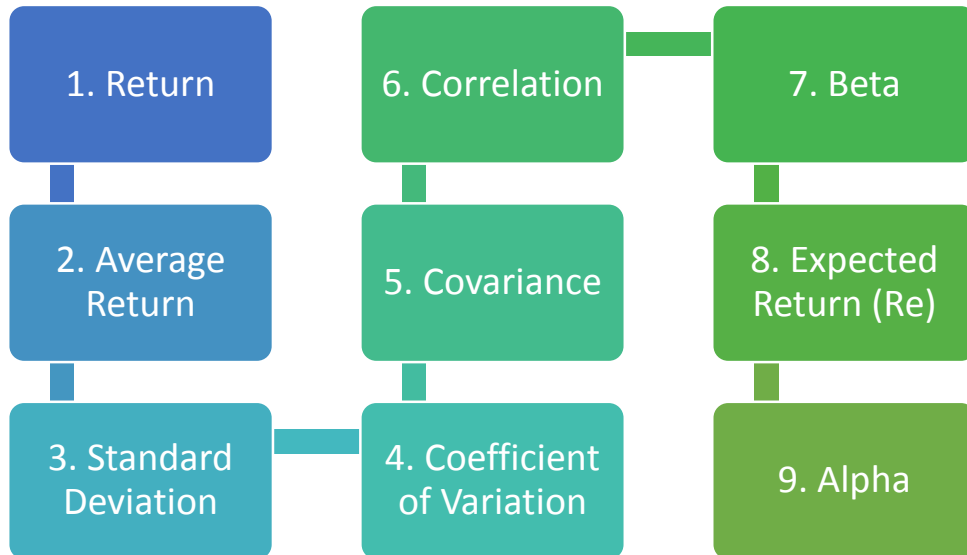
1.   **Return :**

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.

$$\therefore \bar{X} = \frac{\sum x}{n} \text{ or } \sum x . p$$

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 :

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.

$$\text{Variance} = \sigma^2 = \frac{\Sigma d^2}{n} \text{ or } \Sigma d^2 . p$$

$$\text{SD} = \sigma = \sqrt{\sigma 2}$$

Question 4 :

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

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 5 :

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.

$$COVxy = \frac{\sum dxdy}{n} = \text{ or } \sum dxdy.p$$

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 6 :

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 7 :

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 8 : 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 1.5.

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.

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 9 : 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

3. 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 :**

    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 = σ_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 10 :

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?

3.   **Portfolio Beta :**

> **Beta of the portfolio = Weighted Average Beta of individual Stock**

Question 11 :

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 12 :

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

4. 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 13 :

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 14 :

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 15 :

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 16 : 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 17 :

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 18 : Mr. X
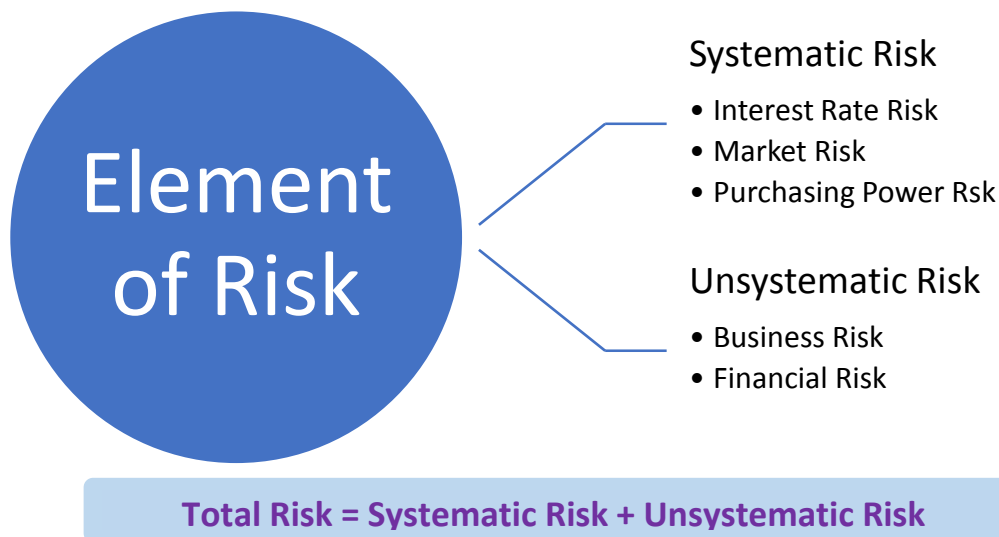
Mr. X owns a portfolio with the following characteristics:

	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?

5. 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.

Element of Risk

Systematic Risk
- Interest Rate Risk
- Market Risk
- Purchasing Power Rsk

Unsystematic Risk
- Business Risk
- Financial Risk

Total Risk = Systematic Risk + Unsystematic Risk

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 :

$$\beta x = \frac{COVxy}{\sigma^2 m} \text{ or } \beta x = CORxy \times \frac{\sigma x}{\sigma m}$$

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 19 :

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 20 :

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 21 :

Expected return on two stocks for particular market returns are given in the following table :

Market Return	Aggressive	Defensive
7%	4%	9%
25%	40%	18%

You are required to calculate:

1. The Betas of the two stocks.
2. Expected return of each stock, if the market return is equally likely to be 7% to 25%.
3. The security Market Line (SML), if the risk free rate is 7.5% and market return is equally likely to be 7% or 25%.
4. The Alphas of the two stocks.

Question 22 : X Ltd.

The following information is available for the share of X Ltd. and stock exchange for the last 4 years**.**

	X Ltd.		Index Stock Exchange	Return from markets funds	Return from Govt. Securities
	Share Price	**Dividend yield**			
Present Year	197	10%	2182	16%	15%
1 year ago	164.2	12%	1983	15%	15%
2 year ago	155	8%	1665	16%	16%
3 year ago	121	10%	1789	10%	14%
4 year ago	95	10%	1490	18%	15%

With above information available please calculate:

(i) Expected Return on X Ltd.'s share.
(ii) Expected Return on Market Index.
(iii) Risk Free Rate of Return
(iv) Beta of X Ltd.

Question 23 : 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 24 :

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 25 :

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 26 : 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 27 : 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.

Question 28 : X Co. Ltd.

X Co. Ltd., invested on 1.4.2009 in certain equity shares as below:

Name of Co.	No. of shares	Cost (Rs.)
M Ltd.	1,000 (Rs.100 each)	2,00,000
N Ltd.	500(Rs.10 each)	1,50,000

In September, 2009, 10% dividend was paid out by M Ltd. and in October, 2009, 30% dividend paid out by N Ltd. On 31.3.2010 market quotations showed a value of Rs.220 and Rs.290 per share for M Ltd. and N Ltd. respectively.

On 1.4.2010, investment advisors indicate (a) that the dividends from M Ltd. and N Ltd. for the year ending 31.3.2011 are likely to be 20% and 35%, respectively and (b) that the probabilities of market quotations on 31.3.2011 are as below :

Probability factor	Price/share of M Ltd.	Price/share of N Ltd.
0.2	220	290
0.5	250	310
0.3	280	330

You are required to :

1.   Calculate the average return from the portfolio for the year ended 31.3.2010;

2.   Calculate the expected average return from the portfolio for the year 2010-11; and

3.   Advise X Co. Ltd., of the comparative risk in the two investments by calculating the standard deviation in each case.

6. 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

Increase the beta	Decrease the beta
Buy stocks with High Beta	Buy stocks with low beta
Sell stocks with Low Beta	Sell stocks with high beta
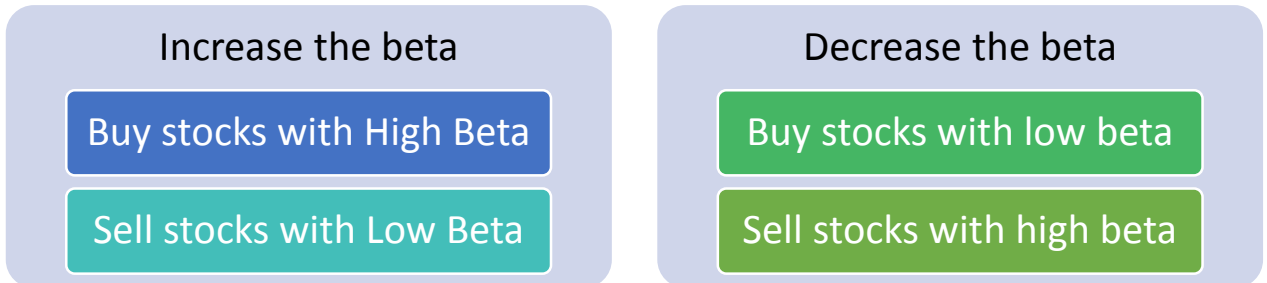
2. **Futures :**

   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.

Increase the beta	Decrease the beta
Buy Futures	Sell 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 = $\dfrac{V_p \lfloor \beta_t - \beta_p \rfloor}{F \times M \times \beta_f}$

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 29 :

Details about portfolio of shares of an investor is as below

Shares	No of Shares (Lakhs)	Price Per shares	Beta
A Ltd.	3.00	Rs.500	1.4
B. Ltd.	4.00	Rs.750	1.2
C Ltd.	2.00	Rs.250	1.6

The investor thinks that the risk of the portfolio is very high and wants to reduce the portfolio beta of 0.91. He is considering two below mentioned alternative strategies

(1)   Dispose off a part of his existing portfolio to acquire risk free securities
(2)   Take appropriate position on nifty futures which are currently traded at Rs. 8,125 and each nifty points is worth Rs.200.

You are required to determine

(1)   Portfolio beta
(2)   The value of risk free securities to be acquired
(3)   The number of shares of each company to be disposed off
(4)   The number of nifty contracts to be brought/ sold and
(5)   The value of portfolio for 2% rise in nifty

Question 30 :

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?

7. 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 31 :

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 32 :

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

8. ARBITRAGE PRICING THEORY MODEL (APT) :

$$Re = Rf + \text{Risk associated with factor affecting the stock}$$

Question 33 : 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?

9. PORTFOLIO EVALUATION :

The following 3 ratios are used for portfolio Evaluations :

- Sharpe Ratio
- Treynor Ratio
- Jensons Alpha
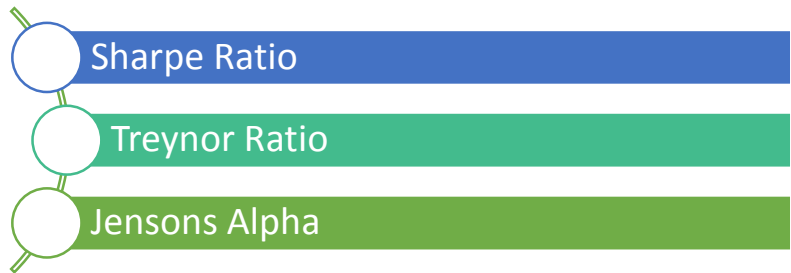
Question 34 :

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

Question 35 : Mr.Sunil

Mr. Sunil has estimated probable under different macroeconomics conditions for the following three stocks

Stock	Current Price	Rate of Return (%) during different macroeconomics scenarios		
		Recession	Moderate	Boom
Him Ice Ltd.	12	−12	15	35
Kalahari Biotech	18	20	12	−5
Puma Softtech	60	18	20	15

Mr Sunil is exploring if it is possible to make any arbitrage profits from the above information.

Question 36 :

The distribution of return of security 'F' and the market portfolio 'P' is 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 37 :

The returns of a portfolio A and market portfolio for the last 12 months are included as follows :

Month	Portfolio A	Market Portfolio
January	-0.52	0.82
February	2.20	0.04
March	2.17	2.80
April	4.17	1.72
May	2.04	0.27
June	3.00	0.39
July	1.99	1.95
August	4.00	0.64
September	-1.38	1.53
October	2.67	2.70
November	3.99	2.52
December	1.86	2.09
Standard Deviation (σ)	1.6223	0.9498

(i) You are required to find out the monthly returns attributable to the sheet skill of the Portfolio Manager.

(ii) What part of the monthly return is attributable to the higher risk assumed by the Portfolio Manager?

Assume that the risk-free rate of return is 12% per annum and the portfolio is fully diversified.

Question 38 :

Following are risk and return estimates for two stocks :

Stock	Expected returns (%)	Beta	Specific SD of expected return (%)
A	14	0.8	35
B	18	1.2	45

The market index has a Standard Deviation (SD) of 25% and risk free rate on Treasury Bills is 6%.

You are required to calculate :

(i) The standard deviation of expected return on A and B.

(ii) Suppose a portfolio is to be constructed with the proportions of 25%, 40% and 35% in stock A, B and Treasury Bills respectively, what would be the expected return, standard deviation of expected return of the portfolio?

Question 39 : Mr.Nirmal Kumar

Mr. Nirmal Kumar has categorized all the available stock in the market into the following types:

(i)   Small cap growth stocks

(ii)   Small cap value stocks

(iii)   Large cap growth stocks

(iv)   Large cap value stocks

Mr. Nirmal Kumar also estimated the weights of the above categories of stocks in the market index. Further more, the sensitivity of returns on these categories of stocks to the three important factor are estimated to be:

Category of Stocks	Weight in the Market Index	Factor I (Beta)	Factor II (Price Book)	Factor III (Inflation)
Small cap growth	25%	0.80	1.39	1.35
Small cap value	10%	0.90	0.75	1.25
Large cap growth	50%	1.165	2.75	8.65
Large cap value	15%	0.85	2.05	6.75
Risk Premium		6.85%	-3.5%	0.65%

The rate of return on treasury bonds is 4.5%

Required:

(a)   Using Arbitrage Pricing Theory, determine the expected return on the market index.

(b)   Using Capital Asset Pricing Model (CAPM), determine the expected return on the market index.

(c)   Mr. Nirmal Kumar wants to construct a portfolio constituting only the 'small cap value' and 'large cap growth' stocks. If the target beta for the desired portfolio is 1, determine the composition of his portfolio.

Thanks....

CHP - 12

Risk Management
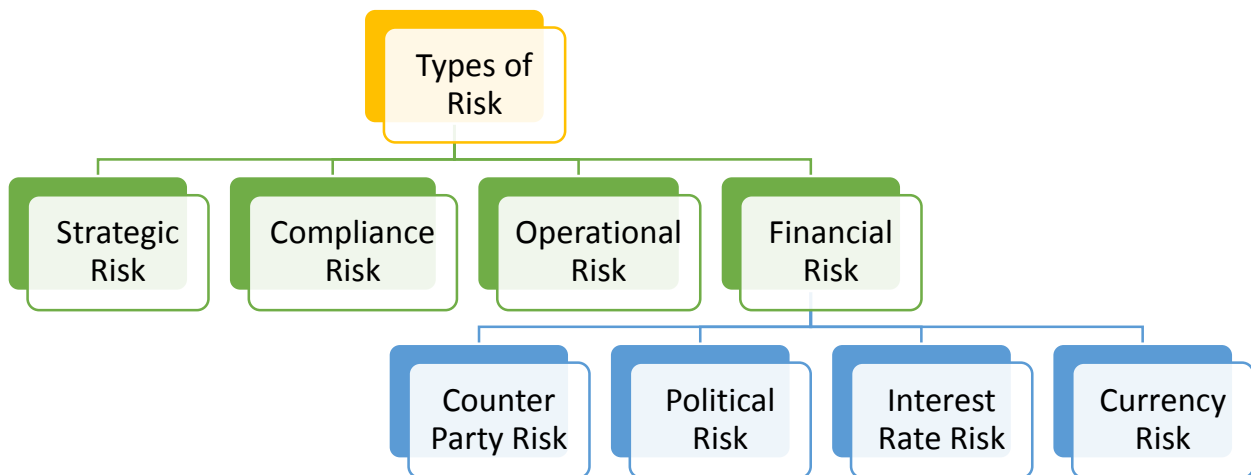
Risk management is:

'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. VALUE AT RISK (VAR)
3. EVALUATION OF APPROPRIATE METHOD FOR THE IDENTIFICATION AND MANAGEMENT OF FINANCIAL RISK

1. TYPES OF RISK :

```
                    ┌──────────────┐
                    │   Types of   │
                    │     Risk     │
                    └──────────────┘
        ┌──────────┬──────┴──────┬──────────┐
┌──────────┐ ┌──────────┐ ┌──────────┐ ┌──────────┐
│ Strategic│ │Compliance│ │Operational│ │ Financial│
│   Risk   │ │   Risk   │ │   Risk   │ │   Risk   │
└──────────┘ └──────────┘ └──────────┘ └──────────┘
```

Counter Party Risk	Political Risk	Interest Rate Risk	Currency Risk

2. 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
	Sysmmetrical to Mean
	Extends from "-" to "+" infinity
	The area under the curve is 1
	Mean = 0
	SD = 1
	Area to the left and right = 50%
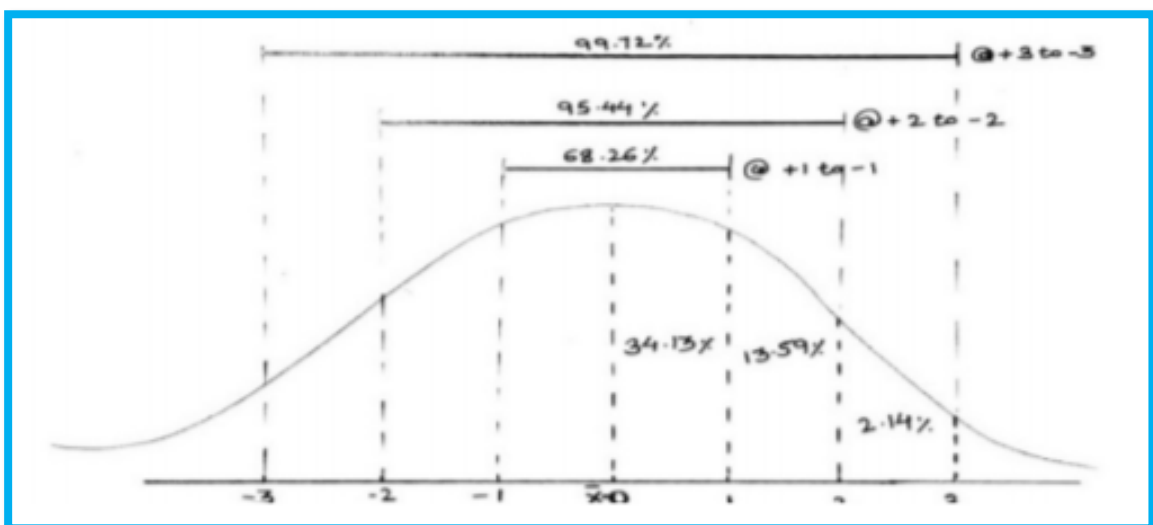
Question 1 :
Calculate mean and standard deviation from the following Information

Years	Return	Years	Return
1	16%	6	16%
2	18%	7	21%
3	15%	8	18%
4	16%	9	15%
5	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

<u>**DEFINITION :**</u>

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?

<u>**FEATURES OF VAR :**</u>

Following are the main features of VAR

1.   **Components of Calculations :** VAR calculation is based on following three components :

TIME	Confidence Level	Loss
1 day VAR 5 day 10 day monthly Semi - Annual Annual VAR	99% confidence (1% VAR) 95% Confidence (5% VAR) 90% Confidence (10% VAR)	In Amount In percentage

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

<u>**Denotations :**</u>

VAR can be described as

*   1 % VAR ---- 99% Confidence level
*   5 % VAR ---- 95% Confidence Level
*   10 % VAR ---- 90% Confidence Level

<u>**Interpretations :**</u>

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 :
Calculate daily VAR 5% for a portfolio of 15.25 lakhs with SD of 1.7%.

Question 12 :
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 13 :

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?

3. 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.

Thanks…

contact@rahulmalkan.com

www.rahulmalkan.com

rahulmalkan

rahulmalkan

rahulmalkan79

CHP - 13

SECURITIZATION

CHAPTER DESIGN

1. **INTRODUCTION**
2. **CONCEPT AND DEFINITION**
3. **PARTICIPANTS**
4. **PROCESS / MECHANISM**
5. **BENEFITS OF SECURITIZATION**
6. **PROBLEMS OF SECURITIZATION**
7. **SECURITIZATION INSTRUMENTS**

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.
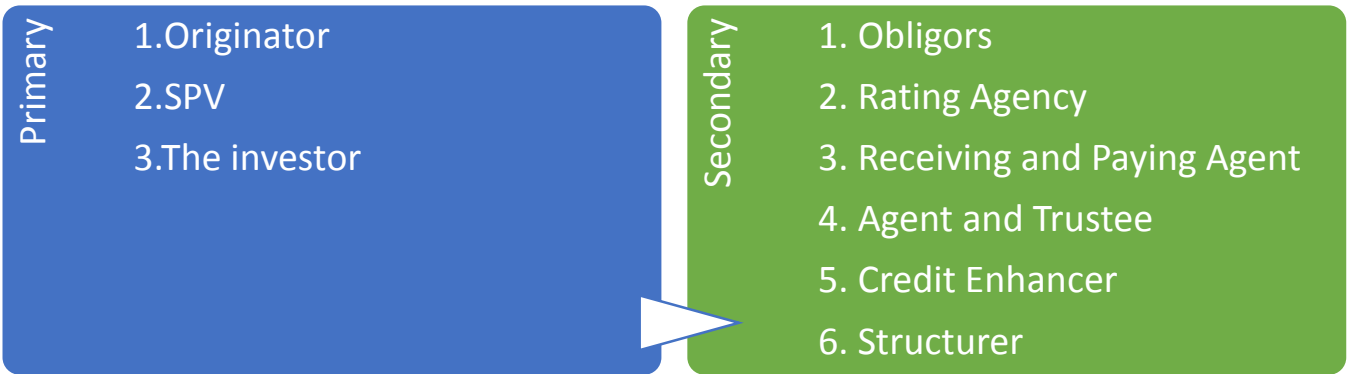
2. CONCEPT AND DEFINITION :

The process of securitization typically involves the creation of pool of assets from the 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.
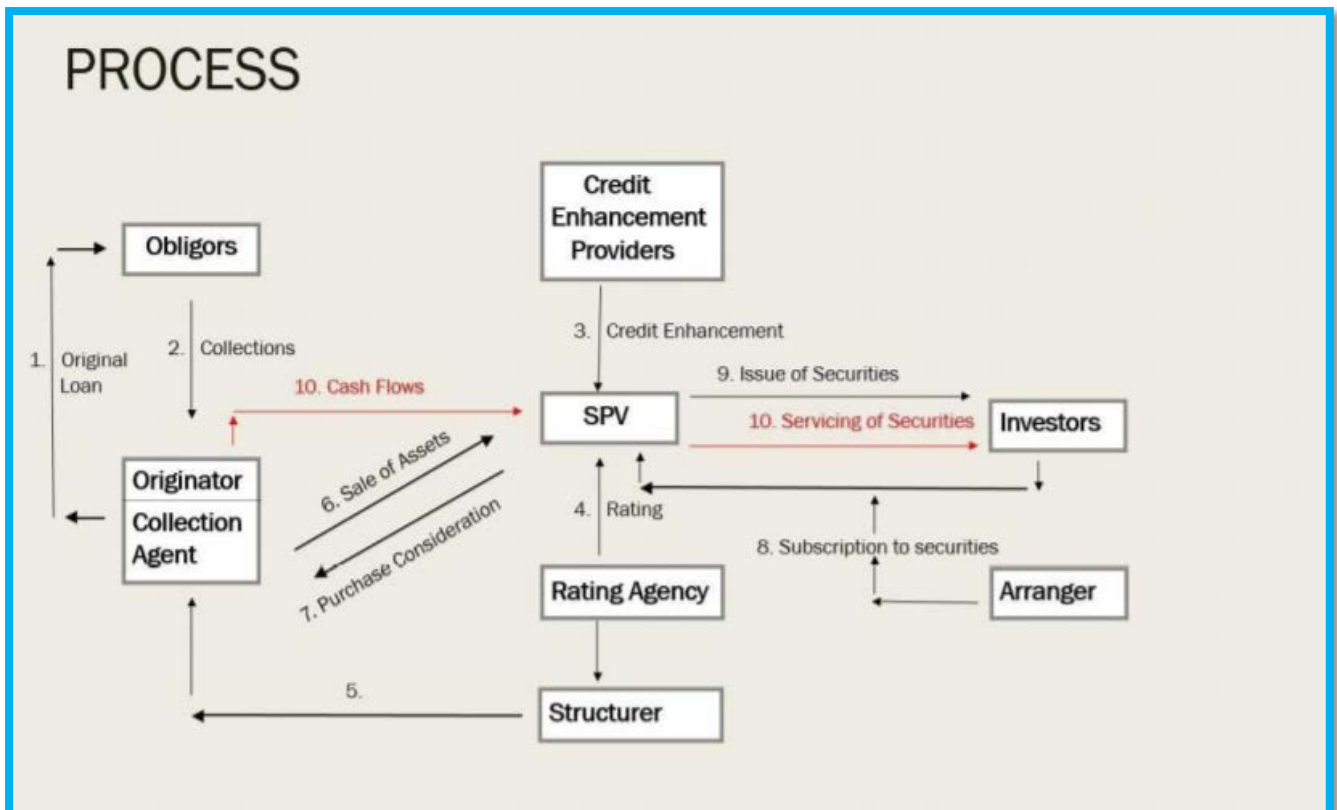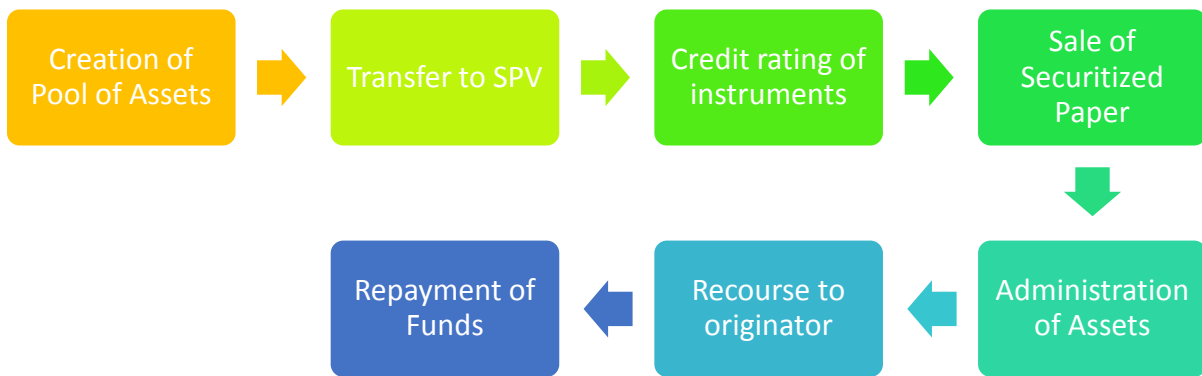
Features of securitization :

3. PARTICIPANTS :

Primary

1. Originator
2. SPV
3. The investor

Secondary

1. Obligors
2. Rating Agency
3. Receiving and Paying Agent
4. Agent and Trustee
5. Credit Enhancer
6. Structurer

4. PROCESS / MECHANISM :

Creation of Pool of Assets → Transfer to SPV → Credit rating of instruments → Sale of Securitized Paper

↓

Repayment of Funds ← Recourse to originator ← Administration of Assets

PROCESS

- Obligors
- 1. Original Loan
- 2. Collections
- Credit Enhancement Providers
- 3. Credit Enhancement
- 10. Cash Flows
- Originator Collection Agent
- 6. Sale of Assets
- 7. Purchase Consideration
- SPV
- 9. Issue of Securities
- 10. Servicing of Securities
- Investors
- 4. Rating
- 8. Subscription to securities
- Rating Agency
- 5.
- Structurer
- Arranger

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

Thanks……

contact@rahulmalkan.com

www.rahulmalkan.com

rahulmalkan

rahulmalkan

rahulmalkan79

CHP - 14

Startup Finance

1. 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:

Personal Financing → Personal Credit Lines → Family and Friends → Peer to peer Lending → Crowd Funding → Micro Loans → Vendor Finacing → Purchase order financing → Factoring accounts receivables
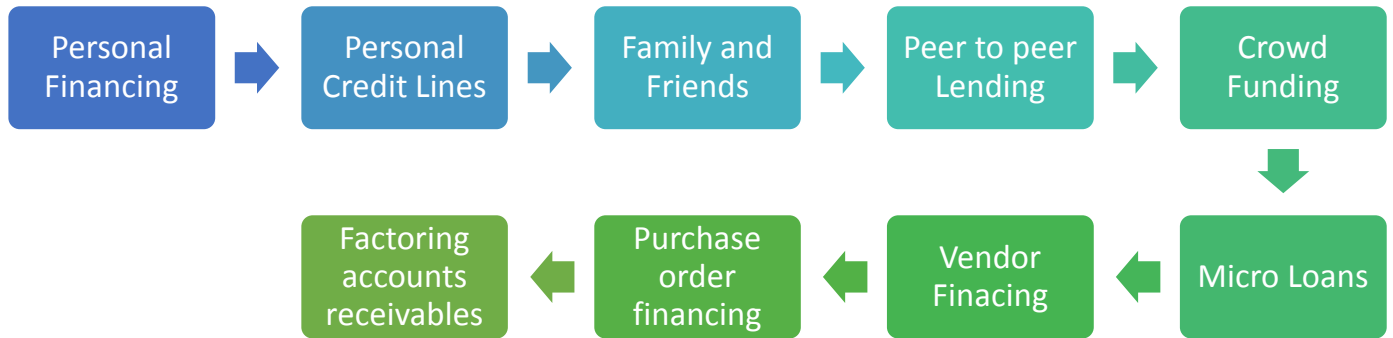
2. PITCH PRESENTATION :

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:

3. 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.
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. **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.

4. 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 ….

contact@rahulmalkan.com

www.rahulmalkan.com

rahulmalkan

rahulmalkan

rahulmalkan79