saransh

LAST MILE REFERENCER FOR

FINAL COURSE

PAPER 2

ADVANCED FINANCIAL MANAGEMENT

Board of Studies (Academic)
The Institute of Chartered Accountants of India
(Set up by an Act of Parliament)
New Delhi

Saransh Last Mile Referencer

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Edition	:	July, 2025
Editor	:	CA. (Dr.) Rashmi Goel
Committee/Department	:	Board of Studies (Academic)
Website	:	www.icai.org; https://boslive.icai.org/
E-mail	:	bosnoida@icai.in
ISBN No.	:	978-93-48313-64-5
Price	:	₹
Published by	:	The Publication & CDS Directorate on behalf of The Institute of Chartered Accountants of India, ICAI Bhawan, Post Box No. 7100, Indraprastha Marg, New Delhi 110 002 (India).
Printed by	:	

Preface

Board of Studies (Academic), the student wing of the Institute, does not leave any stone unturned in providing best-in-class services to its students. It imparts quality academic education through its value-added study materials and other educational inputs. BoS (Academic) also conducts Live Virtual Classes through eminent faculty for its students across the length and breadth of the country.

In a pursuit to provide quality academic inputs to the students to help them grasp the intricate aspects of the subjects, the Board of Studies(Academic) has been publishing crisp and concise capsules in its monthly Students' Journal "The Chartered Accountant Student", wherein the concepts are presented in attractive colours in the form of tables, diagrams and flow charts for facilitating easy retention and quick revision of topics.

To reach out to its students across the nation, the BoS (Academic) has come out with a comprehensive booklet **Saransh – Last Mile Referencer for Final Paper 2 – Advanced Financial Management.** This booklet encapsulates contents of the Study Material, by way of diagrams, flow charts, tables and pictorial representation. This one stop repository, thus, consolidates the significant concepts of Advanced Financial Management at one place, by capturing the key points. This would help the readers to understand the topics covered in the Study Material briefly for a quick reference.

However, the students are advised to refer the Study material, for thorough and comprehensive study of the subject as in no case Saransh can be considered as replacement of Study Material. Further, the students are advised to enhance their ability by working out the examples, illustrations and questions given in the Study Material, Revision Test Papers and Mock Test Papers.

The content matter in this booklet is based on the November 2024 Edition of the Study Material.

This booklet will surely enable the readers in easy retention and quick revision of the subject.

Happy Reading!

The Institute of Chartered Accountants of India
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Board of Studies

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Chapter 1 – Financial Policy and Corporate Strategy

Advanced Role of CFO in various matters including Value Creation

In addition to the traditional role the role of CFO has been advanced in the following areas:

Risk Management

Now a days the CFOs are expected to look after the overall functioning of the framework of Risk Management system of an organisation.

Supply Chain

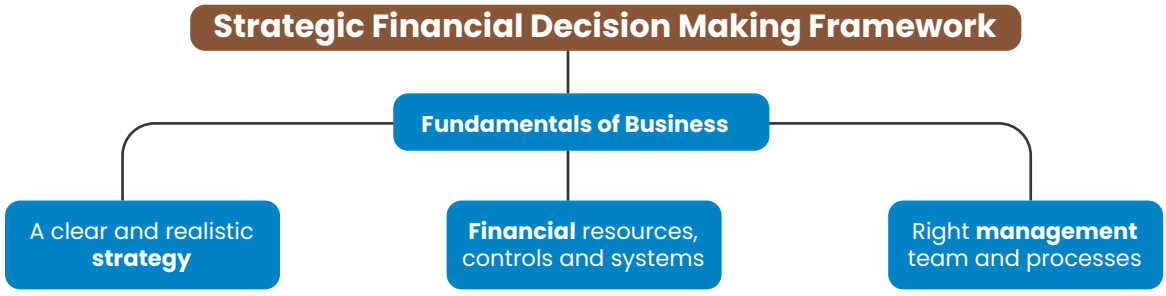
Since CFOs are caretakers of finance of the company, considering the financial viability of the Supply Chain Management their role has now become more critical.

Mergers, Acquisitions, and Corporate Restructuring

Since to capture the market share there has been a spate of Mergers and Acquisitions, the role of CFOs has become more crucial because any error in them can lead to collapse of the whole business.

Environmental, Social and Governance (ESG) Financing

With the evolving of the concept of ESG their role has been shifted from traditional financing to sustainability financing.



Meaning of Strategic Financial Management

- Defined as application of financial management techniques to strategic decisions to help achieve the decision-maker's objectives.
- It combines the backward-looking, report focused discipline of (financial) accounting with the more dynamic, forward-looking subject of financial management.

Functions of Strategic Financial Management

Strategy at Different Hierarchy Levels

Corporate Level Strategy

Fundamentally concerned with selection of businesses in which a company should compete and should be able to answer three basic questions:

Business Unit Level Strategy

At this level, the strategic issues are about practical coordination of operating units.

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.

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.

Financial Planning

There are 3 major components of Financial Planning:

Financial Planning = FR+ FT + FG

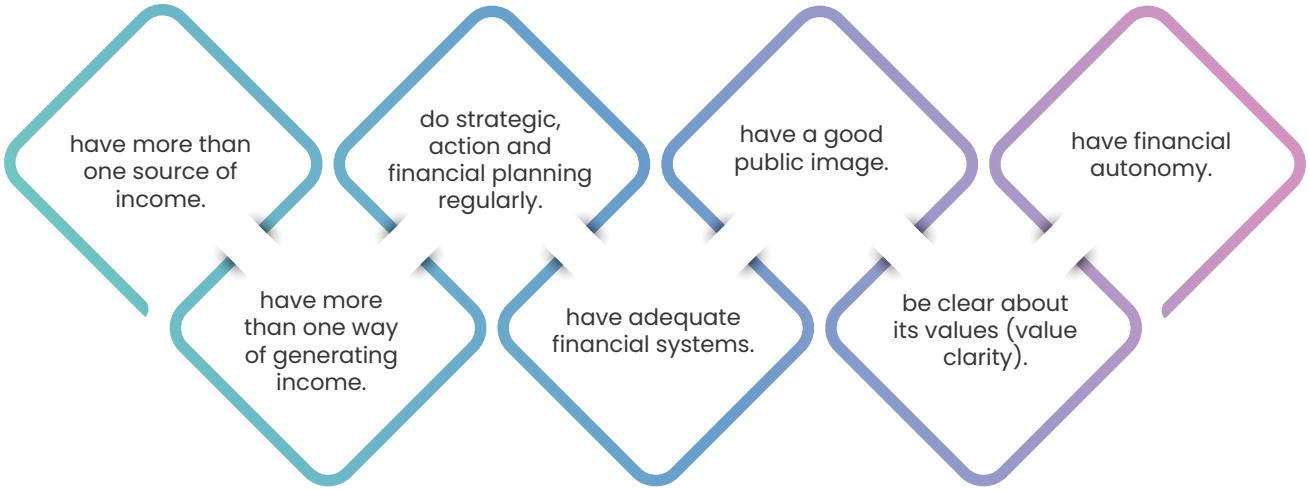
Interface of Financial Policy And Strategic Management

- The starting point of an organization is money and the end point of that organization is also money.
- Sources of finance and capital structure are the most important dimensions of a strategic plan.
- Dividend policy is yet another area for making financial policy decisions affecting the strategic performance of the company.
- Another important dimension of strategic management and financial policy interface is the investment and fund allocation decisions.
- The financial policy of a company cannot be worked out in isolation of other functional policies.
- Corporate strategy is the cause and financial policy is the effect and sometimes financial policy is the cause and corporate strategy is the effect.

Balancing Financial Goals vis-à-vis Sustainable Growth

Too fast or too slow growth will go against enterprise growth and development.

What makes an organization financially sustainable?



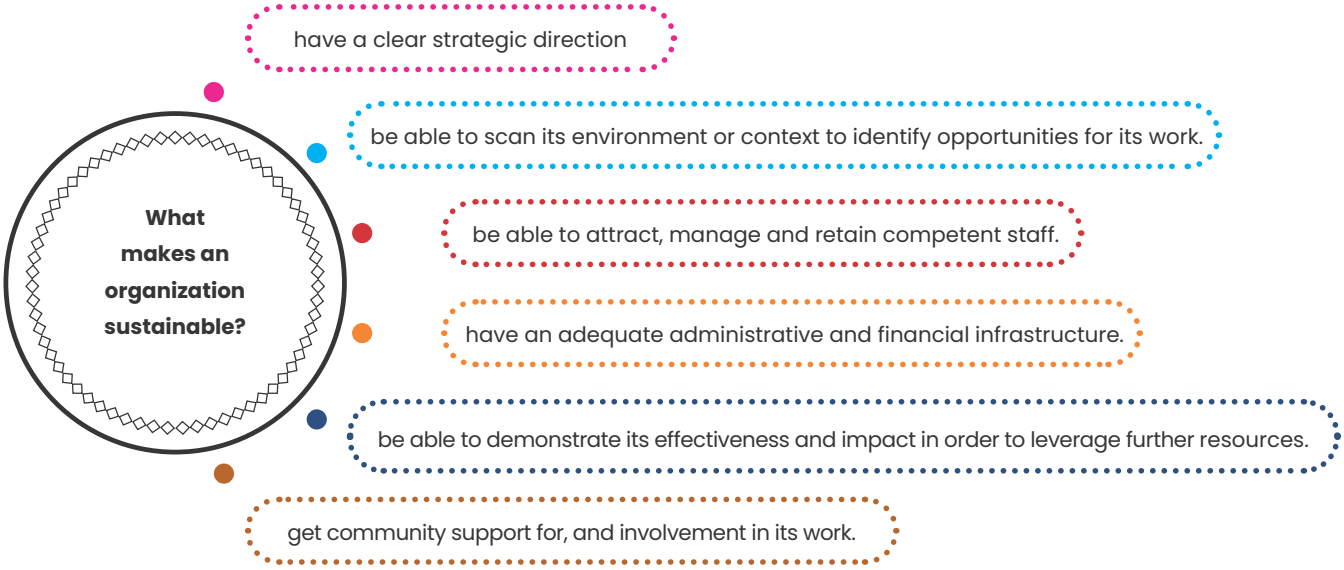
Sustainable Growth Rate

Sustainable Growth Rate (SGR), of a firm is the maximum rate of growth in sales that can be achieved, given the firm's profitability, asset utilization, and dividend pay-out and debt (financial leverage) ratios. It is a measure of how much a firm can grow without borrowing more money. The SGR can be calculated as follows:

SGR = Return on Equity (ROE) x (1- Dividend payment ratio)

Economists and business researchers contend that achieving Sustainable Growth is not possible without paying heed to twin cornerstones:

Growth Strategy — **Growth Capability**



External Funding Requirement (EFR)

Management may sometimes have concerns about the Debt-to-Equity Ratio or Current Ratio. In such situations, to maintain a certain level of growth, it becomes necessary to determine the amount of External Funding Requirement (EFR) and its types.

Approaches

ANALYTICAL

In this approach, we begin by analyzing each item on the balance sheet in relation to changes in sales and determine their amounts while considering prescribed conditions, such as maintaining specific Debt-to-Equity or Current Ratios, among others

FORMULA BASED

In this approach, we first calculate the amount of EFR using the following formula:

$$EFR = \frac{TA}{Sales} \times \Delta S - \frac{Payable\ and\ Liabilities}{Sales} \times \Delta S - mS_1(1 - d)$$

Where:

ΔS = Change in Sales, S_1 = Revised Sales

TA = Total Assets

Payable and Liabilities = Payables and liabilities that change spontaneously in accordance with level of sales.

m = Profit Multiplier or percentage of Net Profit after Tax

d = Dividend Pay-out Ratio

Chapter 2 – Risk Management

Identification of the types of Risk faced by an organisation

A business organisation faces many types of risks, important among them are discussed as below:

STRATEGIC RISK	COMPLIANCE RISK	OPERATIONAL RISKS	FINANCIAL RISK
When a company's strategy becomes less effective and it struggles to achieve its goal. It could be due to technological changes, a new competitor entering the market, shifts in customer demand, an increase in the costs of raw materials, or any large-scale change.	Arises when the company fails to comply with the rules and regulations related to a particular area, industry, or sector.	Relates to internal risk. In other words, it means the failure of the company to cope with day-to-day operational problems. Operational risk relates to 'people' as well as 'processes.	Unexpected changes in financial conditions such as prices, exchange rate, credit rating, interest rate, etc.

Broad categories of Financial Risk

COUNTER PARTY RISK

Also covers Credit Risk, occurs due to the non-honoring of obligations by the counterparty. For instance, failure to deliver the goods for the payment already made or vice-versa or repayment of borrowings and interest, etc.

POLITICAL RISK

Generally, faced by an overseas investor, as the adverse action by the government of the host country may lead to huge losses such as confiscation or destruction of overseas property, rationing of remittance to the home country, etc.

INTEREST RATE RISK

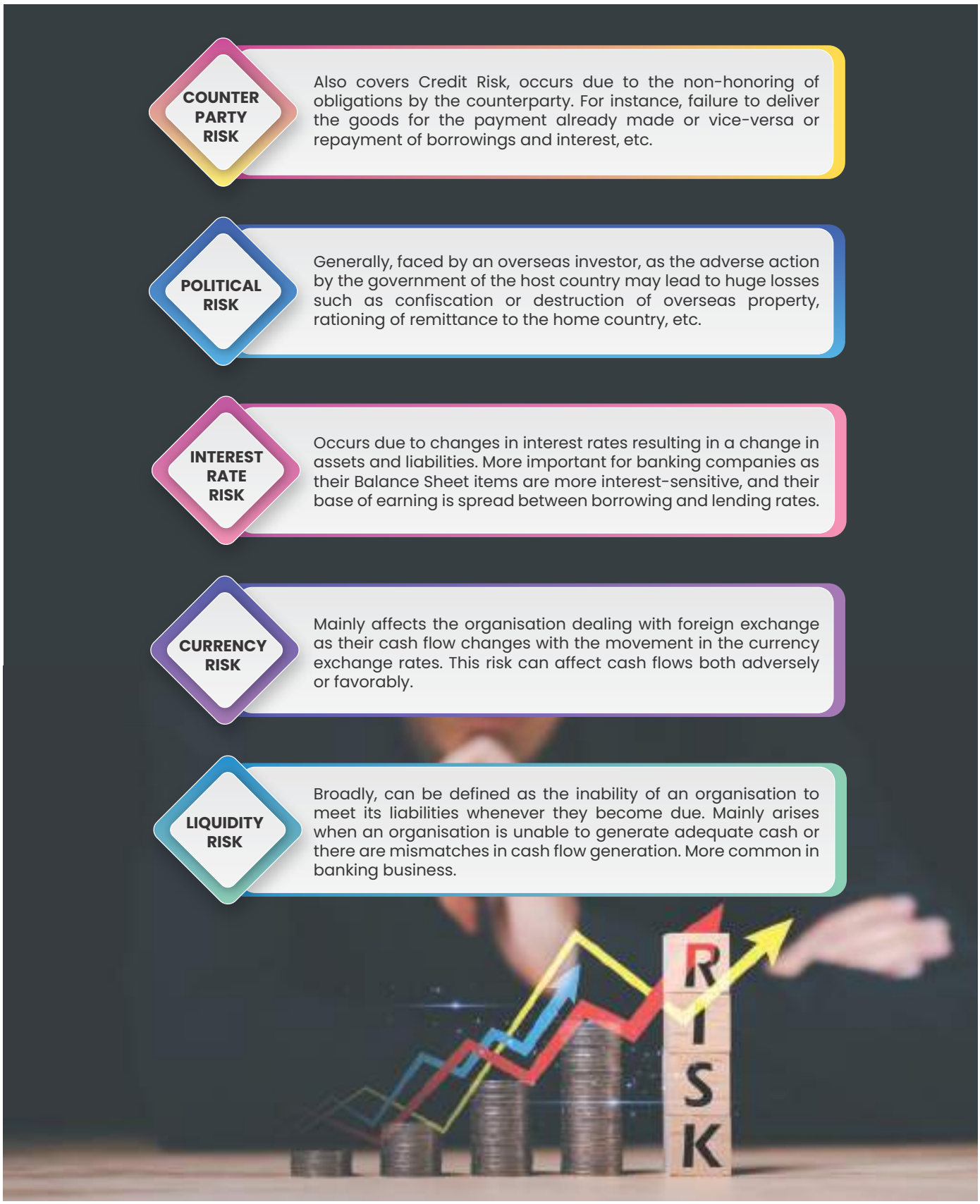
Occurs due to changes in interest rates resulting in a change in assets and liabilities. More important for banking companies as their Balance Sheet items are more interest-sensitive, and their base of earning is spread between borrowing and lending rates.

CURRENCY RISK

Mainly affects the organisation dealing with foreign exchange as their cash flow changes with the movement in the currency exchange rates. This risk can affect cash flows both adversely or favorably.

LIQUIDITY RISK

Broadly, can be defined as the inability of an organisation to meet its liabilities whenever they become due. Mainly arises when an organisation is unable to generate adequate cash or there are mismatches in cash flow generation. More common in banking business.



Evaluation of Financial Risk

From Stakeholder's point of view

Since major stakeholders of a business are equity shareholders they view financial gearing i.e. the ratio of debt in the capital structure of a company as a risk, since in the event of winding up of a company, their priority will be the least.

From Company's point of view

If a company borrows excessively or lends to someone who defaults, it can be forced into liquidation.

From Government's point of view

A financial risk can be viewed as the failure of any bank (like Lehman Brothers) or downgrading of any financial institution leading to the spread of distrust among society at large. Even this risk includes willful defaulters. It can also lead to a sovereign debt crisis.

Value at Risk (VAR)

A measure of the risk of an investment which can be a portfolio, capital investment or foreign exchange, etc. In the normal market conditions in a particular period, it estimates how much an investment might lose in a day.

1. Features of VAR

COMPONENTS OF CALCULATIONS:
Based on three components (i) Time Period (ii) Confidence Level – Generally 95% and 99%, and (iii) Loss in percentage or in amount.

STATISTICAL METHOD:
A type of statistical tool based on Standard Deviation.

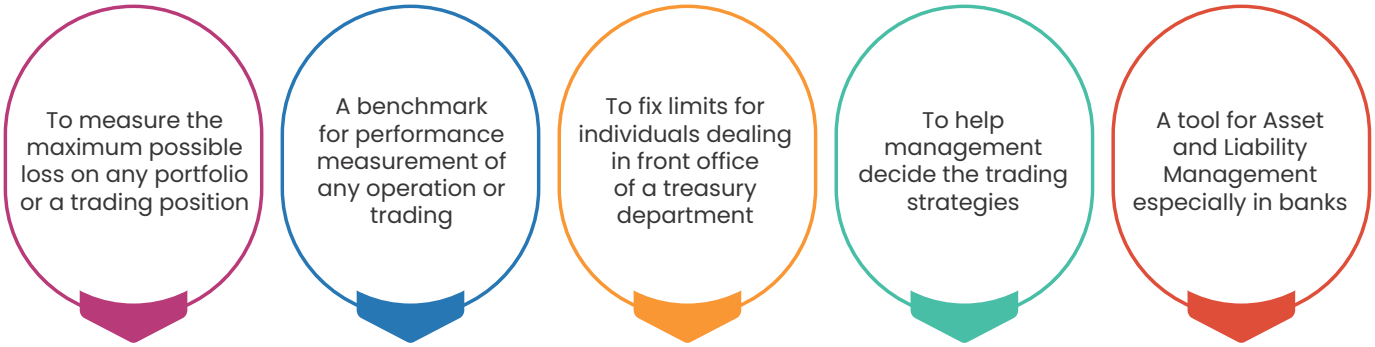
TIME HORIZON:
Can be applied for different time horizons say one day, one week, one month and so on.

PROBABILITY:
Assuming the values are normally attributed, probability of maximum loss can be predicted.

RISK CONTROL:
Risk can be controlled by setting limits for maximum loss.

Z SCORE:
Indicates how many standard deviations a data value is above or below from the mean value of a population. When multiplied by Standard Deviation, it provides VAR.

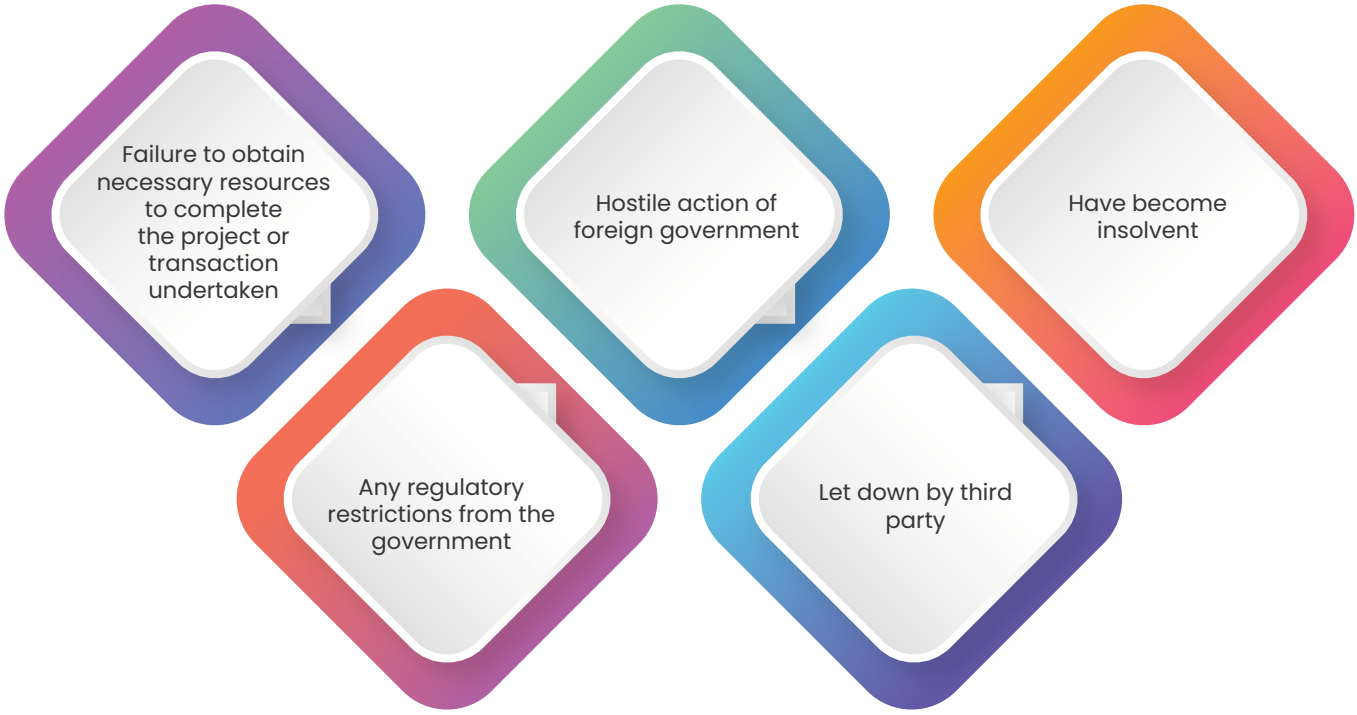
2. Application of VAR



Appropriate Methods for Identification and Management of Financial Risk

1. Counter Party Risk

Some of the illustrations of counter party risk are as follows:



The various techniques to manage this type of risk are as follows:

- Carrying out due diligence before dealing with any third party
- Do not over commit to a single entity or group or connected entities
- Know your exposure limits
- Review the limits and procedure for credit approval regularly
- Rapid action in the event of any likelihood of defaults
- Use of performance guarantee, insurance or other instruments

2. Political Risk

This risk can be identified from the following actions by the Governments of the host country:

- Insistence on resident investors or labour
- Restriction on conversion of currency
- Expropriation of foreign assets by the local government
- Price fixation of the products

Since this risk mainly relates to investments in foreign country, company should assess country risk:

Further, following techniques can be used to mitigate this risk.

Local sourcing of raw materials and labour

Entering into joint ventures

Local financing

Prior negotiations

3. Interest Rate Risk

This risk can be identified from the following:

4. Currency Risk

Some of the parameters to identify this risk are as follows:

Government Action	The Government action of any country has a visual impact on its currency. For example, the UK Govt. decision to divorce from the European Union (Brexit) brought the pound to its lowest since the 1980s.
Nominal Interest Rate	As per interest rate parity (IRP), the currency exchange rate depends on the nominal interest of that country.
Inflation Rate	Purchasing power parity theory impacts the value of currency.
Natural Calamity	Any natural calamity can have negative impact
War, Coup, Rebellion, etc.	All these actions can have far reaching impact on currency's exchange rates.
Change of Government	The change of government and its attitude towards foreign investment also helps to identify the currency risk.

Chapter 3 – Advanced Capital Budgeting Decisions

Current Trends in Capital Budgeting

Investment projects are exposed to various types of factors some of which are as follows:

Inflation

Change in technology

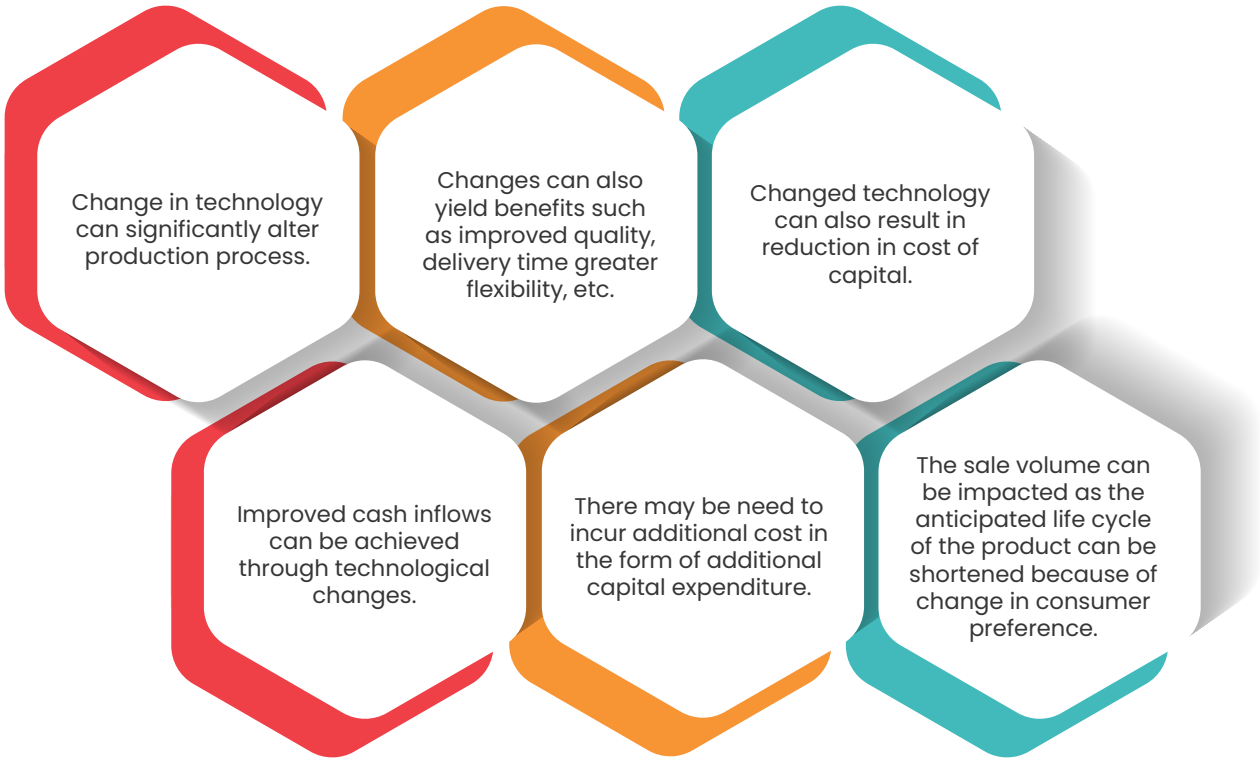
Change in Government Policies

Impact of Inflation on Capital Budgeting Decisions

- Adjustment for inflation is a necessity because the net revenues after adjustment for inflation shall be equal to net revenues in current terms.
- Due to inflation investors require the nominal rate of return to evaluate the project.

Impact of Change in technology on Capital Budgeting Decisions

Why it is important to analyze the impacts of change in technology.



Various ways in which the impact of change in technology can be incorporated in Capital Budgeting decisions

- At the time of making Capital Budgeting Decisions the risk of change in technology should be considered using various techniques such as Sensitivity Analysis, Scenario Analysis, Simulation Analysis etc.
- Once project has been launched analyze the impact of change in technology both positive or negative and revise estimates in monetary terms.
- If continuation of project is proving to be unviable then look for abandonment option and evaluate the same (discussed later).
- Suitably adjusting the discounting rate.

Impact of change in Government Policies on Capital Budgeting Decisions

Impact of change of Policies on Domestic Capital Budgeting Decisions.

Since the change in interest rates are decided by Government through its Monetary Policy, this can affect the Cost of Capital because the Cost of Debt is normally dependent on the bank rate of interest as they are considered as one of the important factors to compute YTM.

Another important change (Government Policy) is related to Fiscal Policy. Since Fiscal Policy forms the basis of Tax Rate and Annual Cash Flows are dependent on Rate of Depreciation of Tax Rate, any drastic change in any of these two items may call for revision of estimated cash flows.

Impact of change of Policies on International Capital Budgeting Decisions.

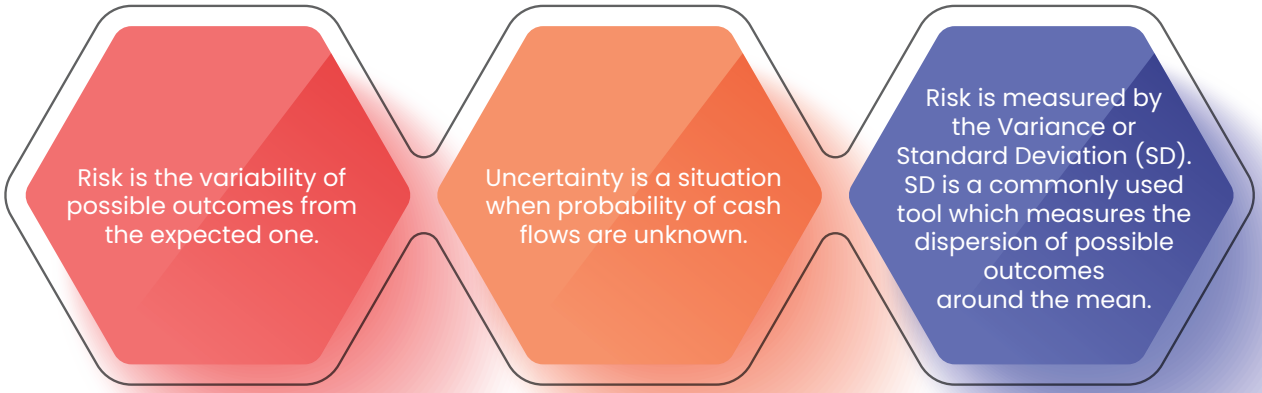
- In International Capital Budgeting Decisions, the foreign exchange rates play a very important role. A change in bank rate and money supply is decided as per Monetary Policy, the change in any of these two impacts the rate of Foreign Exchange and it may call for revision of estimates.
- Change in Tax Rates relating to Foreign Income or changes in provisions of Double Tax Avoiding Agreement (DTAA) as decided in Fiscal Policy may call for revision of estimates.

Dealing with Risk in Investment Decisions

There can be 3 types of Decision making:

1. **Decision making under certainty:** When cash flows are certain.
2. **Decision making involving risk:** When cash flows involve risk and probability can be assigned.
3. **Decision making under uncertainty:** When cash flows are uncertain and probability cannot be assigned

What is Risk and Uncertainty and how is it measured?



Reasons for adjustment of risk in Capital Budgeting Decisions

- Adjustment of risk is necessary to help make the decision as to whether the returns of the project are proportionate with the risks borne and whether it is worth investing in the project over the other investment options available.
- Risk adjustment is required to know the real value of the Cash Inflows. Higher risk will lead to higher risk premium and also expectation of higher returns

Internal and External factors affecting Capital Budgeting Decisions

Internal Factors

Project-specific risk

- Risks which are related to a particular project and affects the project's cash flows.
- It includes completion of the project in scheduled time, error of estimation in resources and allocation, estimation of cash flows etc.

Company-specific risk

- Risk which arises due to company-specific factors like downgrading of credit rating, changes in key managerial persons, dispute with workers etc.
- All these factors affect the cash flows of an entity and access to funds for capital investments.

External Factors

Industry-specific risk

These are the risks which affect the whole industry in which the company operates. These risks include regulatory restrictions on industry, changes in technologies etc.

Market risk

The risk which arises due to market related conditions like entry of substitute, changes in demand conditions, availability and access to resources etc.

Competition risk

These are risks related with competition in the market in which a company operates. These risks are risk of entry of rival, product dynamism and change in taste and preference of consumers etc.

Economic conditions

These are the risks which are related with macro-economic conditions like changes in monetary policies by central banks, changes in fiscal policies like introduction of new taxes and cess, inflation, changes in GDP, changes in savings and net disposable income etc.

International risk

These are risks which are related with conditions which are caused by global economic conditions like restriction on free trade, restrictions on market access, recessions, bilateral agreements, political and geographical conditions etc.

Methods of incorporating Risk in Capital Budgeting

Techniques of Risk Analysis in Capital Budgeting

Statistical Techniques

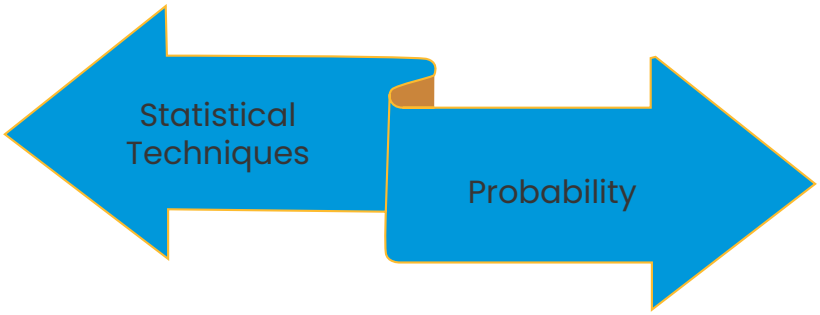
- Probability
- Variance or Standard Deviation
- Coefficient of Variation

Conventional Techniques

- Risk-Adjusted Discount Rate
- Certainty Equivalents

Others Techniques

- Sensitivity analysis
- Scenario analysis
- Simulation analysis
- Decision Tree



Probability is a measure about the chances that an event will occur.

Event certain to occur: Probability = 1

No Chance of happening an event: Probability = 0

Expected cash flows are assigned a probability factor (P_i) and net cash flows are calculated as below.

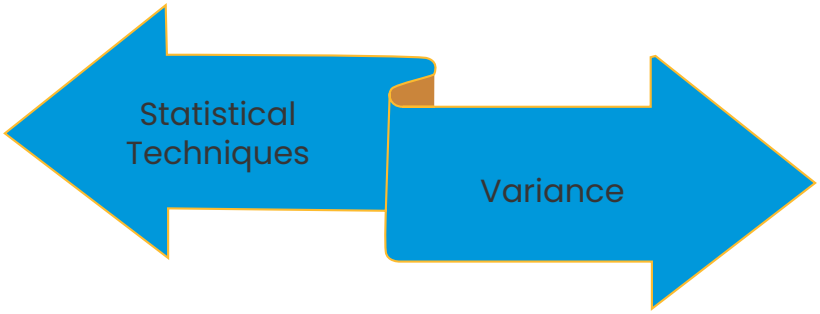
$$E(R)/ENCF = \sum_{i=1}^{n} NCF_i \times P_i$$

Where,

$E(R)/ENCF$ = Expected Cash flows

P_i = Probability of Cash flow

NCF_i = Cash flows



It measures the degree of dispersion between numbers in a data set from its average.

Variance is calculated as below:

$$\sigma^2 = \sum_{j=1}^{n} (NCF_j - ENCF)^2 P_j$$

Where, σ^2 = Variance in net cash flow;

P_j = Probability and ENCF = Expected Net Cash Flow.

Advanced Capital Budgeting Decisions

Variance MEASURES the uncertainty of a value from its average. Thus, variance helps an organization to understand the level of risk it might face on investing in a project.	A variance value of ZERO would indicate that the cash flows that would be generated over the life of the project would be same.	A LARGE variance indicates that there will be a large variability between the cash flows of the different years.	A SMALL variance would indicate that the cash flows would be somewhat stable throughout the life of the project.

Statistical Techniques → Standard Deviation

A degree of variation of individual items of a set of data from its average. (The square root of variance is called Standard Deviation)	For Capital Budgeting decisions, Standard Deviation is used to calculate the risk associated with the estimated cash flows from the project.

Statistical Techniques → Coefficient of Variation

The Coefficient of Variation calculates the risk borne for every percent of expected return.

It is calculated as below:

$$\text{Coefficient of variation} = \frac{\text{Standard Deviation}}{\text{Expected Return/Expected Cash Flow}}$$

The Coefficient of Variation calculates the risk borne for every percent of expected return.

The investment with lower ratio of standard deviation to expected return, provides a better risk – return trade off.

For selection between two projects, a project which has a lower Coefficient of Variation is selected.

A risk adjusted discount rate is a sum of risk- free rate and risk premium.

Risk-Free Rate

The rate of return on Investments that bear no risk. e.g., if Government securities yield a return of 6 % and since it bears no risk it will be considered as the Risk-Free Rate.

Risk Premium

The rate of return over and above the risk-free rate, expected by the Investors as a reward for bearing extra risk.

For high risk project, the risk premium will be high and for low risk projects, the risk premium would be lower.

If the risk is higher than risk involved in a similar kind of project, discount rate is adjusted upwards in order to compensate this additional risk borne.

Under this method NPV is Calulated as below:

$$NPV = \sum_{t=1}^{n} \frac{NCF_t}{(1+k)^t} - I$$

Where, NCF_t = Net cash flow;

K = Risk adjusted discount rate;

I = Initial Investment;

t = Time.

Advantages

- It is easy to understand.
- It incorporates risk premium in the discounting factor.

Limitations

- Difficulty in finding risk premium and risk-adjusted discount rate.
- Though NPV can be calculated it is not possible to calculate Standard Deviation of a given project.

Conventional Techniques

Certainty Equivalent (CE)

To deal with risks in capital budgeting, risky future cash flows are expressed in terms of certain cash flows as their equivalent. Decision maker would be indifferent between the risky amount and the (lower) riskless amount considered to be its equivalent.

Steps involved in the Certainty Equivalent (CE) approach

1

- Remove risks by substituting equivalent certain cash flows from risky cash flows
- Multiply each risky cash flow by the appropriate α_t value (CE coefficient)

2

Discounted value of cash flow is obtained by applying Risk-Free Rate of Return.

3

- To evaluate the project Normal Capital budgeting methods are applied except in case of IRR method.
- In case of IRR, it is compared with risk free rate of interest rather than the firm's required rate of return or cost of capital.

CE Coefficient (α_t) is calculated as below:

$$\text{CE Coefficient } (\alpha_t) = \frac{\text{Certain cash flow}}{\text{Risky or expected cash flow}_t}$$

- The value of Certainty Equivalent Coefficient lies between 0 & 1.
- Certainty Equivalent Coefficient 1 indicates that the cash flow is certain or management is risk neutral.
- In industrial situation, cash flows are generally uncertain and managements are usually risk averse.

NPV under this method is calculated as below:

$$NPV = \sum_{t=1}^{n} \frac{\alpha_t \times NCF_t}{(1+k)^t} - I$$

Where,

NCF_t	=	Forecasts of net cash flow for year 't' without risk-adjustment
α_t	=	Risk-adjustment factor or the certainty equivalent coefficient.
K	=	Risk-free rate assumed to be constant for all periods.
I	=	Initial Investment.

Advantages of CE Method

Simple and easy to understand and apply.

It can **easily be calculated for different risk levels** applicable to different cash flows.

Disadvantages of CE Method

CEs **are subjective** and vary as per each individual's estimate.

CEs are decided by the management based on their perception of risk. However, the **risk perception of the shareholders** who are the money lenders for the project **is ignored**.

Risk-adjusted Discount Rate Vs. Certainty-Equivalent

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

Other Techniques → Sensitivity Analysis

Sensitivity Analysis

A modelling technique used in Capital Budgeting decisions to study the impact of changes in the variables on the outcome of the project.

As per CIMA terminology, "Sensitivity Analysis is modelling and risk assessment procedure in which changes are made to significant variables in order to determine the effect of these changes on the planned outcome. Particular attention is thereafter paid to variables identified as being of special significance"

In this analysis, the project outcome is studied after taking into change in only one variable. → The more sensitive is the NPV, the more critical is the variable. → It is a way of finding impact in the project's NPV (or IRR) for a given change in one of the variables.

Steps involved in Sensitivity Analysis

1. Finding variables, which have an influence on the NPV (or IRR) of the project
2. Establishing mathematical relationship between the variables.
3. Analysing the effect of the change in each of the variables on the NPV (or IRR) of the project.

ADVANTAGES

CRITICAL ISSUES:

This analysis identifies critical factors that impinge on a project's success or failure.

SIMPLICITY:

It is a simple technique.

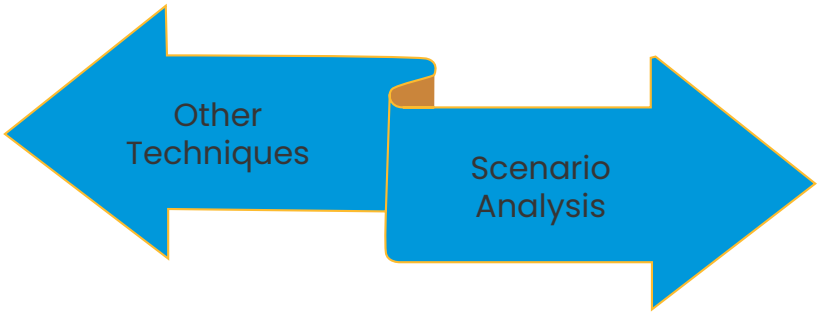
DISADVANTAGES

ASSUMPTION OF INDEPENDENCE

This analysis assumes that all variables are independent i.e. they are not related to each other, which is unlikely in real life.

IGNORE PROBABILITY

This analysis does not look to the probability of changes in the variables.



Scenario Analysis

This analysis brings in the probabilities of changes in key variables and also allows us to change more than one variable at a time.

Scenario Analysis begins with base case or most likely set of values for the input variables.

Then, go for worst case scenario (low unit sales, low sale price, high variable cost and so on) and best case scenario.

Alternatively, Scenario Analysis is possible where some factors are changed positively and some factors are changed negatively.

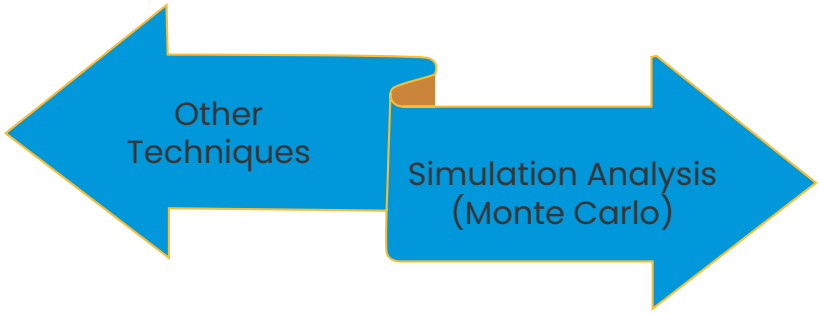
In a nutshell Scenario Analysis examines the risk of investment, to analyse the impact of alternative combinations of variables, on the project's NPV (or IRR).

Sensitivity Analysis Vs. Scenario Analysis

Sensitivity Analysis Vs Scenario Analysis

SENSITIVITY analysis calculates the impact of the change of a single input variable on the outcome of the project viz., NPV or IRR. The sensitivity analysis thus enables to identify that single critical variable that can impact the outcome in a huge way and the range of outcomes of the project given the change in the input variable.

SCENARIO analysis, on the other hand, is based on a scenario. The scenario may be recession or a boom wherein depending on the scenario, all input variables change. Scenario Analysis calculates the outcome of the project considering this scenario where the variables have changed simultaneously.



Simulation Analysis

It is the exact replica of the actual situation. To simulate an actual situation, a model shall be prepared, in which infinite calculations are made to obtain the possible outcomes and probabilities for any given action.

This analysis starts with carrying out a simulation exercise to model the investment project.

It involves identifying the key factors affecting the project and their interrelationships.

It involves modelling of cash flows to reveal the key factors influencing both cash receipt and payments and their inter- relationship.

This analysis specifies a range for a probability distribution of potential outcomes for each of the model's assumptions.

Steps involved

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

Advantages

- We can predict all types of bad market situations beforehand.
- Handle problems characterised by:
  - (a) numerous exogenous variables following any kind of distribution.
  - (b) complex interrelationships among parameters, exogenous variables and endogenous variables.
  - (c) compels decision maker to explicitly consider the inter-dependencies and uncertainties featuring the project.

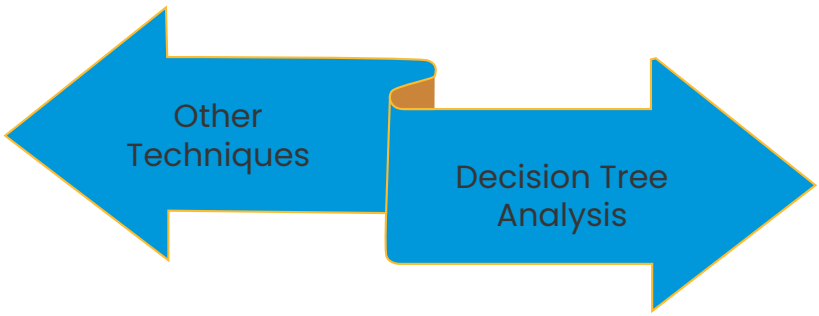
Shortcomings

(1) Difficult to model the project and specify probability distribution of exogenous variables.

(2) Simulation is inherently imprecise. Provides rough approximation of probability distribution of NPV and hence may be misleading when a tail of distribution is critical.

(3) Realistic simulation model being likely to be complex would probably be constructed by management expert and not by the decision maker.

(4) Decision maker lacking understanding of the model may not use it.



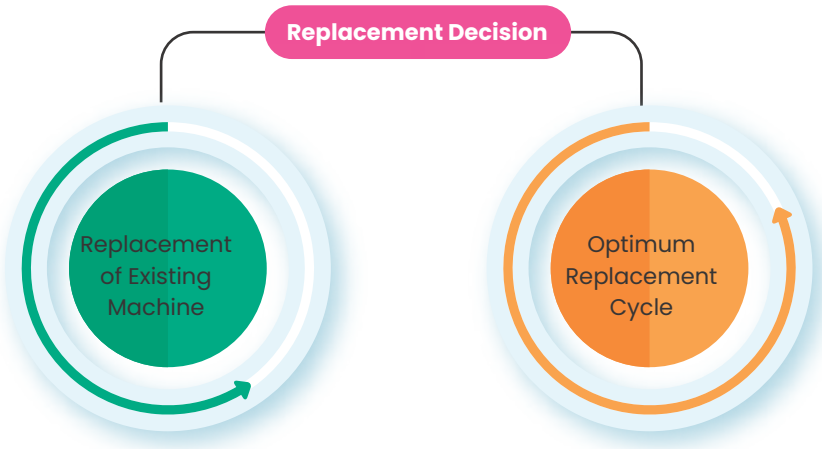
- Basically, decision tree is a graphic display of the relationship between a present decision and future events, future decision, and their consequences.
- This approach assumes that there are only two types of situations that a finance manager has to face. The first situation is where the manager has control or power to determine what happens next. This is known as "Decision", as he can do what he desires to do.
- The second situation is where finance manager has no control over what happens next. This is known as "Event". Since the outcome of the events is not known, a probability distribution needs to be assigned to the various outcomes or consequences.
- It should, however, be noted when a finance manager faced with a decision situation, he is assumed to act rationally.

Steps involved in Decision Tree Analysis

Define Investment	Decision Tree Analysis can be applied to a variety of business decision-making scenarios.
Identification of Decision Alternatives	It is very essential to clearly identity decision alternatives.
Drawing a Decision Tree	After identifying decision alternatives, at the relevant data such as the projected cash flows, probability distribution, expected present value etc. should be put in diagrammatic form called decision tree.
Evaluating the Alternatives	After drawing out the decision tree the next step is the evaluation of alternatives.

Replacement Decision

The replacement decision can be divided into following two types of decisions.



Replacement of Existing Machine

This is a decision concerning whether an existing asset should be replaced by a newer version of the same machine or even a different type of machine that has the same functionality as the existing machine.

Steps involved in decision to replace Existing Machine

Net cash outflow (assumed at current time /[Present value of cost]):

a. (Book value of old equipment - market value of old equipment) × Tax Rate = Tax payable/ savings from sale

b. Cost of new equipment – [Tax payable/savings from sale + market value of old equipment] = Net cash outflow

Estimate change in cash flow per year, if replacement decision is implemented. Change in cash flow = [(Change in sales ± Change in operating costs) – Change in depreciation] (1 – tax rate) + Change in depreciation

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

Net present value = Present value of benefits – Present value of costs

Decision rule. Accept when present value of benefits > Present value of costs. Reject when the opposite is true.

Optimum Replacement Cycle

- To determine optimal replacement cycle, concept of Equivalent Annual Cost (EAC) is used.
- The formula to compute EAC is as follows:

$$\frac{\text{PV of Cash Outflow}}{\text{PVAF}}$$

- This decision is based on assumption that as the machine (asset) becomes older its efficiency decreases leading to increase in operating cost and reduction in resale value.

Adjusted Present Value

- This approach separates the investment decision and financing decision.
- Following formula is used to evaluate a project as per this approach:

  Base Case NPV + PV of Tax Benefit on Interest
- Base Case NPV is calculated using cost of equity assuming the company is unlevered i.e., all equity financed. Now question arises: how to calculate the Unlevered Cost of Equity?
- This method provides a broader view to evaluate a project considering the benefit of increased use of debt in financing of any project.

Chapter 4 – Security Analysis

Introduction

- Security Analysis involves a systematic analysis of risk-return profiles of various securities.
- Two approaches viz. Fundamental Analysis and Technical Analysis are in vogue for carrying out Security Analysis.
- In fundamental analysis, factors affecting risk-return characteristics of securities are looked into while in technical analysis, demand/supply position of the securities along with prevalent share price trends are examined.

Fundamental Analysis

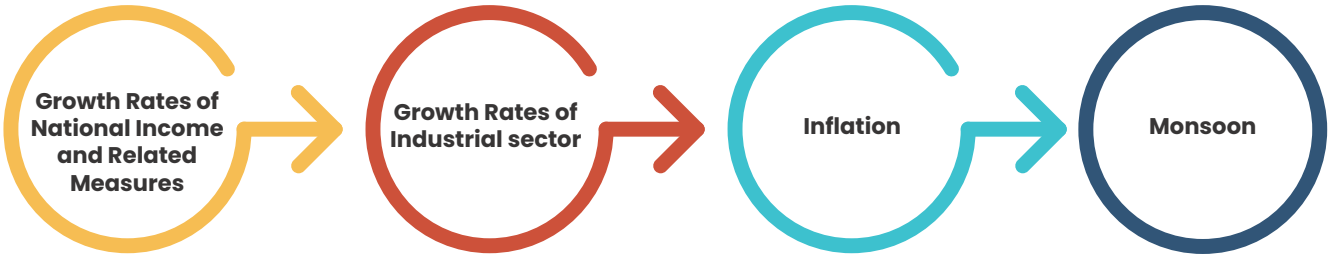
Dividend Growth Model and PE Multiple Model

- Fundamental Analysis is based on the assumption that the share prices depend upon the future dividends expected by the shareholders.
- The fundamental analysts use **Dividend Growth Model or PE Multiple Model** or some of their variations, for estimating fundamental or intrinsic price or the fundamental price-earnings multiple of a security.
- 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.

Economic Analysis

Economic analysis is used to forecast national income with its various components that have a bearing on the concerned industry and the company.

Factors Affecting Economic Analysis



Techniques used in Economic Analysis

Anticipatory Surveys: They help investors to form an opinion about the future state of the economy. It incorporates expert opinion on construction activities, expenditure on plant and machinery, levels of inventory – all having a definite bearing on economic activities.

Barometer/Indicator Approach: Various indicators are used to find out how the economy shall perform in the future. The Indicators have been classified as under:

a) *Leading Indicators*

b) *Roughly Coincidental Indicators*

c) *Lagging Indicators*

Economic Model Building Approach: In this approach, a precise and clear relationship between dependent and independent variables is determined. The steps used in this approach are as follows -

(i) Hypothesize total economic demand by measuring total income (GNP) based on political stability, rate of inflation, changes in economic levels.

(ii) Forecasting the GNP by estimating levels of various components viz. consumption expenditure, gross private domestic investment, government purchases of goods/services, net exports.

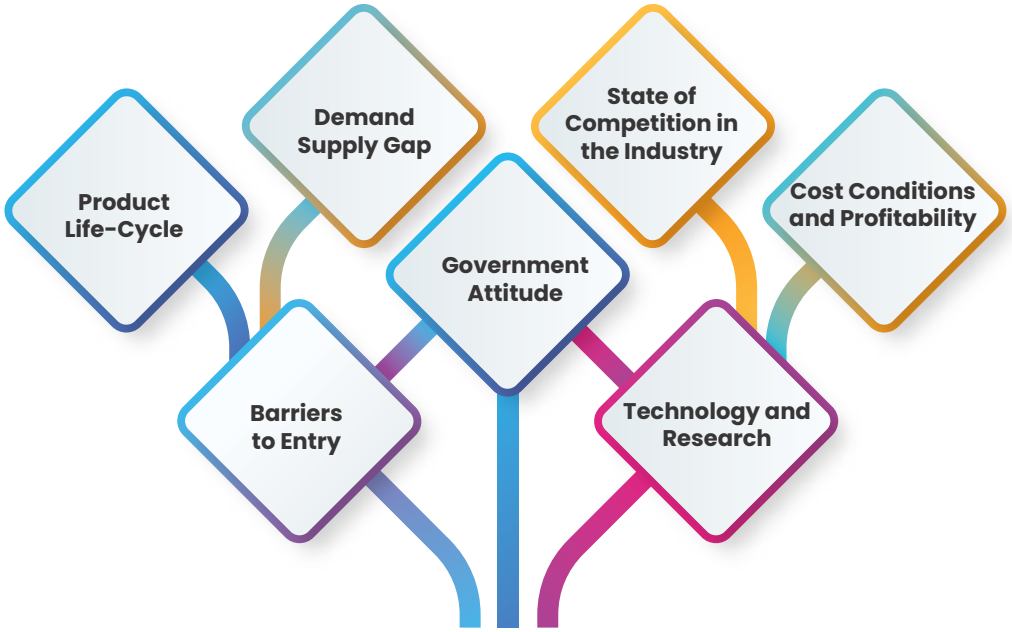
(iii) After forecasting individual components of GNP, add them up to obtain the forecasted GNP.

(iv) Comparison is made of total GNP thus arrived at with that from an independent agency for the forecast of GNP and then the overall forecast is tested for consistency.

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.

Factors Affecting Economic Analysis



Techniques used in Industry Analysis

(a) Regression Analysis : Factors to be considered are GNP, disposable income, per capita consumption / income, price elasticity of demand. For identifying factors affecting demand, statistical techniques like regression analysis and correlation are used.

(b) Input – Output Analysis: It reflects the flow of goods and services through the economy, intermediate steps in production process as goods proceed from raw material stage through final consumption.

Company Analysis

Quantitative and Qualitative Fundamental for Company Analysis

The following factors may particularly be kept in mind while assessing the factors relating to company:

a. Net Worth and Book Value

b. Sources and Uses of funds

c. Cross-Sectional and Time Series Analysis

d. Size and Ranking

e. Growth Record

f. Financial Analysis

g. Competitive Advantage

h. Quality of Management

i. Corporate Govenance

j. Regulation

k. Location and Labour- Management Relations

l. Pattern of existing Stock Holding

m. Marketability of the Shares

Techniques used in Company Analysis

(a) Correlation & Regression Analysis : Simple regression is used when inter relationship covers two variables. For more than two variables, multiple regression analysis is followed. Here the inter relationship between variables belonging to economy, industry and company are found out.

(b) Trend Analysis: The relationship of one variable is tested over time using regression analysis. It gives an insight to the historical behavior of the variable.

(c) Decision Tree Analysis: In decision tree analysis, the decision is taken sequentially with probabilities attached to each sequence. To obtain the probability of final outcome, various sequential decisions given along with probabilities, the probabilities of each sequence is to be multiplied and then summed up.

Technical Analysis

Meaning

It is method of share price movements based on study of price graphs or charts on the assumption that share price trends are repetitive.

Assumptions

a. The market value of stock depends on supply and demand for a security.
b. The supply and demand are actually governed by several factors which can be rational or irrational.
c. Stock prices generally move in trends which continue for a substantial period of time.
d. Technical analysis relies upon chart analysis.

Principles of Technical Analysis

a. The market discounts everything.
b. Price moves in trends.
c. History tends to repeat itself.

Theories of Technical Analysis

The Dow Theory

- It is one of the oldest and most famous technical theory.
- It was originated by Charles Dow.
- It is a helpful tool for determining the relative strength of the stock market.
- It can also be used as a barometer of business.
- It is based upon movements of two indices, constructed by Charles Dow, Dow Jones Industrial Average (DJIA) and Dow Jones Transportation Average (DJTA).
- The movements of the market are divided into 3 classifications (going at the same time)
  - **Primary movement** is the main trend of the market which lasts from 1 year to 36 months or longer.
  - **Secondary movement** of the market is shorter in duration than primary movement, and is in opposite direction. It lasts from 2 weeks to a month or more.
  - **Daily fluctuations** are the narrow movements from day-to-day.

Elliot Wave Theory

- This theory is inspired by the Dow Theory and by observations found throughout nature.
- Ralph Elliot formulated Elliot Wave Theory in 1934.
- It was based on analysis of 75 years stock price movements and charts.
- From his studies, he defines price movements in terms of waves.
- As per this theory wave is a movement of the market price from one change in direction to the next change in the same direction.
- These waves are resulted from buying and selling impulses emerging from demand and supply pressures on the market.
- As per this theory, waves can be classified into two parts:

  a) Impulsive Patterns - (Basic Waves) - These waves shall move in the direction of the basic movement. This movement can indicate bull phase or bear phase.

  b) Corrective Patterns - (Reaction Waves) - These waves are against the basic direction of the basic movement.

Random Walk Theory

The arguments of this Theory are as follows:

- Prices of shares in stock market can never be predicted.
- Reason is that the price trends are not the result of any underlying factors, but that they represent only a statistical expression of past data.
- There may be periodical ups or downs in share prices, but no connection can be established between two successive peaks (high price of stocks) and troughs (low price of stocks).

Charting Techniques

Market Indicators

a. **Breadth Index :** It is computed by dividing the net advances or declines in the market by the number of issues traded. The breadth index either supports or contradicts the movement of the Dow Jones Averages.

b. **Volume of Transations:** The volume of shares traded in the market provides useful clues on how the market would behave in the near future. The volume concept is best used with another market indicator, such as the Dow Theory.

c. **Confidence Index:** It is the ratio of high-grade bond yields to low-grade bond yields. It is usually, but not always a leading indicator of the market. Therefore, it should be used in conjunction with other market indicators.

d. **Relative Strength Analysis:** The relative strength concept suggests that the prices of some securities rise relatively faster in a bull market or decline more slowly in a bear market than other securities i.e. some securities exhibit relative strength.

e. **Odd - Lot Theory:** This theory is used primarily to predict tops in bull markets, but also to predict reversals in individual securities.

Support and Resistance Levels

- When index/price goes down from peak, the peak becomes Resistance Level.
- When index/price rebounds after reaching a trough subsequently, the lowest value reached becomes the Support Level.

Interpreting Price Patterns

(a) **Channel:** A series of uniformly changing tops and bottoms gives rise to a channel formation. A downward sloping channel would indicate declining prices and an upward sloping channel would imply rising prices.

(b) **Wedge:** A wedge is formed when the tops (resistance levels) and bottoms (support levels) change in opposite direction (that is, if the tops, are decreasing then the bottoms are increasing and vice versa), or when they are changing in the same direction at different rates over time.

(c) **Head and Shoulders:** It is a distorted drawing of a human form, with a large lump (for head) in the middle of two smaller humps (for shoulders).

(d) **Triangle or Coil Formation:** This formation represents a pattern of uncertainty and is difficult to predict which way the price will break out.

(e) **Flags and Pennants Form:** This form signifies a phase after which the previous price trend is likely to continue.

(f) **Double Top Form:** This form represents a bearish development signaling that price is expected to fall.

(g) **Double Bottom Form:** This form represents bullish development signaling price is expected to rise.

(h) **Gap:** A gap is the difference between the opening price on a trading day and the closing price of the previous trading day. The wider the gap the stronger the signal for a continuation of the observed trend.

Decision Using Data Analysis

(a) Arithmetic Moving Average (AMA): An n-period AMA, at period t, is nothing but the simple average of the last n period prices.

$$AMA_{n,t} = 1/n[P_t + P_{t-1+} \dots + P_{t-(n-1)}]$$

(b) Exponential Moving Average: EMA assigns decreasing weights, with the highest weight being assigned to the latest price. The weights decrease exponentially, according to a scheme specified by the exponential smoothing constant, also known as the exponent, a.

$$EMA_t = aP_t + (1-a)(EMA_{t-1})$$

Where, a (exponent) $= \frac{2}{n+1}$

P_t = Price of today

EMA_{t-1} = Previous day's EMA

EMA_t = (Closing Price of the day - EMA of Previous Day) x Exponent + Previous Day EMA

n = Number of days for which average is to be calculated

Buy and Sell Signals Provided by Moving Average Analysis

Buy Signal	Sell Signal
(a) Stock price line rise through the moving average line when graph of the moving average line is flattering out.	(a) Stock price line falls through moving average line when graph of the moving average line is flattering out.
(b) Stock price line falls below moving average line which is rising.	(b) Stock price line rises above moving average line which is falling.
(c) Stock price line which is above moving average line falls but begins to rise again before reaching the moving average line.	(c) Stock price line which is slow moving average line rises but begins to fall again before reaching the moving average line.

Evaluation of Technical Analysis

The advocates of technical analysis offer the following interrelated argument in their favour:

a) Under influence of crowd psychology trend persist for some time. Tools of technical analysis help in identifying these trends early and help in investment decision making.

b) Shift in demand and supply are gradual rather than instantaneous. Technical analysis helps in detecting this shift rather early and hence provides clues to future price movements.

c) Fundamental information about a company is observed and assimilated by the market over a period of time. Hence price movement tends to continue more or less in same direction till the information is fully assimilated in the stock price.

Detractors believe that it is a useless exercise; their arguments are as follows:

a) Most technical analysts are not able to offer a convincing explanation for the tools employed by them.

b) Empirical evidence in support of random walk hypothesis cast its shadow over the useful ness of technical analysis.

c) By the time an uptrend and down trend may have been signalled by technical analysis it may already have taken place.

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

Difference between Fundamental Technical Analysis

Basis	Fundamental Analysis	Technical Analysis
Method	Prospects are measured by analyzing economy's macro factors such as GDP, Inflation Rate, Interest Rate, Growth Rate etc. and company's micro factors like Sales, Profitability, Solvency, Assets, Liabilities and Cash position etc.	Predicts future prices and their direction using historical data such as Price Movements, Volume, Open Interest etc.
Rule	Price of a share discounts everything.	Price captures everything
Usefulness	For Long-term Investing	For Short-term Investing

Efficient Market Theory (Efficient Market Hypothesis)

- It was developed by University of Chicago professor Eugen Fama in the 1960s.
- As per this theory at any given time, all available price sensitive information is fully reflected in securities' prices.
- It states that no one can "beat the market" hence making it is impossible to outperform the market through overall expert stock selection or market timing.

Search for Theory

Researchers concluded that randomness of stock price was a result of efficient market that led to the following view points:

- Information is freely and instantaneously available to all market participants.
- Keen competition among the market participants more or less ensures that market will reflect intrinsic values. This means that they will fully impound all available information.
- Price change only response to new information that is unrelated to previous information and therefore unpredictable.

Misconception about Efficient Market Theory

Level of Market Efficiency

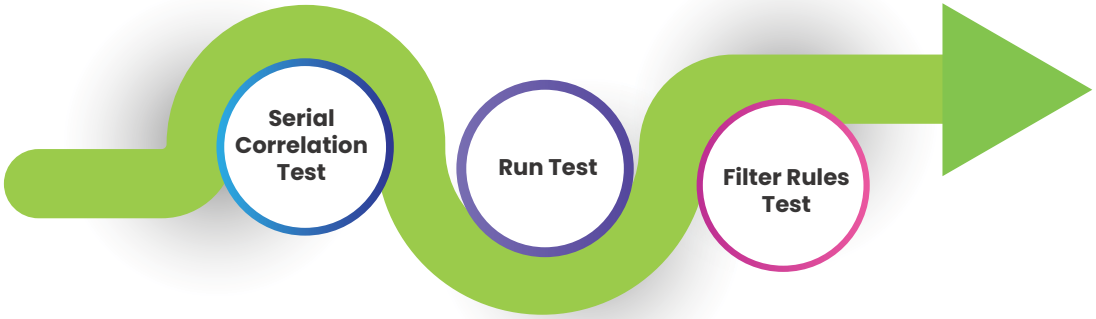
Weak Form Efficiency: Price reflects all information found in records of past prices and volumes.

Semi- Strong Efficiency: Price reflects not only information found in records of past prices and volumes but also all other publicly available information.

Strong Form Efficiency: Price reflect all available information public as well as private.

Empirical Evidence on Weak form of Efficient Market Theory

Three types of tests have been employed to empirically verify the weak form of Efficient Market Theory:



Empirical Evidence on Semi-strong Efficient Market Theory

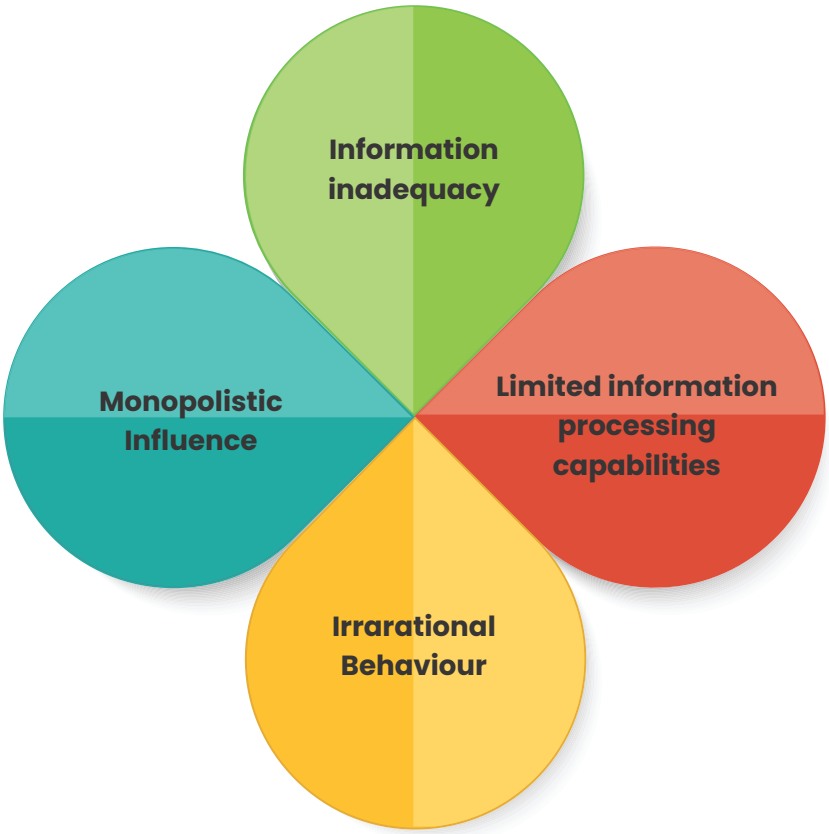
To test semi-strong form efficient market theory, a number of studies was conducted which have been empirically documented showing the following inefficiencies and anomalies:

- Stock price adjust gradually not rapidly to announcements of unanticipated changes in quarterly earnings.
- Small firms' portfolio seemed to outperform large firms' portfolio.
- Low price earning multiple stock tend to outperform large price earning multiple stock.
- Monday's return is lower than return for the other days of the week.

Empirical Evidence on Strong form of Efficient Market Theory

- To test this theory, the researcher analysed returns earned by certain groups viz. corporate insiders, specialists on stock exchanges, mutual fund managers who have access to internal information (not publicly available), or possess greater resource or ability to intensively analyse information in the public domain. They suggested that corporate insiders (having access to internal information) and stock exchange specialists (having monopolistic exposure) earn superior rate of return after adjustment of risk.
- Mutual Fund managers do not on an average earn a superior rate of return. No scientific evidence has been formulated to indicate that investment performance of professionally managed portfolios as a group has been any better than that of randomly selected portfolios.

Challenges to the Efficient Market Theory



Equity Research and Tools Available

Earlier equity research used to be paper based, and analysts needed to refer various reports, data, and graphs etc. However, with the advent of internet now a days most analysts use various tools available online.

Chapter 5 – Security Valuation

Introduction

Knowing what an asset is worth and what determines its value is a pre-requisite for making intelligent decisions while choosing investments for a portfolio or in deciding an appropriate price to pay or receive in a business takeover and in making investment, financing and dividend choices when running a business. While some assets are easier to value than others, for different assets, the details of valuation and the uncertainty associated with value estimates may vary. However, the core principles of valuation always remain the same.

Return Concepts

A sound investment decision depends on the correct use and evaluation of the Rate of Return. Some of the different concepts of return are given as below:

Required Rate of Return

The minimum rate of return that the investor is expected to receive while making an investment in an asset over a specified period of time.

Discount Rate

The rate at which present value of future cash flows is determined.

Internal Rate of Return

The discount rate which equates the present value of future cash inflows to its cost i.e. cash outlay.

Equity Risk Premium

Equity risk premium is the excess return that investment in equity shares provides over a risk-free rate of return, such as return from tax free government bonds. This excess return compensates investors for taking on the relatively higher risk of investing in equity shares of a company.

Calculating the Equity Risk Premium

The Equity Risk Premium can be derived from Capital Asset Pricing Model (CAPM), which is as follows:

$R_x = R_f + ß_x (R_m - R_f)$

Where:

R_x = Expected return on equity share of company X

R_f = Risk-Free Rate of Return

$ß_x$ = Beta of Company X i.e. Systematic Market Risk of the Company

R_m = Expected Return of Market or Market Portfolio or Return from Market Index

The equity risk premium is basically excess of a Security's Return over Risk-Free Rate Return and accordingly the CAPM can be remodeled as follows:

Equity Risk Premium = $R_x - R_f = ß_x (R_m - R_f)$

The $(R_m - R_f)$ portion is called Market Risk Premium.

Discount Rate Selection in relation to Cash Flows

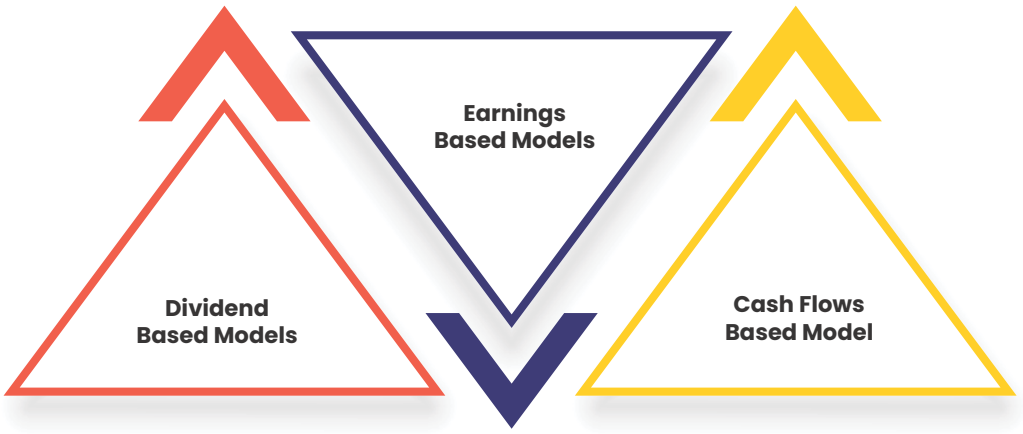
Nominal Cash Flow and Real Cash Flow

- Nominal cash flow is the amount of future revenues the company expects to receive and expenses it expects to pay out, without any adjustments for inflation.
- Real cash flow shows a company's cash flow with adjustments for inflation.

Discount rate for Equity Valuation

- For nominal cash flow, Nominal Rate of Discount is used.
- For real cash flow, real rate of discount is used.

Valuation of Equity Shares



Dividend Based Models

Valuation Based holding period of One Year: If an investor holds the share for one year then the value of equity share is computed as follows:

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

Valuation Based on Multi Holding Period: In this type of holding following three types of dividend pattern can be analyzed.

(i) Zero Growth: Also, called as No Growth Model, as dividend amount remains same over the years infinitely. The value of equity can be found as follows:

$$P_0 = \frac{D}{(K_e)}$$

ii) Constant Growth: Although assumption is quite unrealistic assumption but the value of equity shared can be found by using following formula:

$$P_0 = \frac{D_1}{K_e - g} \text{ or } \frac{D_0 (1+g)}{(K_e - g)}$$

(iii) Variable Growth in Dividend: Just like the constant growth assumption this assumption also appears to be unrealistic but valuation can also be done on the same. Valuation on the basis of this assumption can further be classified in Two-Stage Dividend Discount Model and Three Stage Dividend Discount Model.

Earning Based Models

Gordon's Model:

Valuation as per this model shall be

$$\frac{EPS_1 (1-b)}{K_e - br}$$

Where, r = Return on Retained Earnings b = Retention Ratio

Walter's Approach:

As per this model, the value of equity share shall be:

$$\frac{D+(E-D)\frac{r}{K_e}}{K_e}$$

Price Earning Ratio or Multiplier Approach:

As per this approach the share price or value can simply be determined as follows: Value = EPS X PE Ratio

This ratio can be estimated for a similar type of company or of industry after making suitable adjustment in light of specific features pertaining to the company under consideration.

Cash Flow Models

Free Cash Flow to Firm Model (FCFF) – In FCFF model, the value of equity is determined by first computing the value of firm, using FCFF and Cost of Capital i.e. WACC (K_o) and then deducting Debt from the same.

Free Cash Flow to Equity Model (FCFE) – In FCFE model, the value of equity is determined by using FCFE and Cost of Equity (K_e).

Calculation of Free Cash Flow to Firm (FCFF)

(a) Based on its Net Income:	FCFF= Net Income + Interest expense *(1-tax) + Depreciation -/+ Capital Expenditure –/+ Change in Net Non-Cash Working Capital
(b) Based on Operating Income or Earnings Before Interest and Tax (EBIT):	FCFF= EBIT *(1 - tax rate) + Depreciation -/+ Capital Expenditure –/+ Change in Net Non-Cash Working Capital
(c) Based on Earnings before Interest, Tax , Depreciation and Amortisation (EBITDA):	FCFF = EBITDA* (1-Tax) +Depreciation* (Tax Rate) -/+ Capital Expenditure – /+Change in Net Non-Cash Working Capital
(d) Based on Free Cash Flow to Equity (FCFE):	FCFF = FCFE + Interest* (1-t) + Principal Prepaid - New Debt Issued + Preferred Dividend
(e) Based on Cash Flows:	FCFF = Cash Flow from Operations (CFO) + Interest (1-t) -/+ Capital Expenditure

Calculation of Free Cash Flow to Equity (FCFE)

Free Cash flow to equity is used for measuring the intrinsic value of the stock for equity shareholders. The cash that is available for equity shareholders after meeting all operating expenses, interest, net debt obligations and re-investment requirements such as working capital and capital expenditure. It is computed as follows:

Free Cash Flow to Equity (FCFE) = Net Income - Capital Expenditures + Depreciation -/+ Change in Non - cash Working Capital + New Debt Issued - Debt Repayments + Net Issue of Preference Shares - Preference share Dividends

or

FCFE = Net Profit + depreciation- Δ NWC - CAPEX + New Debt - Debt Repayments + Net Issue of Preference Shares - Preference Share Dividends

ΔNWC = changes in Net Working Capital. CAPEX = Addition in fixed assets to sustain the basis.

FCFE can also be used to value share as per Multistage Growth Model Approach.

Dividend Discount Model versus Free Cash Flow to Equity Model

A stock's intrinsic value based on the Dividend Discount Model (DDM) may not always reflect its fair value, as dividends are distributed in the form of cash from profits. This model can lead to undervaluation, especially when a company maintains healthy cash reserves on its balance sheet but has low dividend payouts.

In contrast, the Free Cash Flow to Equity (FCFE) model values a stock based on the cash flow available to shareholders after accounting for all reinvestment needs, including capital expenditures (CAPEX) and incremental working capital. This provides a more comprehensive and realistic measure of value.

Enterprise Value

Enterprise Value is the true economic value of a company. It is calculated by adding market capitalization, Long term Debt, Minority Interest minus cash and cash equivalents. (Also Minus like Equity investments like affiliates, investment in any company and also Long term investments.). Since it considers both equity and debt it is more comprehensive and is least affected by its capital structure.

Enterprise Value is of three types:

TOTAL ENTERPRISE VALUE

It is the value of all the business activities; it is the summation of market capitalization, Debt (Interest Bearing), Minority Interest "minus "cash.

OPERATING ENTERPRISE VALUE:

It is the value of all operating activities, and to get this we have to deduct market value of non- operating assets which includes Investments and shares (in associates) from the Total Enterprise Value.

CORE ENTERPRISE VALUE:

It is the value which does not include the value of operations which are not the part of core activities. To get this we deduct the value of non-core assets from the Operating Enterprise Value.

There are different Enterprise Value multiples which can be calculated as per the requirement (which requirement). If we take the EV as numerator then the denominator must represent the claims of all the claimholders on enterprise cash flow.

Valuation of Rights

Immediately after the right issue, the price of share is called Ex Right Price or Theoretical Ex-Right Price (TERP) which is computed as follows:

$$\frac{nP_o + S}{n + n_1}$$

n = No. of existing equity shares

P_0 = Price of Share Pre-Right Issue

S = Subscription amount raised from Right Issue

n_1 = No. of new shares issued

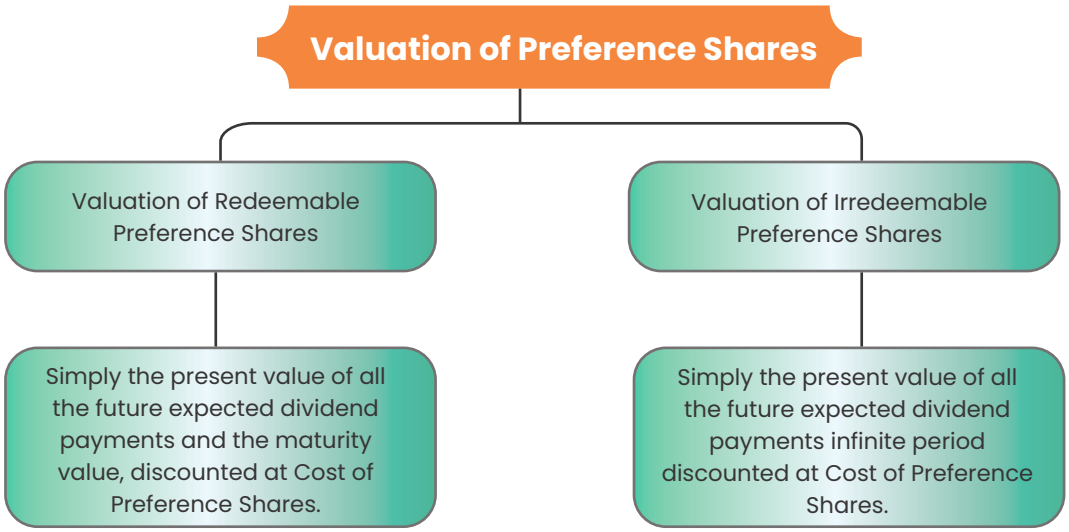
However, theoretical value of right can be calculated as follows:

Ex- Right Price - Subscription Rate

$$\text{Value of per Share Holding} = \frac{\text{Ex Right Price - Subscription Price}}{\text{Existing Number of shares}}$$

Valuation of Preference Shares

Preference shares, like debentures, are usually subject to fixed rate of dividend. In case of non-redeemable preference shares, their valuation is similar to perpetual bonds.



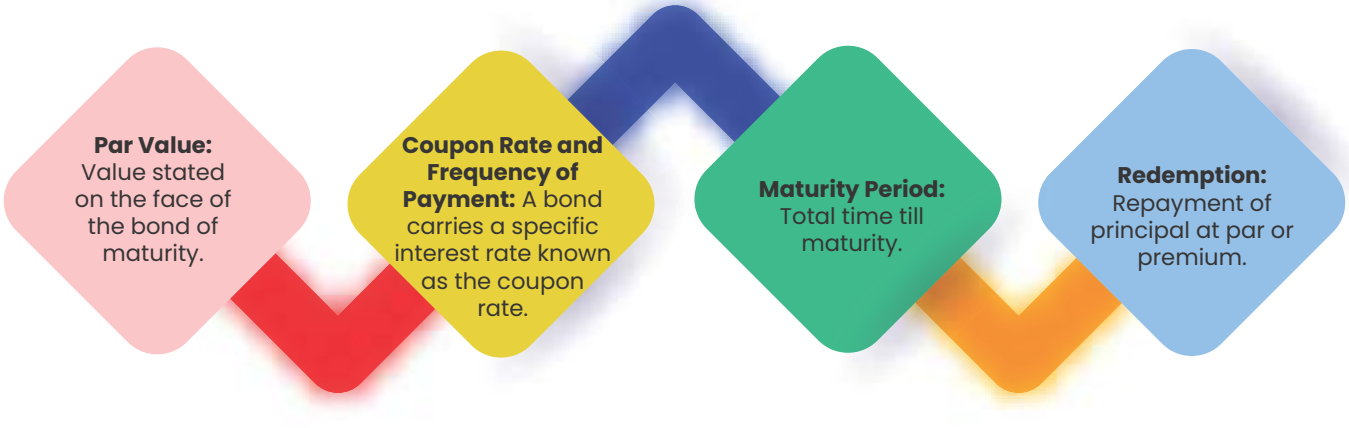
Formula for Valuation of Redeemable Preference Share

$$= \frac{\text{Dividend}_1}{(1+r)^1} + \frac{\text{Dividend}_2}{(1+r)^2} + \ldots\ldots\ldots + \frac{(\text{Dividend}_n + \text{Maturity value})}{(1+r)^n}$$

Formula for Valuation of Irredeemable Preference Share

$$\text{Irredeemable Preference share value} = \frac{\text{Dividend}}{\text{Required return on Preference share}}$$

Basics of a Bond



Bond Valuation Model

The value of a bond is:

$$V = \sum_{t=1}^{n} \frac{I}{(1+k_d)^t} + \frac{F}{(1+k_d)^n}$$

$$V = I\,(PVIFA_{k_d,n}) + F\,(PVIF_{k_d,n})$$

Where,

V = value of the bond

I = annual interest payable on the bond

F = principal amount (par value) of the bond repayable at the time of maturity

N = maturity period of the bond.

K_d = Yield to Maturity (YTM) or Required Rate of Return on the same type of bonds

Bond Value Theorems

CAUSE	EFFECT
YTM = Coupon Rate	Bond sells at Par
YTM > Coupon Rate	Bond sells at Discount
YTM < Coupon Rate	Bond sells at Premium
Longer the Maturity of Bond	Greater the bond price change with a given change in YTM

Yield to Maturity (YTM)

The discount rate (Kd) at which the Present Value of Future Cash flows from a Bond equals its Market Price.

Bond Values with Semi-Annual Interest

The basic bond valuation equation thus becomes:

$$V = \sum_{t=1}^{2n} \frac{\frac{I}{2}}{\left[1+\frac{k_d}{2}\right]^t} + \frac{F}{\left[1+\frac{k_d}{2}\right]^{2n}}$$

$$= I/2(PVIFA_{kd/2,2n}) + F(PVIF_{kd/2,2n})$$

Where,

V = Value of the bond

I/2 = Semi-annual interest payment

$K_d/2$ = Discount rate applicable to a half-year period

F = Par value of the bond repayable at maturity

2n = Maturity period expressed in terms of half-yearly periods.

Price Yield Relationship

A basic property of a bond is that its price varies inversely with yield. The reason is simple. As the required yield increases, the present value of the cash flow decreases; hence the price decreases and vice versa.

Relationship between Bond Price and Time

If a bond is trading at premium, its price will decrease over time and if a bond is trading at a discount its price will increase over time.

Since the price of bond must equal to its Par Value at maturity (assuming that there is no risk of default), bond prices change with time and they approach to the Par Value of the Bond.

Duration of Bond

Duration is nothing but the average time taken by an investor to collect his/her investment. If an investor receives a part of his/her investment over the time on specific intervals before maturity, the investment will offer him the duration which would be lesser than the maturity of the instrument. Higher the coupon rate, lesser would be the duration and vice versa.

Bond duration is also a measure of interest rate risk. Factors that affect bond's duration are:

(i) Time to Maturity – The shorter maturity bond would have a lower duration and lower interest rate risk and vice versa.

(ii) Coupon Rate – Higher the coupon rate the lower is the duration and vice versa.

(iii) YTM – Higher YTM means lower duration and hence lower interest rate risk and vice versa.

(a) Macaulay Duration

$$\text{Macaulay Duration} = \frac{\sum_{t=1}^{n} \frac{t * C}{(1+i)^t} + \frac{n * M}{(1+i)^n}}{P}$$

Where

n = Time to Maturity

C = Cash flows (Coupon Amount)

i = Required yield

M = Maturity (par) value

P = Bond price

(b) Modified Duration

This is a modified version of Macaulay duration which takes into account the interest rate changes because the changes in interest rates affect duration as the yield gets affected each time the interest rate varies.

The formula for modified duration is as follows:

$$\text{Modified Duration} = \left[\frac{\text{Macaulay Duration}}{\left(1+\frac{YTM}{n}\right)}\right]$$

Where

n = Number of compounding periods per year

YTM= Yield to Maturity

Immunization

The interest rate risk of a bond is subject to following two risk:

(a) Price Risk (b) Reinvestment Risk

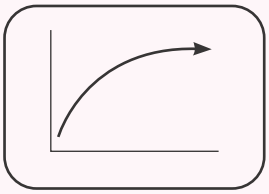
With change in interest rates these two risks move in opposite direction.

Through the process of immunization selection of bonds shall be in such manner that the effect of above two risks shall offset each other.

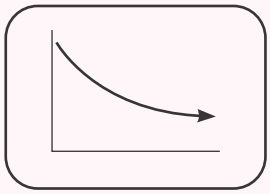
Yield Curve

The term structure of interest rates, also known as Yield Curve, shows how yield to maturity is related to term of maturity for bonds that are similar in all respects, except maturity. Four patterns are depicted as follows:

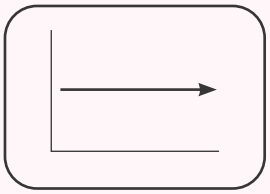
A. Upward Sloping



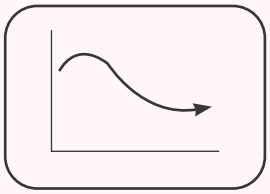
B. Downward Sloping



C. Flat



D. Humped



Term Structure Theories

Popularly known as Yield Curve, shows how yield to maturity is related to term to maturity for bonds that are similar in all respects, except maturity.

Expectation Theory

As per this theory the long-term interest rates can be used to forecast short-term interest rates in the future on the basis of rolling the sum invested for more than one period.

Liquidity Preference Theory

As per this theory forward rates reflect investors' expectations of future spot rates plus a liquidity premium to compensate them for exposure to Interest Rate Risk.

Preferred Habitat Theory

As per this theory the Premiums are related to supply and demand for funds for various maturities – not the term to maturity and hence this theory can be used to explain almost any yield curve shape.

Convexity Adjustment

Although, the duration is a good approximation of the percentage of price change for a small change in interest rate but the change cannot be estimated so accurately due to convexity effect. This estimation can be improved by adjustment on account of 'convexity'. The formula for convexity is as follows:

$C^* \times (\Delta y)^2 \times 100$

Δy = Change in Yield

$$C^* = \frac{V_+ + V_- - 2V_0}{2V_0(\Delta y)^2}$$

V_0 = Initial Price

V_+ = price of Bond if yield increases by Δy

V_- = price of Bond if yield decreases by Δy

Convertible Debentures

Convertible Debentures are those debentures which are converted in equity shares after certain period of time. The number of equity shares for each convertible debenture are called Conversion Ratio and price paid for the equity share is called 'Conversion Price'.

Further, conversion value of debenture is equal to Price per Equity Share x Converted No. of Shares per Debenture.

Valuation of Warrants

A warrant is a right that entitles a holder to subscribe equity shares during a specific period at a stated price. These are generally issued to sweeten the debenture issue. Theoretical value of warrant can be found as follows:

$(MP - E) \times n$

MP = Current Market Price of Share

E = Exercise Price of Warrant

n = No. of equity shares convertible with one warrant

Zero Coupon Bond

As name indicates these bonds do not pay interest during the life of the bonds. Instead, zero coupon bonds are issued at discounted price to their face value, which is the amount a bond will be worth when it matures or comes due. When a zero coupon bond matures, the investor will receive one lump sum (face value) equal to the initial investment plus interest that has been accrued on the investment made.

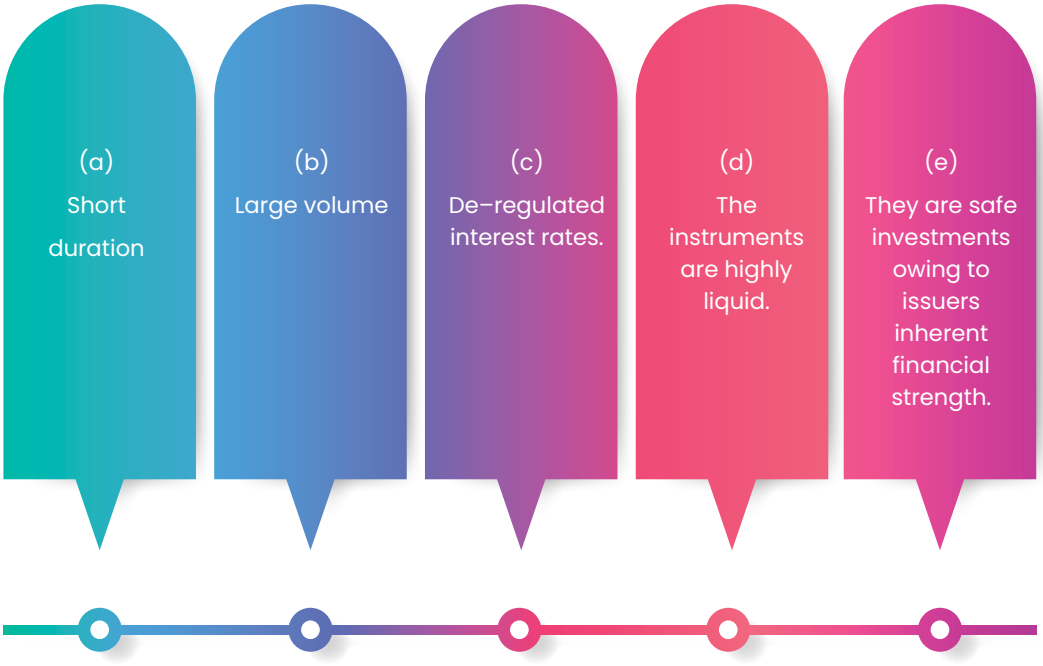
Refunding of Bonds

It is a type of strategic financial decision, and the Capital Budgeting method is used to evaluate the decision to refund the exiting bonds and issuing new bonds of an equivalent amount. Generally, the Net Present Value (NPV) method is used to evaluate such types of Bond Refunding decisions.

If the Present Value of Cash Inflows (in form of net cash saving) exceeds the Present Value of cash outflow (call premium, interest during transition period etc.) then exiting bonds can be refunded and new bonds carrying lower coupon interest rate can be issued resulting in overall saving of cash outflows.

Money Market Instruments

The instruments of money market are characterised by



Type of Money Market Instruments

Call/ Notice money

Call money market, or inter-bank call money market, is a segment of the money market where scheduled commercial banks lend or borrow on call (i.e., overnight) or at short notice (i.e., for periods upto 14 days) to manage the day-to-day surpluses and deficits in their cash-flows.

Treasury Bills (TBs)

The TBs are short-term promissory notes issued by Government of India at a discount. Their yields can be calculated using the following formula:

$$Y = \left\{\frac{F-P}{P}\right\} \times \frac{365}{M} \times 100$$

where
Y = Yield,
F = Face Value,
P= Issue Price / purchase Price,
M= Actual days to Maturiy

Commercial Bills

A commercial bill is one which arises out of a genuine trade transaction, i.e. credit transaction. A bill of exchange contains a written order from the creditor to the debtor, to pay a certain sum, to a certain person, after a creation period. A bill of exchange is a 'self-liquidating' paper and negotiable; it is drawn always for a short period ranging between 3 months and 6 months.

Certificate of Deposit

The Certificate of Deposits (CDs) are negotiable term deposits accepted by commercial bank from bulk depositors at market related rates. CDs are usually issued in demat form or as a Usance Promissory Note.

Commercial Paper

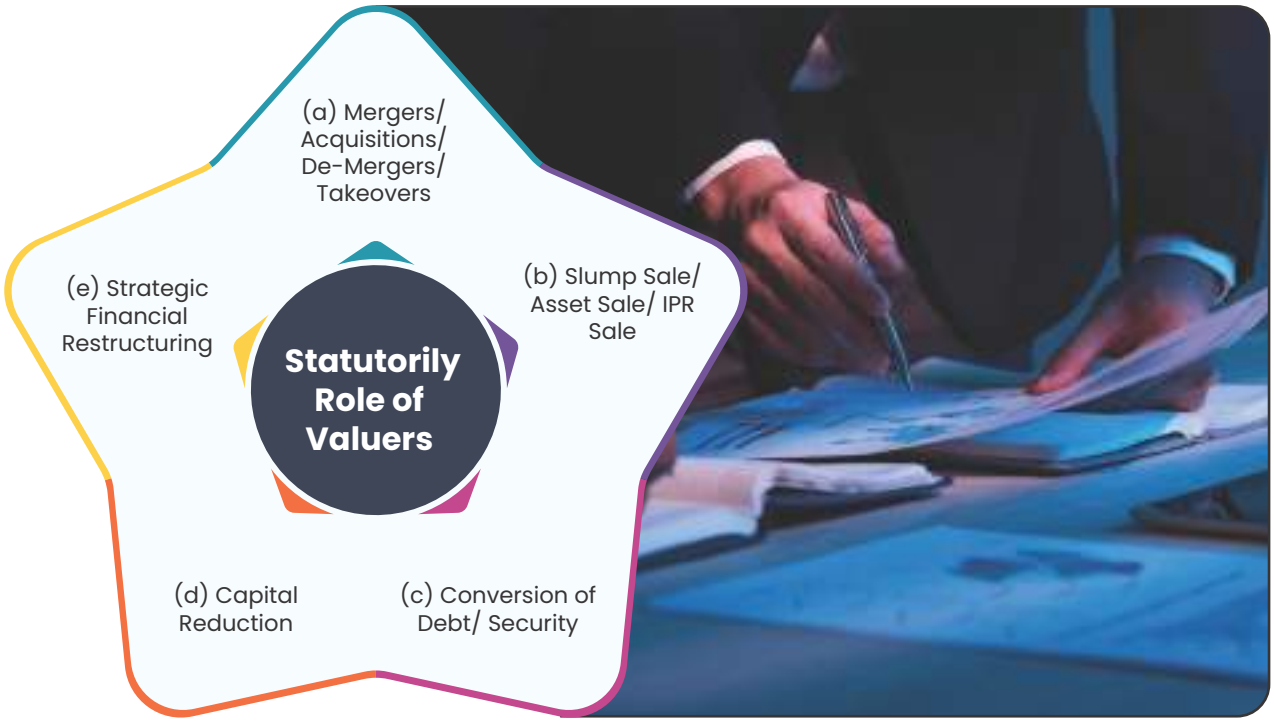
CPs are unsecured and negotiable promissory notes issued by high rated corporate entities to raise short-term funds for meeting working capital requirements directly from the market instead of borrowing from banks. Its period ranges from 7 days to 1 year. CP is issued at discount to face value

Repurchase Options and Reverse Repurchase Agreement

The term Repurchase Agreement (Repo) and Reverse Repurchase Agreement (Reverse Repo) refer to a type of transaction in which money market participant raises funds by selling securities and simultaneously agreeing to repurchase the same after a specified time generally at a specified price, which typically includes interest at an agreed upon rate.

Role and Responsibilities of Valuers

(1) Statutorily Role of Valuers



2. Responsibilities of Valuers

Precautions Need to be taken by a Valuer before Accepting any Valuation

1

A good valuation does not provide a precise estimate of value. A valuation by necessity involves many assumptions and is a professional estimate of value. The quality of a valuation will be directly proportional to the time spent in collecting the data and in understanding the firm being valued.

2

This concept is getting more and more critical in today's day and age where most emerging business are valued not on their historical performances captured in the financial statement but rather on a narrative driven factors like scalability, ease of replication, growth potential, cross sell opportunities etc.

3

More often than not, investors/users tend to focus on either numbers or the story without attempting to reach a middle ground. In both these cases, investors will fail to capture opportunities that could have been unlocked had they been willing to reach some middle ground between the two concepts.

4

While it is true that a robust intrinsic value calculation using financial statements data and an error-free model makes investing a more technical subject, in reality, emotions play a massive role in moving stocks higher or lower. Not accounting for this fact, therefore, could become an obstacle in consistently getting the valuation right.

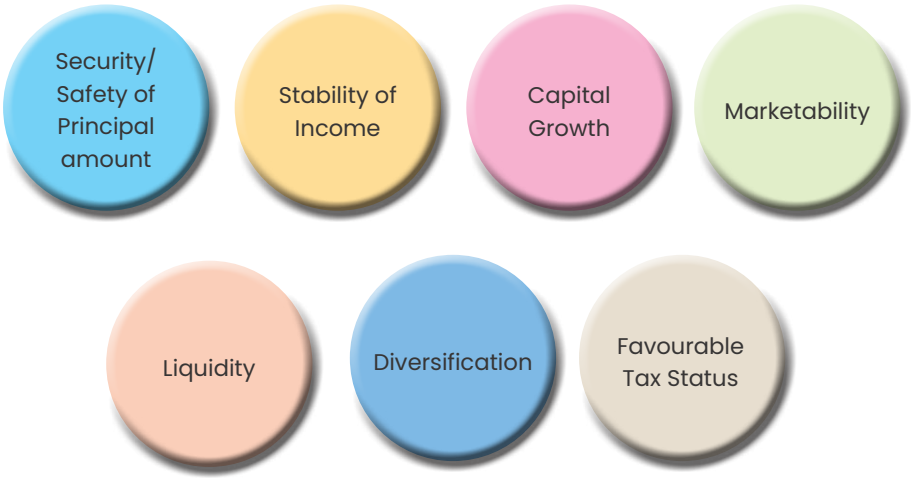
Chapter 6 – Portfolio Management

Introduction

Investment in the securities such as bonds, debentures and shares etc. is lucrative as well as exciting for the investors. Investment in a portfolio can reduce risk without diluting the returns. Every investment is characterized by return and risk. In general, risk refers to the possibility of the rate of return from a security or a portfolio of securities deviating from the corresponding expected/average rate and can be measured by the standard deviation/variance of the rate of return.

Activities in Portfolio Management

Objectives of Portfolio Management



Phases of Portfolio Management

Security Analysis – Security analysis constitutes the initial phase of the portfolio formation process and consists in examining the risk-return characteristics of individual securities and also the correlation among them.

Portfolio Analysis – Once the securities for investment have been identified, the next step is to combine these to form a suitable portfolio.

Portfolio Selection – An Efficient Portfolio has the highest return among all Feasible Portfolios having same or lower Risk or has the lowest Risk among all Feasible Portfolios having same or higher Return.

Portfolio Revision – Once an optimal portfolio has been constructed, it becomes necessary for the investor to constantly monitor the portfolio to ensure that it does not lose it optimality.

Portfolio Evaluation – This process is concerned with assessing the performance of the portfolio over a selected period of time in terms of return and risk and it involves quantitative measurement of actual return realized and the risk borne by the portfolio over the period of investment.

Portfolio Theories

Traditional Approach

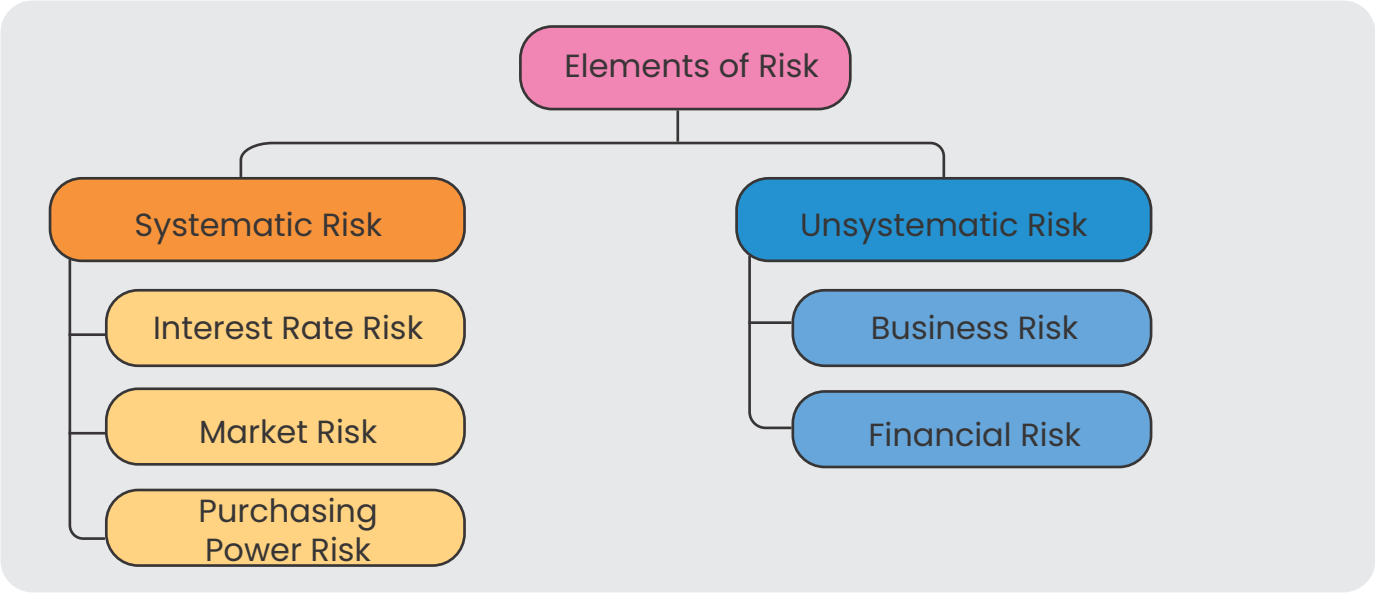
The traditional approach to portfolio management concerns itself with the investor, definition of portfolio objectives, investment strategy, diversification and selection of individual investment.

Modern Approach (Markowitz Model or Risk-Return Optimization)

The essence of his theory is that risk of an individual asset hardly matters to an investor. What really matters is the contribution it makes to the investor's overall risk.

Risk Analysis

1. Types of Risk:



Systematic Risk

The first group i.e. systematic risk comprises factors that are external to a company (macro in nature) and affect a large number of securities simultaneously. These are mostly uncontrollable in nature.

(i) **INTEREST RATE RISK**

This arises due to variability in the interest rates from time to time. A change in the interest rates establishes an inverse relationship in the price of security i.e. price of securities tends to move inversely with change in rate of interest.

(ii) **PURCHASING POWER RISK**

It is also known as inflation risk, as it also emanates from the very fact that inflation affects the purchasing power adversely. Purchasing power risk is more in inflationary conditions especially in respect of bonds and fixed income securities. It is not desirable to invest in such securities during inflationary periods.

(iii) **MARKET RISK**

This is a type of systematic risk that affects prices of any particular share move up or down consistently for some time periods in line with other shares in the market.

Unsystematic Risk

The second group i.e. unsystematic risk includes those factors which are internal to companies (micro in nature) and affect only those particular companies. These are controllable to a great extent.

(i) **BUSINESS RISK:**

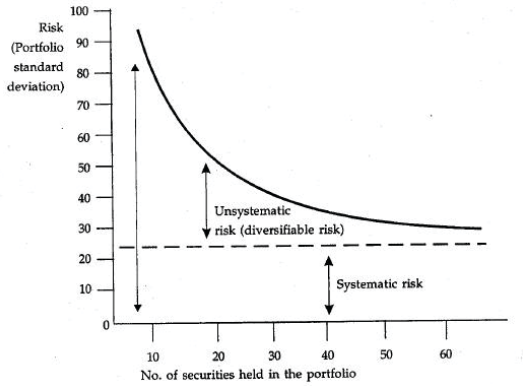
Business risk emanates from variability in operating profits of a company.

(ii) **FINANCIAL RISK**

It arises due to changes in the capital structure of the company. It is also known as leveraged risk and expressed in terms of debt-equity ratio.

Diversion of Risk

By combining many securities in a portfolio the unsystematic risk can be avoided or diversified which is attached to any particular security. The following diagram depicts how the risk can be reduced with the increase in the number of securities.



From the above diagram it can be seen that total risk is reducing with the increase in the number of securities in the portfolio. However, ultimately when the size of the portfolio reaches certain limit, it will contain only the systematic risk.

Risk & Return

An attempt is made by him/her to measure or quantify the risk of each investment under consideration before making the final selection. Thus quantification of risk is necessary for analysis of any investment.

With the help of available probability distribution two statistical measures one expected return and the other risk of the investment can be calculated.

Calculation of Expected Return

The expected return of the investment is the probability weighted average of all the possible returns. If the possible returns are denoted by X_i and the related probabilities are $p(X_i)$ the expected return may be represented as $\bar{x}$ and can be calculated as:

$$\overline{X} = \sum_{i=1}^{n} x_i \, p(X_i)$$

It is the sum of the products of possible returns with their respective probabilities.

Measurement of Risk

Risk aspect should also be considered along with the expected return. The most popular measure of risk is the variance or standard deviation of the probability distribution of possible returns.

Variance of each security is generally denoted by σ^2 and is calculated by using the following formula:

$$\sum_{i=1}^{n} [(X_i - \bar{X})^2 \, p(X_i)]$$

Measurement of Systematic Risk

The systematic risk of a security is measured by a statistical measure which is called Beta (ß). There are two statistical methods i.e. correlation method and the regression method, which can be used for the calculation of Beta.

Correlation Method

Using this method beta (ß) can be calculated from the historical data of returns by the following formula:

$$\beta_i = \frac{r_{im} \sigma_i \sigma_m}{\sigma_m^2}$$

Where

r_{im} = Correlation coefficient between the returns of the stock i and the returns of the market index.

σ_i = Standard deviation of returns of stock i

σ_m = Standard deviation of returns of the market index.

σ^2_m = Variance of the market returns

Regression Method:

The regression model is based on the postulation that there exists a linear relationship between a dependent variable and an independent variable. The model helps to calculate the values of two constants, namely Alfa (α) and Beta (ß). The formula of the regression equation is as follows: $Y = \alpha + ßX$

where

Y = Dependent variable

X = Independent variable

α and ß are constants.

$\alpha = Y - ßX$

The formula used for the calculation of α and ß are given below.

$$\beta = \frac{n\sum XY - (\sum X)(\sum Y)}{n\sum X^2 - (\sum X)^2}$$

where

n = Number of items.

Y = Dependent variable scores.

X = Independent variable scores.

Portfolio Analysis

Portfolio Return

The formula for the calculation of expected portfolio return may be expressed as shown below:

$$\bar{r}_p = \sum_{i=1}^{n} x_i \bar{r}_i$$

$\bar{r}_p$ = Expected return of the portfolio.

X_i = Proportion of funds invested in security

$\bar{r}_i$ = Expected return of security i.

n = Number of securities in the portfolio.

Portfolio Risk

Two important terms associated with the computation of Risk of Portfolio are as follows:

(i) Covariance:

A statistical measure between two securities or two portfolios or a security and a portfolio indicates how the rates of return for the two concerned entities behave relative to each other.

The covariance between two securities A and B can be calculated using the following formula:

$$COV_{AB} = \frac{\sum [R_A - \overline{R_A}][R_B - \overline{R_B}]}{N}$$

At the beginning please add the summation sign in the numerator where

COV_{AB} = Covariance between x and y.

R_A = Return of security x.

R_B = Return of security y.

$\overline{R_A}$ = Expected or mean return of security x.

$\overline{R_B}$ = Expected or mean return of security y.

N = Number of observations.

(ii) Coefficient of Correlation:

A statistical measure between two securities or two portfolios or a security and a portfolio indicate degree of relationship with each other.

The coefficient of correlation between two securities A and B can be calculated using the following formula:

$$r_{AB} = \frac{Cov_{AB}}{\sigma_A \sigma_B}$$

where

r_{AB} = Coefficient of correlation between x and y.

Cov_{AB} = Covariance between A and B.

σ_A = Standard deviation of A.

σ_B = Standard deviation of B.

From above formula the covariance can be expressed as the product of correlation between the securities and the standard deviation of each of the securities as shown below:

$$Cov_{AB} = \sigma_A \sigma_B r_{AB}$$

The variance of a portfolio with only two securities in it can be calculated with the following formula.

$$\sigma_p^2 = x_1^2\sigma_1^2 + x_2^2\sigma_2^2 + 2x_1x_2(r_{12}\sigma_1\sigma_2)$$

where

σ_p^2 = Portfolio variance.

x_1 = Proportion of funds invested in the first security.

x_2 = Proportion of funds invested in the second security (x1+x2 = 1).

σ_1^2= Variance of first security.

σ_2^2 = Variance of second security.

σ_1 = Standard deviation of first security.

σ_2 = Standard deviation of second security.

r_{12} = Correlation coefficient between the returns of the first and second securities.

Risk & Return

In order to understand the mechanism and power of diversification, it is necessary to consider the impact of covariance or correlation on portfolio risk more closely. Following three cases taking two securities in the portfolio:

Case	Formula for Variance	Formula for Standard Deviation	Movement
Perfectly Positively Correlated	$\sigma_p^2 = (x_1\sigma_1 + x_2\sigma_2)^2$	$\sigma_p = x_1\sigma_1 + x_2\sigma_2$	Returns of securities then move up or down together.
Perfectly Negatively Correlated	$\sigma_p^2 = (x_1\sigma_1 - x_2\sigma_2)^2$	$\sigma_p = x_1\sigma_1 - x_2\sigma_2$	Two returns always move in exactly opposite directions
Returns are uncorrelated or independent	$\sigma_p^2 = x_1^2\sigma_1^2 + x_2^2\sigma_2^2$	$\sigma_p = \sqrt{x_1^2\sigma_1^2 + x_2^2\sigma_2^2}$	Returns of two securities are entirely uncorrelated

Calculation of Return and Risk of Portfolio with more than two securities

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. 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.

A convenient way to obtain the result is to set up the data required for calculation in the form of a variance-covariance matrix.

The first cell in the first row of the matrix represents X and X the second cell in the first row represents securities X and Y, and so on. The variance or covariance in each cell has to be multiplied by the weights of the respective securities represented by that cell. These weights are available in the matrix at the left side of the row and the top of the column containing the cell.

This process may be started from the first cell in the first row and continued for all the cells till the last cell of the last row is reached.

Once the variance-covariance matrix is set up, the computation of portfolio variance is a comparatively simple operation. Each cell in the matrix represents a pair of two securities.

When all these products are summed up, the resulting figure is the portfolio variance. The square root of this figure gives the portfolio standard deviation.

Hence, the formula for computing Portfolio Variance may also be stated as follows:

$$\sigma_p^2 = \sum_{i=1}^{n}\sum_{j=1}^{n} x_i x_j r_{ij} \sigma_i \sigma_j \quad \text{Or} \quad \sigma_p^2 = \sum_{i=1}^{n}\sum_{j=1}^{n} x_i x_j \sigma_{ij}$$

where

σ_p^2 = Portfolio variance.

x_i = Proportion of funds invested in security i (the first of a pair of securities).

x_j = Proportion of funds invested in security j (the second of a pair of securities).

σ_i = Standard Deviation of security i

σ_j = Standard Deviation of security j

r_{ij} = The co-efficient of correlation between the pair of securities i and j

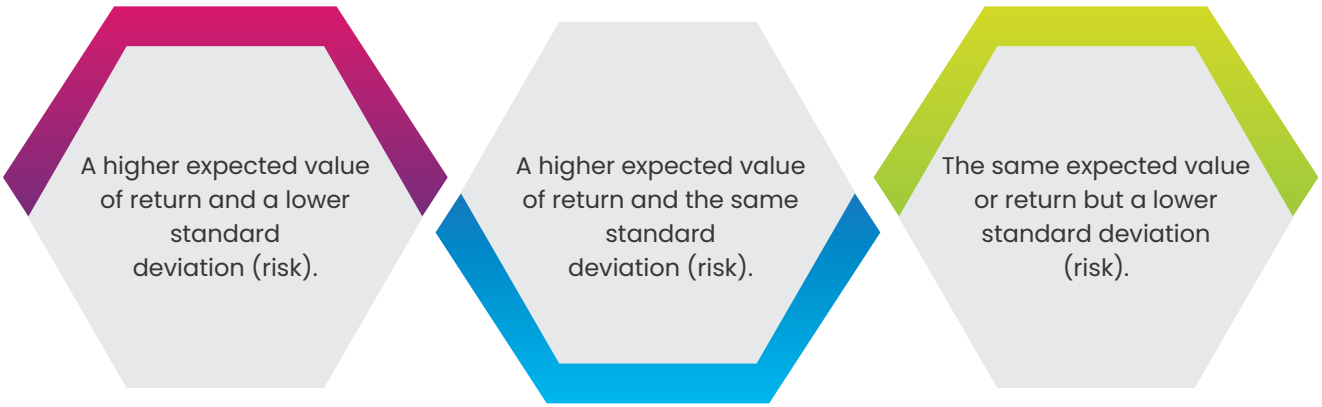
σ_{ij} = The covariance between the pair of securities i and j

n = Total number of securities in the portfolio.

Markowitz's Model of Risk Return Optimisation

The essence of the theory is that risk of an individual asset hardly matters to an investor. The investor is more concerned to the contribution it makes to his total risk. Markowitz has formalized the risk return relationship and developed the concept of efficient frontier. For selection of a portfolio, comparison between combinations of portfolios is essential. The investor has to select a portfolio from amongst all those represented by the efficient frontier. This will depend upon his risk-return preference. As different investors have different preferences with respect to expected return and risk, the optimal portfolio of securities will vary considerably among investors.

As a rule, a portfolio is not efficient if there is another portfolio with:



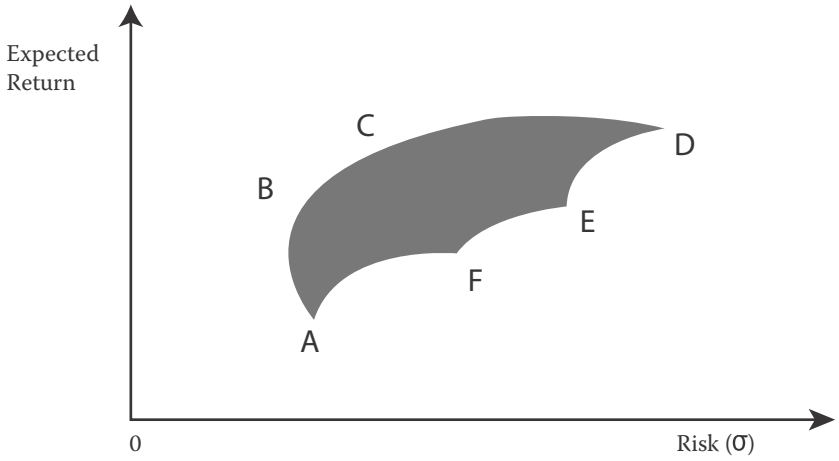
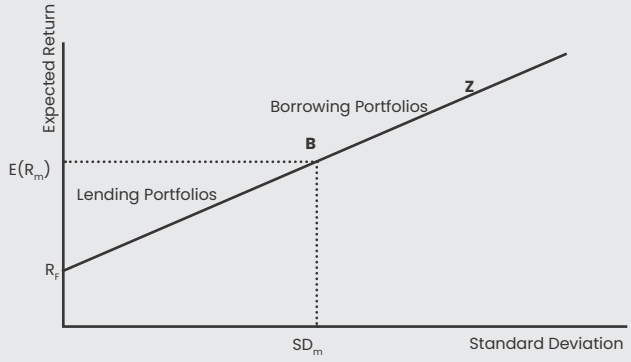


Fig. Markowitz Efficient Frontier

Capital Market Theory

The figure of Markowitz Model portrays the relationship between risk and return for efficient portfolio graphically. Point B represents the market portfolio and if a line tangent to this point is drawn and extended upto y-axis the point at which it will touch will be the riskless rate of interest.



Preferred investment strategies plot along line R_fBZ, representing alternative combinations of risk and return obtainable by combining the market portfolio with borrowing or lending. This is known as the Capital Market Line (CML). Portfolio lying on line from Rf to B shall be lending portfolio as it will involve some investment in risk-free securities and some investment in market portfolio. Portfolios lying from B to Z will be borrowing portfolio as it will be an investment in market portfolio by borrowing the same amount.

The slope of the capital market line can be regarded as the reward per unit of risk borne and it is computed as follows:

$$\text{Slope} = \frac{R_M - R_F}{\sigma_M}$$

Where R_M = Market Return

R_f = Risk Free Rate of Return

σ_M = Standard Deviation of Market

From the Capital Market Line the expected return of a portfolio can be found as follows:

$$E(R) = R_f + \frac{R_M - R_F}{\sigma_M} \times \sigma_P$$

Where σ_P = Standard Deviation of Portfolio

Single Index Model (Sharpe Index Model)

This model assumes that co-movement between stocks is due to change or movement in the market index. Towards this purpose, the following equation can be used:

$$R_i = \alpha_i + \beta_i R_m + \in_i$$

Where,

R_i = expected return on security i

α_i = intercept of the straight line or alpha co-efficient

$ß_i$ = slope of straight line or beta co-efficient

R_m = the rate of return on market index

$\in_i$ = error term or return expected on account of unsystematic risk

The variance of security's return:

$$\sigma^2 = \beta^2_i \sigma^2_m + \sigma^2_{\in i}$$

The covariance of returns between securities i and j is:

$$\sigma_{ij} = \beta_i \beta_j \sigma^2_m$$

The variance explained by the index is referred to as systematic risk. The unexplained variance is called Residual Variance or Unsystematic Risk.

The systematic risk can be calculated by using following formula:

$$\text{Systematic risk} = \beta^2_i \times \text{variance of market index}$$

$$= \beta^2_i \sigma^2_m$$

Unsystematic risk = Total variance - Systematic risk.

$$\in_i^2 = \sigma_i^2 \text{ - Systematic risk.}$$

Thus, the total risk = Systematic risk + Unsystematic risk.

$$= \beta_i^2 \ \sigma_m^2 + \in_i^2.$$

From this, the portfolio variance can be derived

$$\sigma_p^2 = \left[\left(\sum_{i=1}^{N} X_i \beta_i\right)^2 \sigma_m^2\right] + \left[\left(\sum_{i=1}^{N} X_i^2 \in_i^2\right)\right]$$

Where,

σ_p^2 = variance of portfolio

σ_m^2 = expected variance of index

$\in_i^2$ = variation in security's return not related to the market index

X_i = the portion of stock i in the portfolio.

$ß_i$ = Beta of stock i in the portfolio

Likewise expected return on the portfolio also can be estimated. For each security α_i and $ß_i$ should be estimated.

$$R_P = \sum_{i=1}^{N} x_i (\alpha_i + \beta_i R_m)$$

$ß_i$ = Value of the beta for security i

x_i = Proportion of the investment on security i

α_i = Value of alpha for security i

N = The number of securities in the portfolio

A portfolio's alpha value is the weighted average of the alpha values for its component securities using the proportion of the investment in a security as weight.

$$\alpha_P = \sum_{i=1}^{N} x_i \alpha_i$$

α_p = Value of the alpha for the portfolio

Similarly, a portfolio's beta value is the weighted average of the beta values of its component stocks using relative share of them in the portfolio as weights.

$$\beta_P = \sum_{i=1}^{N} x_i \beta_i$$

Where,

βP = Value of the beta for the portfolio.

Arbitrage Pricing Theory Model (APT)

Arbitrage pricing theory (APT) is used as an alternative to Capital Assets Pricing Model (CAPM). While the CAPM formula helps to calculate the market's expected return, APT uses the risky asset's expected return and the risk premium of a number of macroeconomic factors.

Accordingly, in a simplistic way, the stocks' return would be in the following manner:

$E(Ri) = Rf + \lambda_1\beta_1 + \lambda_2\beta_2 + \lambda_3\beta_3 \ldots\ldots\ldots\ldots \lambda_n\beta_n$

Where,

Rf = Risk Free Rate

λ_n = nth factor price or risk premium

$ß_n$ = Sensitivity of the Factor n

Further according to Ross, if no surprise happens to these macro-economic factors then actual returns shall be equal to expected. In case, if any unanticipated changes happens in these factors, then formula of APT shall be as follows:

$E(R) = R_f + ß_1 (EV1 - AV1) + ß_2 (EV_2 - AV_2) + \ldots\ldots\ldots ß_n (EV_n - AV_n)$

Where

$(EV_n - AV_n)$ = Surprise Factor due to change in the Value of Factor

R_f = Risk Free Rate of Return

$ß_n$ = Sensitivity of corresponding Macro-economic factor

Portfolio Evaluation

SHARPE RATIO

Measures the Risk Premium per unit of Total Risk for a security or a portfolio of securities.

Formula

$$\frac{R_i - R_f}{\sigma_i}$$

Where

R_i = Expected return on stock i

R_f = Return on a risk less asset

σ_i = Standard Deviation of the rates of return for the i Security or Portfolio

TREYNOR RATIO

Measures the Risk Premium per unit of Systematic Risk (ß) for a security or a portfolio of securities.

Formula

$$\frac{R_i - R_f}{ß_i}$$

Where

R_i = Expected return on stock i

R_f = Return on a risk less asset

$ß_i$ = Expected change in the rate of return on stock i associated with one unit change in the market return (Beta)

JENSEN ALPHA

This is the difference between a portfolio's actual return and those that could be expected in line with systematic risk of a security or portfolio using CAPM. Hence, purely a reward for bearing market risk.

Sharpe's Optimal Portfolio

William Sharpe has developed a simplified variant of Markowitz model that reduces substantially its data and computational requirements.

This model is based on desirability of an investor for excess return of risk free rate of return to beta. Accordingly, the ranking of securities shall be based on the Sharpe Ratio and unique cut off point C* discussed below.

The steps for finding out the stocks to be included in the optimal portfolio are given below:

(a) Find out the "excess return to beta" ratio for each stock under consideration i.e. Treynor's ratio.

(b) Rank them from the highest to the lowest.

(c) Proceed to calculate Ci for all the stocks according to the ranked order using the following formula:

$$C_i = \frac{\sigma_m^2 \sum_{i=1}^{N} \frac{(R_i - R_f)\,\beta_i}{\sigma_{ei}^2}}{1 + \sigma_m^2 \sum_{i=1}^{N} \frac{\beta_i^2}{\sigma_{ei}^2}}$$

Where,

σ_m^2 = variance of the market index

σ_{ei}^2 = variance of a stock's movement that is not associated with the movement of market index i.e. stock's unsystematic risk.

(d) Compute the cut-off point which the highest value of Ci and is taken as C*. The stock whose excess-return to risk ratio is above the cut-off ratio are selected and all whose ratios are below are rejected.

(e) Once we came to know which securities are to be included in the optimum portfolio, we shall calculate the percent to be invested in each security by using the following formula:

$$X_i^0 = \frac{Z_i}{\sum_{j=1}^{N} Z_i}$$

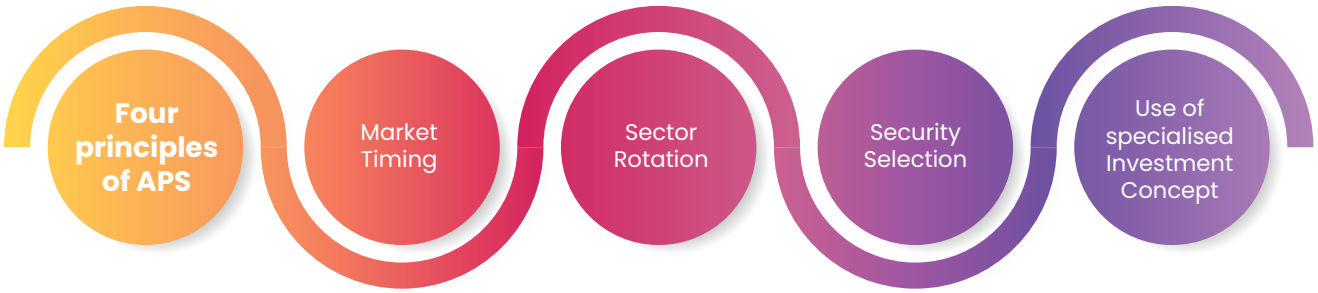
where

$$Z_i = \frac{B_i}{\sigma_{ei}^2}\left(\frac{R_i - R_0}{B_i} - C^*\right)$$

The first portion determines the weight each stock and total comes to 1 to ensure that all funds are invested and second portion determines the relative investment in each security.

Formulation of Portfolio Strategy

Active Portfolio Strategy (APS)



Passive Portfolio Strategy

Passive strategy, on the other hand, rests on the tenet that the capital market is fairly efficient with respect to the available information. Hence they search for superior return. Basically, passive strategy involves adhering to two guidelines. They are:

Guideline 1

Create a well diversified portfolio at a predetermined level of risk.

Guideline 2

Hold the portfolio relatively unchanged over time unless it became adequately diversified or inconsistent with the investor risk return preference.

Selection of Securities

(a) For Selection of Bonds

The following factors have to be evaluated in selecting fixed income avenues:

YIELD TO MATURITY

The yield to maturity for a fixed income avenues represent the rate of return earned by the investor, if he invests in the fixed income avenues and holds it till its maturity.

RISK OF DEFAULT

To assess such risk on a bond, one has to look at the credit rating of the bond. If no credit rating is available relevant financial ratios of the firm have to be examined such as debt equity, interest coverage, earning power etc and the general prospect of the industry to which the firm belongs have to be assessed.

TAX SHIELD

In the past, several fixed income avenues offers tax shields but at present only a few of them do so.

LIQUIDITY

If the fixed income avenues can be converted wholly or substantially into cash at a fairly short notice it possesses a liquidity of a high order.

(b) For selection of Stock (Equity Share)

Following three approaches are applied for selection of equity shares:

(i) Technical analysis looks at price behaviours and volume data to determine whether the share price will move up or down or remain trend less

(ii) Fundamental analysis focuses on fundamental factors like earning level, growth prospects and risk exposure to establish intrinsic value of a share. The recommendation to buy hold or sell is based on comparison of intrinsic value and prevailing market price.

(iii) Random selection analysis is based on the premise that the market is efficient and security is properly priced.

Portfolio Revision and Rebalancing

It means the value of portfolio as well as its composition. The relative proportion of bond and stocks may change as stock and bonds fluctuate in response to such changes. Therefore, Portfolio rebalancing is necessary. Policies of Portfolio Rebalancing

Buy and Hold Policy

Sometime this policy is also called 'do nothing policy' as under this strategy no balancing is required and therefore investor maintains an exposure to stocks and therefore linearly related to the value of stock in general.

Constant Mix Policy

This strategy involves periodic rebalancing to required (desired) proportion by purchasing and selling stocks as and when their prices goes down and up respectively.

Constant Proportion Insurance Policy

Under this strategy investor sets a floor below which he does not wish his asset to fall called floor, which is invested in some non-fluctuating assets such as Treasury Bills, Bonds etc.

Asset Allocation Strategies

Many portfolios containing equities also contain other asset categories, so the management factors are not limited to equities. There are four asset allocation strategies:

Integrated Asset Allocation	Under this strategy, capital market conditions and investor objectives and constraints are examined and the allocation that best serves the investor's needs while incorporating the capital market forecast is determined.
Strategic Asset Allocation	Under this strategy, optimal portfolio mixes based on returns, risk, and covariances is generated using historical information and adjusted periodically to restore target allocation within the context of the investor's objectives and constraints.
Tactical Asset Allocation	Under this strategy, investor's risk tolerance is assumed constant and the asset allocation is changed based on expectations about capital market conditions.
Insured Asset Allocation	Under this strategy, risk exposure for changing portfolio values (wealth) is adjusted; more value means more ability to take risk.

Fixed Income Portfolio

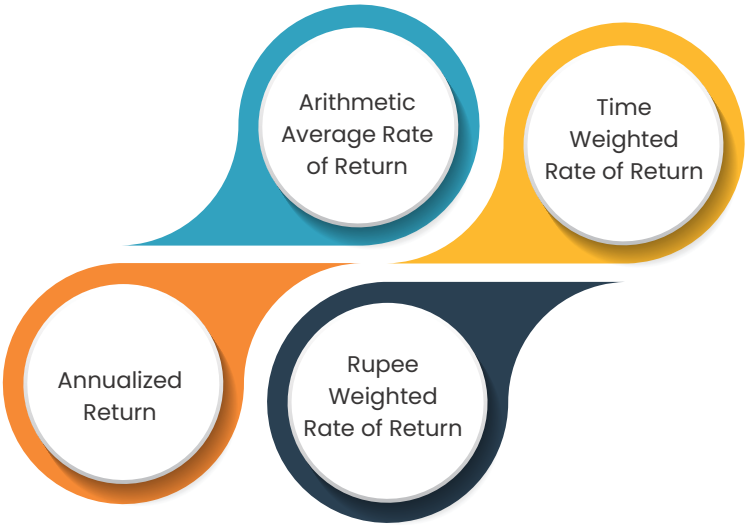
Fixed Income Portfolio is same as equity portfolio with difference that it consists of fixed income securities such as bonds, debentures, money market instruments etc. Since it mainly consists of bonds, it is also called Bond Portfolio.

Fixed Income Portfolio Process

Just like other portfolios, following five steps are involved in fixed income portfolio.

Calculation of Return on Fixed Income Portfolio

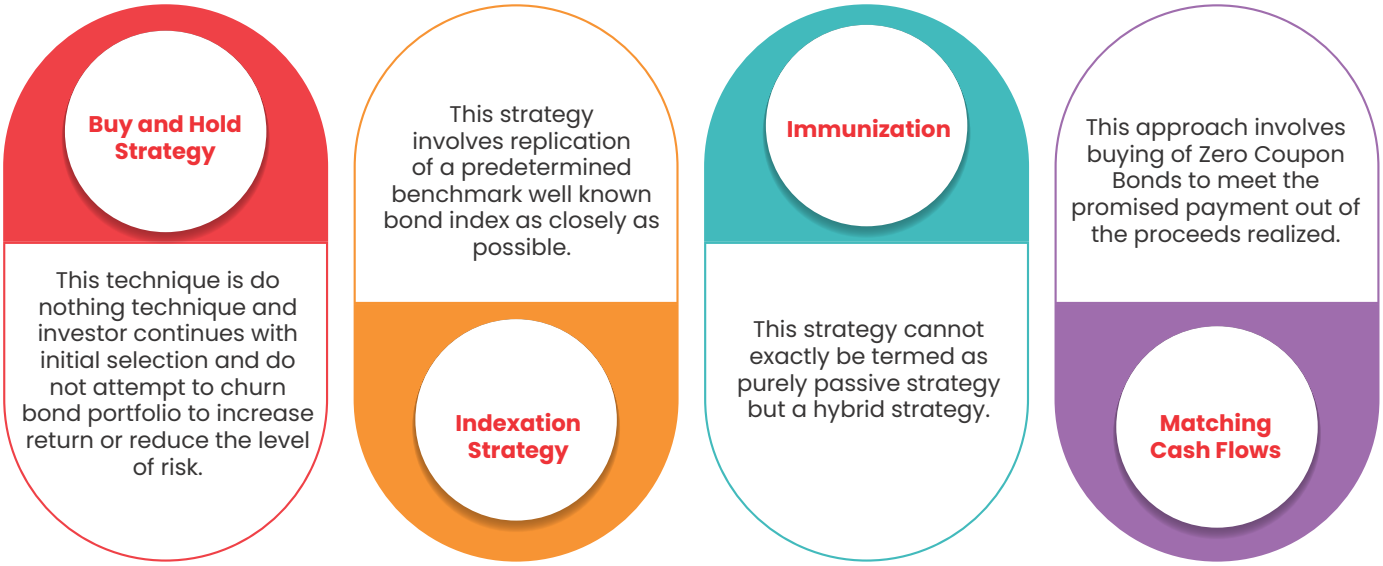
Although there can be many types of measuring returns as per requirements but some of the commonly used measures are :



Fixed Income Portfolio Management Strategies

(i) Passive Strategy

Common strategies applied by passive investors of fixed income portfolios are as follows:



(ii) Active Strategy

Following are some of active strategies:

(1) **Forecasting Returns and Interest Rates:** This strategy involves the estimation of return on basis of change in interest rates. Based on short term yield movement following three strategies can be adopted:

- **(a) Bullet Strategy:** This strategy involves concentration of investment in one particular bond. This type of strategy is suitable for meeting the fund after a point of time such as meeting education expenses of children etc. For example, if 100% of fund meant for investing in bonds is invested in 5-years Bond.
- **(b) Barbell Strategy:** As the name suggests this strategy involves investing equal amount in short term and long term bonds. For example, half of fund meant for investment in bonds is invested in 1-year Bond and balance half in 10-year Bonds.
- **(c) Ladder Strategy:** This strategy involves investment of equal amount in bonds with different maturity periods. For example if 20% of fund meant for investment in bonds is invested in Bonds of periods ranging from 1 year to 5 years.

(2) **Bond Swaps:** This strategy involves regularly monitoring bond process to identify mispricing and try to exploit this situation. Some of the popular swap techniques are as follows:

(a) Pure Yield Pickup Swap - This strategy involves switch from a lower yield bond to a higher yield bonds of almost identical quantity and maturity. This strategy is suitable for portfolio manager who is willing to assume interest rate risk as in switching from short term bond to long term bonds to earn higher rate of interest, he may suffer a capital loss.

(b) Substitution Swap - This swapping involves swapping with similar type of bonds in terms of coupon rate, maturity period, credit rating, liquidity and call provision but with different prices. This type of differences exits due to temporary imbalance in the market. The risk a portfolio manager carries if some features of swapped bonds may not be truly identical to the swapped one.

(c) International Spread Swap – In this swap portfolio manager is of the belief that yield spreads between two sectors is temporarily out of line and he tries to take benefit of this mismatch. Since the spread depends on many factor and a portfolio manager can anticipate appropriate strategy and can profit from these expected differentials.

(d) Tax Swap – This is based on taking tax advantage by selling existing bond whose price decreased at capital loss and set it off against capital gain in other securities and buying another security which has features like that of disposed one.

(3) **Interest Rate Swap:** Interest Rate Swap is another technique that is used by Portfolio Manager.

Alternative Investment Avenues

Plainly speaking, Alternative Investments (AIs) are Investments other than traditional investments (stock, bond and cash).

Features of Alternative Investments

Following are some common features of Alternative Investments

Some of the types of Alternative Investments are as follows:

Real Estates

As opposed to financial claims in the form of paper or a dematerialized mode, real estate is a tangible form of assets which can be seen or touched. Real Assets consists of land, buildings, offices, warehouses, shops etc.

Valuation of Real Estates

Generally, following four approaches are used in valuation of Real estates:

Sales Comparison Approach

It is like Price Earning Multiplier as in case of equity shares. Benchmark value of similar type of property can be used to value Real Estate.

Income Approach

This approach like value of Perpetual Debenture or unredeemable Preference Shares. In this approach the perpetual cash flow of potential net income (after deducting expense) is discounted at market required rate of return.

Cost Approach

In this approach, the cost is estimated to replace the building in its present form plus estimated value of land. However, adjustment of other factors such as good location, neighbourhood is also made in it.

Discounted After Tax Cash Flow Approach

In comparison to NPV technique, PV of expected inflows at required rate of return is reduced by amount of investment.

Gold

Being a real asset Gold is an attractive alternative form of investment by various categories of investors. Hence with the passage of time other forms have been evolved some of which are as follows:

GOLD BARS

An alternative to investment in jewellery, investors can buy gold coins/ bar of different denominations. However, similar to jewellery this form of investment suffers from the limitation of cost of physical storage.

SOVEREIGN GOLD BONDS (SGBS)

Investors have to pay the issue price in cash and the bonds will be redeemed in cash on maturity. The Bond is issued by Reserve Bank on behalf of Government of India. The quantity of gold for which the investor pays is protected, since he receives the ongoing market price at the time of redemption/ premature redemption.

E-GOLD

Each unit of e-gold is equivalent to one gram of physical gold and is held in the Demat account (different from holding and transacting in equities). Like Gold ETFs, e-gold units are fully backed by an equivalent quantity of gold kept with the custodian and have less storage cost compared to physical gold. These units can be traded on the exchange.

GOLD EXCHANGE TRADED FUNDS (ETFS)

Prices of Gold ETFs are based on gold prices and investment of fund amount is made in gold bullion. Further because of its direct gold pricing, there is a complete transparency on the holdings of an ETF. Compared to physical gold investments due to its unique structure and creation mechanism, the ETFs have much lower expenses.

Distressed Securities

It is purchasing the securities of companies that are in or near bankruptcy. Since these securities are available at very low price, the main purpose of buying such securities is to make efforts to revive the sick company. Further, these securities are suitable for those investors who cannot participate in the market and those who wants to avoid due diligence.

On the face, investment in distressed securities appears to be a good proposition but following types of risks are needed to be analyzed.

Chapter 7 – Securitization

Concept of Securitization

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

Creation of Financial Instruments

Creation of additional financial product of securities in market backed by collaterals.

Bundling and Unbundling

Bundling - All the assets are combined in one pool. Unbundling – Pool is broken into instruments of fixed denominations.

Tool of Risk Management

In case securitization is on a nonrecourse basis then the risk of default is shifted.

Structured Finance

Financial instruments created out of pool are tailor structured to meet the Risk Return Trade-off profile of different investors.

Tranching

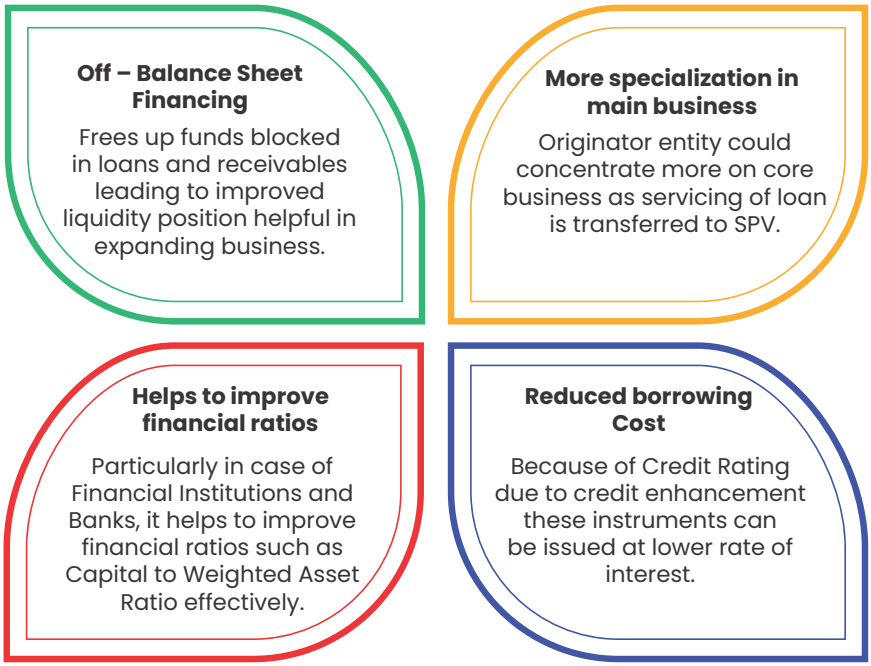
Splitting of portfolio of different receivables/ loans/ assets into several parts based on carrying different levels of risk and return.

Homogeneity

Under each tranche, the securities issued are of homogenous nature.

Benefits of Securitization

From the angle of originator



From the angle of investor

DIVERSIFICATION OF RISK:

Securities backed by different types of assets provides the diversification of portfolio.

REGULATORY REQUIREMENT:

Acquisition of asset backed securities belonging to a particular industry, say micro industry helps banks to meet the regulatory requirement of investment of funds in a specific industry.

PROTECTION AGAINST DEFAULT:

In case of recourse arrangement, in case of any default by third party, the originator shall make good the amount. Moreover, insurance arrangement can be made for any such default.

Participants in Securitization

Primary Participants

ORIGINATOR

It is an entity that initiates the deal and sells the illiquid mortgage based assets to the Special Purpose Vehicle (SPV).

SPECIAL PURPOSE VEHICLES

Created for sole purpose of executing the securitization deal. Since the originator transfers all its rights in assets to SPV, it holds the legal title of these assets. It converts those illiquid assets into marketable securities which are issued to the investors.

INVESTORS

This may be an individual, an institutional investor such as mutual fund, provident fund, insurance companies, financial Institutions etc., who buys securitized papers.

Secondary Participants

Obligors

Parties who owe money to the originator i.e. assets on the Originator's Balance Sheet.

Rating Agency

Provide credit rating to the securitized instruments which are assessed in terms of their credit quality before issuing them to the investors.

Receiving and Paying agents (RPA)

Also called Servicer or Administrator who collects payment due from obligor(s) and pass it to the SPV.

Agent or Trustee

To take care of the interest of investors by overseeing that all parties to the deal perform in the true spirit of the terms of the agreement.

Credit Enhancer

Tries to improve the credit ratings of the securitized instruments.

Structurer

Basically, Investment Bankers also called arrangers of the securitization deal who ensures that deal meets all the legal, regulatory, accounting, and tax laws requirements.

Mechanism of Securitization

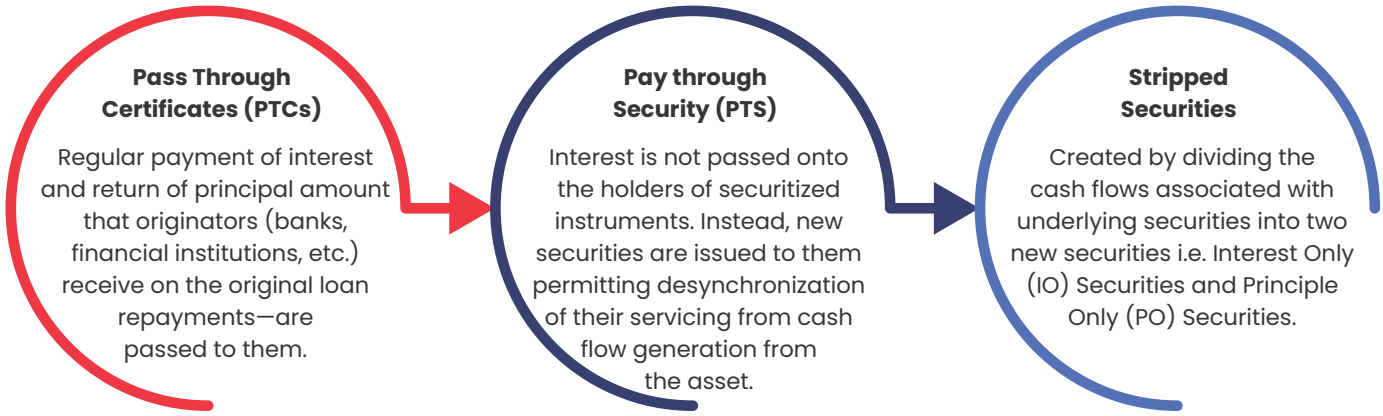
CREATION OF POOL OF ASSETS	Creation of pool of assets by segregation of assets backed by similar type of mortgages in terms of interest rate, risk, maturity and concentration units.
TRANSFER TO SPV	Pooled assets are transferred to Special Purpose Vehicle (SPV) especially created for this purpose.
SALE OF SECURITIZED PAPERS	Designing of certificates out of the pool of assets to be issued to investors based on the nature of interest, risk, tenure, etc.
ADMINISTRATION OF ASSETS	Originator works as a conduit which collects the principal and the interest from underlying assets and transfers it to the SPV.
RECOURSE TO ORIGINATOR	Depending on the terms of agreement in case of default, instruments go back to originator from SPV.
REPAYMENT OF FUNDS	SPV will repay the funds in the form of interest and principal that arises from the assets pooled.
CREDIT RATING TO INSTRUMENTS	Before the sale of securitized instruments, credit rating can be done to assess the risk of the issuer.

Problems in Securitization

STAMP DUTY	Under the Transfer of Property Act, 1882, a mortgage debt stamp duty that goes up to 12% in some states of India has impeded the growth of securitization in India.
TAXATION	In the absence of any specific provision in the Income Tax Act, there is a difference of opinion among experts.
ACCOUNTING	Though Securitization is an off-balance sheet instrument but problem arises especially when assets are transferred without recourse.
LACK OF STANDARDIZATION	Every originator follows its own format for documentation and this leads to lack of standardization.
INADEQUATE DEBT MARKET	The lack of existence of a well-developed debt market in India.
INEFFECTIVE FORECLOSURE LAWS	Foreclosure laws are not supportive to the lending institutions and this makes securitized instruments especially mortgaged-backed securities less attractive as the lenders face difficulty in the transfer of property in the event of default by the borrower.

Securitization Instruments

The securitized instruments can be divided into following three categories:



Pricing of Securitized Instruments

From Originator's Angle

Can be priced at a rate at which the originator has incurred an outflow by giving loans to the original borrowers and if that outflow can be amortized over a period of time by investing the amount raised through securitization.

From Investor's Angle

Can be determined by discounting expected future cash flows using yield to maturity of a comparable security with respect to credit quality and average life of the securities.

Risks in Securitization

1. Credit risk or Counterparty risk

It is the prime risk wherein investors are prone to the risk of bankruptcy and non-performance of the servicer.

2. Legal risks

Since in India there is an absence of conclusive judicial precedent or explicit statutory provisions on securitization transactions, any dispute over the legal ownership of the assets is likely to result in uncertainty regarding investor pay-outs from the pool cash flow.

3. Market risks

Market risks represent risks external to the transaction and include market-related factors that impact the performance of the transaction. Some of these risks are as follows:

(a) MACROECONOMIC RISKS:

The performance of the underlying loan contracts depends on macroeconomic factors, such as industry downturns or adverse price movements of the underlying assets

(b) PREPAYMENT RISKS:

A change in the market interest rate represents a difficult situation for investors because it is a combination of prepayment risk and volatile interest rates.

(c) INTEREST RATE RISKS:

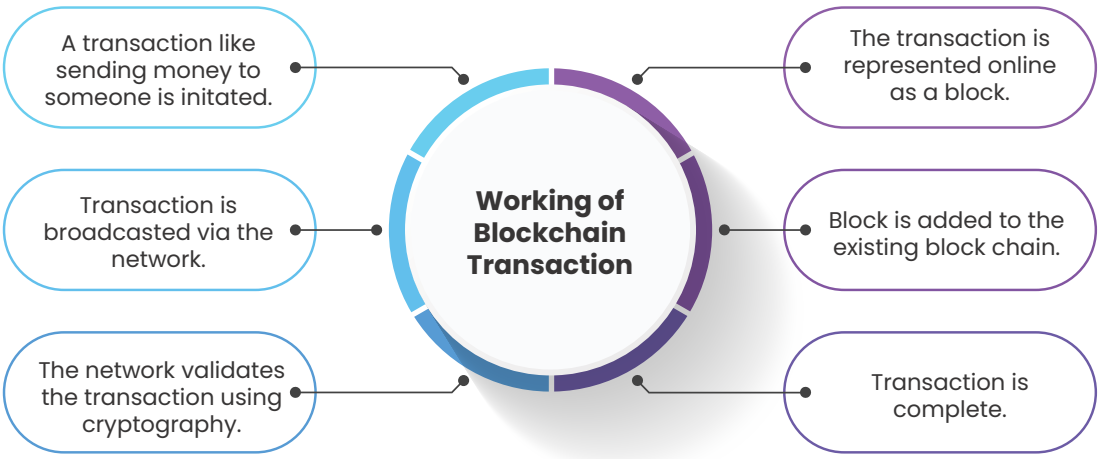
This risk is prominent where the loans in the pool are based on a floating rate and investor pay-outs are based on a fixed rate or vice versa.

Tokenization

Before we discuss the concept of Tokenization it is necessary to understand the concept of Blockchain.

Blockchain, sometimes referred to as Distributed Ledger Technology (DLT) is a shared, peer-to-peer, and decentralized open ledger of transactions system with no trusted third parties in between. This ledger database has every entry as permanent as it is an append-only database which cannot be changed or altered. All transactions are fully irreversible with any change in the transaction being recorded as a new transaction.

Working of Blockchain Transaction



Applications of Blockchain

Financial Services	Blockchain can be used to provide an automated trade lifecycle in terms of the transaction log of any transaction of asset or property - whether physical or digital such as laptops, smartphones, automobiles, real estate, etc. from one person to another.
Healthcare	Blockchain provides secure sharing of data in healthcare industry by increasing the privacy, security, and interoperability of the data by eliminating the interference of third party and avoiding the overhead costs.
Government	Blockchain improves the transparency and provides a better way to monitor and audit the transactions in systems of land registration, vehicle registration and management, e-voting etc.
Travel Industry	Blockchain can be applied in money transactions and in storing important documents like passports/other identification cards, reservations and managing travel insurance, loyalty, and rewards thus, changing the working of travel and hospitality industry.
Economic Forecasts	Blockchain makes possible the financial and economic forecasts based on decentralized prediction markets, decentralized voting, and stock trading, thus enabling the organizations to plan and shape their businesses.

Risk associated with Blockchain

In an organisation different members for a particular blockchain may have different risk appetite/risk tolerances that may further lead to conflict when monitoring controls are designed for a blockchain.

If underlying consensus mechanism has been tampered with, it could render the financial information stored in the ledger to be inaccurate and unreliable.

In the absence of any central authority to administer and enforce protocol amendments, there could be a challenge in the development and maintenance of process control activities.

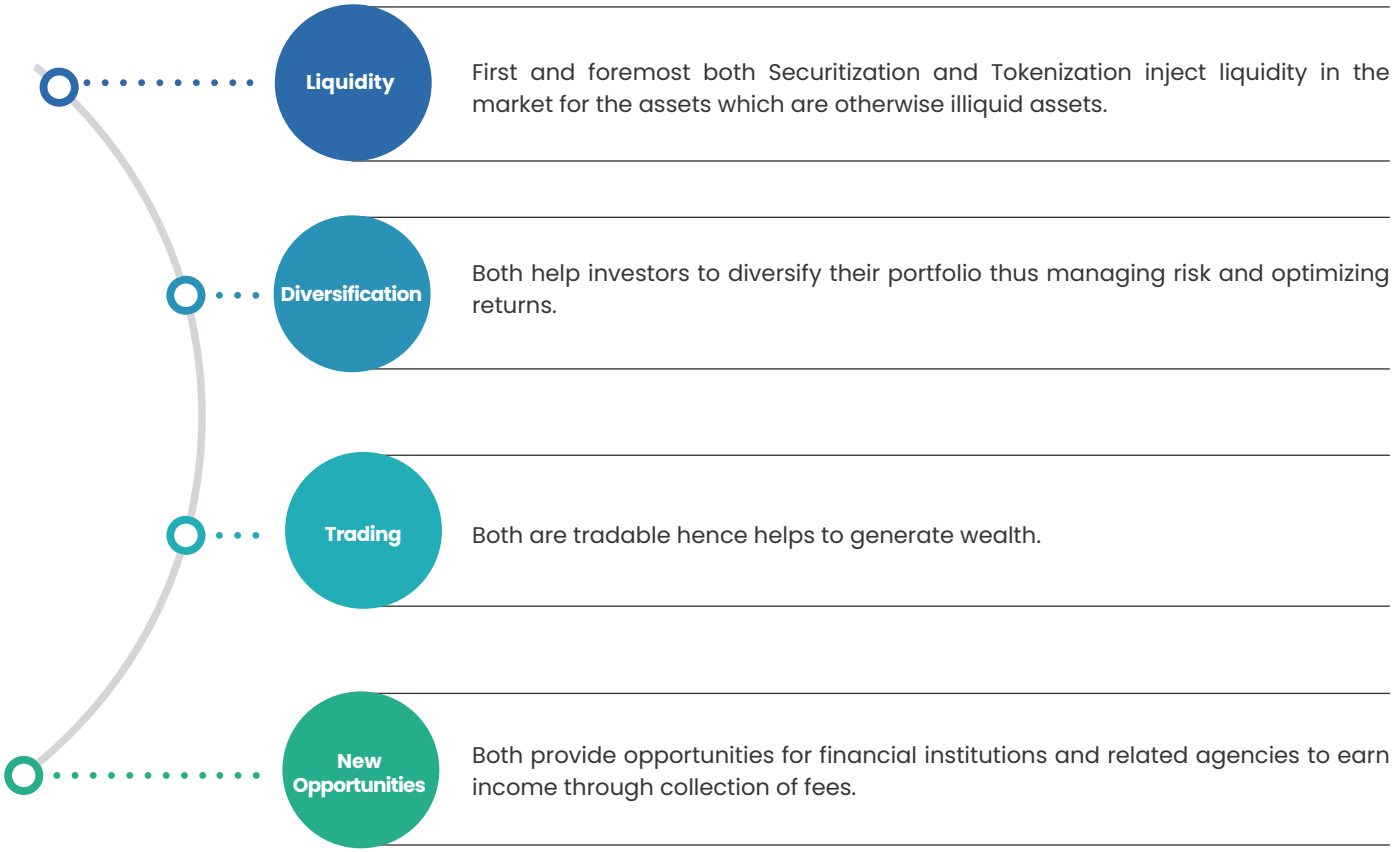
As blockchain involves humongous data getting updated frequently, risk related to information overload could potentially challenge the level of monitoring required.

Meaning of Tokenization

Tokenization is a process of converting tangible and intangible assets into blockchain tokens. Digitally representing anything has recently acquired a lot of traction. It can be effective in conventional industries like real estate, artwork etc.

Tokenization and Securitization

Some similarities between Tokenization and Securitization



Securitization in India

It is the Citi Bank who pioneered the concept of securitization in India by bundling of auto loans into securitized instruments.

Thereafter many organizations securitized their receivables. Although it started with securitization of auto loans it moved to other types of receivables such as sales tax deferrals, aircraft receivable etc.

To encourage securitization, the Government has come out with Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest (SARFAESI) Act, 2002, to tackle the menace of Non-Performing Assets (NPAs) without approaching the Court.

With growing sophistication of financial products in Indian Capital Market, securitization has occupied an important place.

Chapter 8 – Mutual Funds

Introduction

Mutual Benefits

Investing in the Capital market via mutual funds is an expert's job in the present market scenario. A regular and systematic investment into Mutual Fund can deliver good returns in the long run.

What is a Mutual Fund?

A mutual fund is a trust that pools the savings of numerous investors who share a common financial goal. A mutual fund is the most suitable investment vehicle for the investors as it offers an opportunity to invest in a basket of diversified securities managed by professionally qualified managers 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 the fund managers in different types of securities. These could range from shares and debentures to money market instruments depending upon the scheme's stated investment objectives.

The income earned through these investments and capital appreciation realized by the scheme is shared amongst its unit holders in proportion to the units owned by them.

Should we invest in Stocks or Mutual Funds?

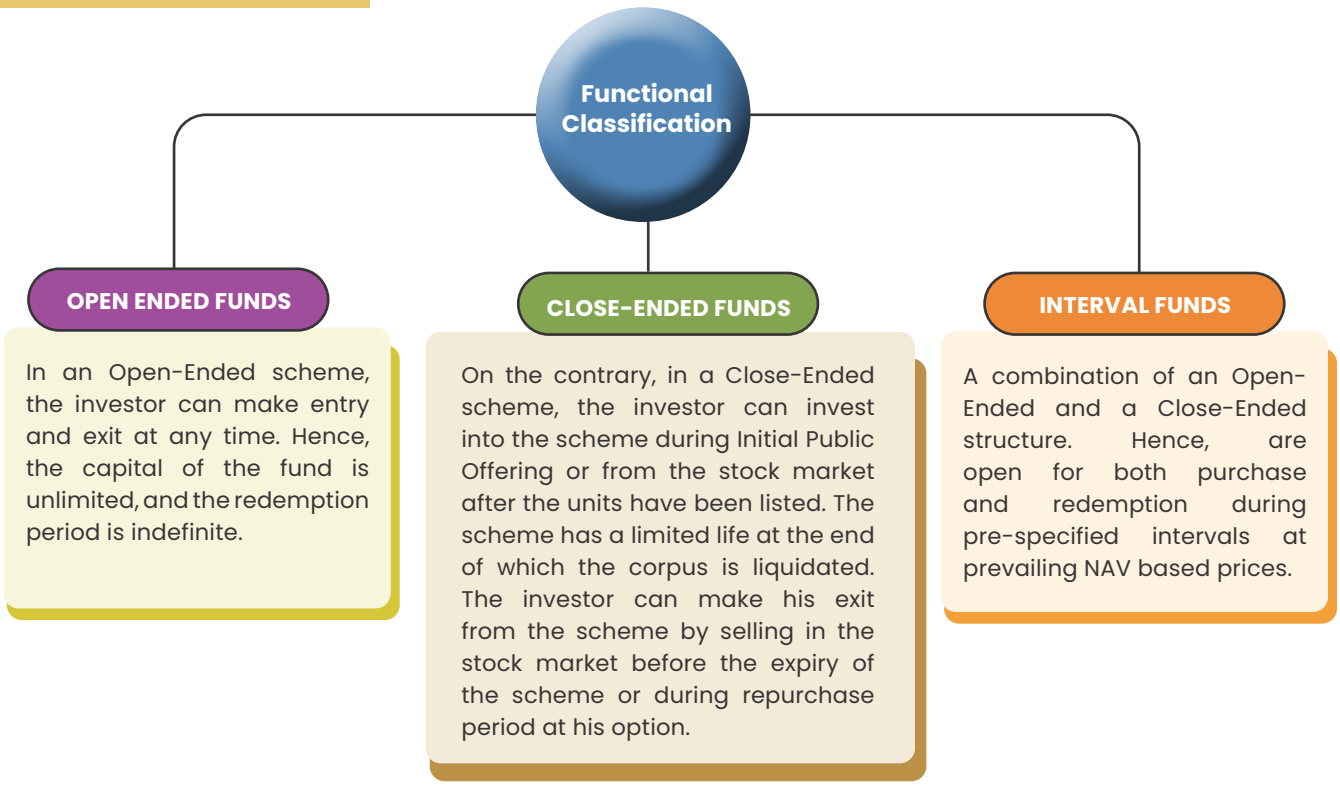
As soon as you have set your goals and decided to invest in equity, the question arises should you invest in stocks or mutual funds? Well, you need to decide what kind of an investor you are.

Let's say you can afford to invest only ₹ 1,000 a month in the Stock market. You can simply invest in a fund every month through a Systematic Investment Plan (SIP) as a matter of financial discipline. You can save yourself the trouble of scouting for a stock every month.

Mutual funds could be the best avenue for the risk-averse Investors.

Classification of Mutual Funds

Functional Classification



Portfolio Classification

Equity Funds

Equity Funds are of the following types viz.

Debt Fund

Debt Funds are of two types viz.

BOND FUNDS

Mainly invest in fixed income securities e.g. Government Bonds, Corporate Debentures, Convertible Debentures and Money Market instruments. Investors seeking tax free income or steady income may opt for such funds.

GILT FUNDS

Mainly invest in Government securities hence earns a secure income for investor in funds.

Special Funds

INDEX FUNDS	The funds get invested in these stocks exactly in the same weightage which it bears in the Index. Generally, Index Funds are low-cost funds as they are passively managed Funds.
INTERNATIONAL FUNDS	A mutual fund which raises money in India but invests globally.
OFFSHORE FUNDS	A mutual fund located in India to raise money globally for investing in India.
SECTOR FUNDS	Invest their entire fund in a particular sector e.g. Infrastructure Information Technology, Pharmaceuticals etc.
MONEY MARKET FUNDS	Predominantly debt-oriented schemes to achieve main objectives of preservation of capital, easy liquidity and moderate income. Invest majorly in safer short-term instruments like Commercial Papers, Certificate of Deposits, Treasury Bills, G-Secs, etc.
FUND OF FUNDS	As the name suggests are schemes which invest in other mutual fund schemes.
CAPITAL PROTECTION ORIENTED FUNDS	A typical portfolio structure could be to set aside major portion of the assets for capital safety and could be invested in highly rated debt instruments. The remaining portion would be invested in equity or equity related instruments to provide capital appreciation.
GOLD FUNDS	Generally in the form of an Exchange Traded Fund (ETF) which offers investors an opportunity to participate in the bullion market without having to take physical delivery of gold.
QUANT FUNDS	Works on a data-driven approach for stock selection and investment decisions based on a predetermined rules or parameters using statistics or mathematics-based models.

Ownership Classification

Funds are classified into Public Sector Mutual Funds, Private Sector Mutual Funds and Foreign Mutual Funds. Public Sector Mutual Funds are sponsored by a company of the public sector. Private Sector Mutual Fund is sponsored by a company of the private sector. Foreign Mutual Funds are sponsored by companies for raising funds in India, operate from India and invest in India.

Direct Plan in Mutual Funds

Mutual fund direct plans are those plans where Asset Management Companies do not charge distribution expenses, trail fees and transaction charges.

NAV of the direct plan is generally higher in comparison to a regular plan.

Studies have shown that the 'Direct Plans' have performed better than the 'Regular Plans' for almost all the mutual fund schemes to the extent of lower fees charged by the Mutual Fund Company.

Types of Schemes

1. **Balanced Funds** - Make strategic allocation to both debt as well as equities. It mainly works on the premise that while the debt portfolio of the scheme provides stability, the equity provides growth.

2. **Diversified Equity Funds** - A fund that contains a wide array of stocks. The fund manager ensures high level of diversification in its holdings, thereby reducing the amount of risk in the fund.

3. **Equity Linked Saving Scheme (ELSS)** - ELSS has the potential to give better returns than any traditional tax savings instrument.

4. **Sector Funds** - Highly focused on a particular industry. Since sector funds ride on market cycles, they have the potential to offer good returns if the timing is perfect.

5. **Thematic Funds** - Focusses on trends that are likely to result in the 'out-performance' by certain sectors or companies. The theme could vary from multi-sector, international exposure, commodity exposure, etc. Unlike a sector fund, theme funds have a broader outlook.

6. Arbitrage Funds - Seeks to capitalise on the price differentials between Spot and Future Markets.

7. Hedge Fund - A lightly regulated investment fund and being a sort of a private investment vehicle being offered to selected clients.

8. Cash Fund - An open ended liquid scheme that aims to generate returns with lower volatility and higher liquidity through a portfolio of debt and money market instrument.

9. Exchange Traded Funds (ETFs) - Are hybrid products that combine the features of listed stocks and index funds. These funds are listed on the stock exchanges and their prices are linked to the underlying index. ETFs can be bought and sold like any other stock on an exchange.

10. Fixed Maturity Plans (FMPs) - Close Ended Funds usually invest funds in Certificates of Deposits (CDs), Commercial Papers (CPs), Money Market Instruments and Non-Convertible Debentures over fixed investment period. Sometimes, they also invest in Bank Fixed Deposits.

Types of Equity Diversified Funds

Flexicap Fund

Under this category, the Fund Manager is allowed to invest any proportion across market cap without any restrictions. This category offers true diversification to the investors & a lot of flexibility to the Fund Managers.

Multicap Fund

This category offers diversification with a lot of discipline as a minimum percentage of the assets has to be invested across all market cap stocks.

Contra Fund

A contra fund invests in those out-of-favour companies that are unrecognized/ under valued. Investors who invest in contra funds have an aggressive risk appetite.

Index Fund

An index fund invests and track the performance of a benchmark market index like the BSE Sensex or S&P. CNX Nifty

Dividend Yield fund

A dividend yield fund invests in shares of companies having high dividend yields. Dividend yield is defined as dividend per share divided by the share's market price.

There are two options for earning Income from Mutual Fund Schemes which are enumerated as under:

a. Growth/Appreciation or Cumulative Option:

Under this option, the investor doesn't get any intermittent income. The investor gets income only at the time of withdrawal of investment.

b. Dividend Option:

Dividend option is further divided in two sub-options as under:

Dividend Payout Option: Dividends are paid out to the unit holders under this option.

Dividend Re-investment Option: The dividend that accrues on units under option is re-invested back into the scheme at ex-dividend NAV. Hence, investors receive additional units on their investments in lieu of dividends.

Types of Exchange Traded Funds

Index ETFs

That holds securities and attempt to replicate the performance of a stock market index.

Commodity ETFs

That invests in commodities, such as precious metals and Futures.

Bond ETFs

That invests in bonds are known as bond ETFs.

Currency ETFs

That provides investor access to the Foreign exchange spot change, local institutional interest rates and a collateral yield.

Advantages of Mutual Funds

Professional Management	Managed by skilled and professionally experienced managers with a back up of a Research Analysis.
Diversification	Offers diversification in portfolio which reduces the concentration risk.
Convenient Administration	As most of the Mutual Funds offer services in a demat form, it saves investor's time and prevents delay.

Higher Returns	Over a medium to long-term investment, investors always get higher returns in Mutual Funds as compared to other avenues of investment.
Low Cost of Management	No Mutual Fund can increase the cost beyond prescribed limits and any extra cost of management is to be borne by the AMC.
Liquidity	In 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.
Transparency	SEBI Regulations now compel all the Mutual Funds to disclose their portfolios on a half-yearly basis.
Other Benefits	Mutual Funds provide systematic withdrawal and systematic investment plans according to the need of the investors.
Highly Regulated	Mutual Funds in India are registered with SEBI and are strictly regulated as per the Mutual Fund Regulations which provide excellent investor protection.
Economies of Scale	Mutual funds pooled money from a large number of investors giving them the advantage of economies of scale.
Flexibility	One of the biggest advantages of Mutual fund scheme its flexibility can opt for a Systematic Investment Plan (SIP), Systematic Withdrawal Plan (SWP) to plan his cash flow requirements as per his convenience.
Convenience:	It is very convenient & easy to invest & disinvest from Mutual Fund Schemes specially through digital transaction portals.

Drawbacks of Mutual Funds

No guarantee of Return

There are three issues involved:

- All Mutual Funds cannot be winners. There may be some Schemes who may underperform against the benchmark index.
- A mutual fund may perform better than the stock market but this does not necessarily lead to a similar gain for every investor.
- In case of a massive fall in the value of the stocks held in the Portfolio, the investor may lose principal in the short-term.

Diversification

Though diversification minimises risk, it does not ensure maximising returns.

Selection of Proper Fund

In case of mutual funds, past performance is the only criteria to fall back upon but past cannot predict the future.

Cost Factor

Every Mutual Fund Scheme charges some fund management fees as a part of Annual Recurring Expenses. Although there are no charges/load on entry, but at times an exit may get charged if withdrawn before a stipulated period, known as "Exit Load".

Terms associated with Mutual Funds

Net Asset Value (NAV)

It is the net value of all assets less liabilities. NAV represents the market value of total assets of the fund less total liabilities attributable to those assets. NAV changes daily. NAV is computed on per unit basis i.e. dividing the Net Asset Value by number of Outstanding Units.

Entry and Exit Load in Mutual Funds

Entry load is charged at the time an investor purchases the units of a scheme. The entry load percentage is added to the prevailing NAV at the time of allotment of units. Exit load is charged at the time of redeeming (or transferring an investment between schemes). The exit load percentage is deducted from the NAV at the time of redemption (or transfer between schemes).

Trail Commission

It is the amount that a mutual fund investor pays to his advisor each year. The purpose of charging this commission from the investor is to provide incentive to the advisor to review their customer's holdings and to give advice from time to time.

Expense Ratio

It is the percentage of the assets that were spent to run a mutual fund. It includes things like management and advisory fees, travel costs and consultancy fees. The expense ratio does not include brokerage costs for trading the portfolio. It is also referred to as the Management Expense Ratio (MER) or Total Expense Ratio (TER).

Side Pocketing

In simple words, a Side Pocketing in Mutual Funds leads to separation of risky assets from other investments and cash holdings. The purpose is to make sure that money invested in a mutual fund, which is linked to stressed assets, gets locked, until the fund recovers the money from the company or could avoid distress selling of illiquid securities.

Tracking Error

Tracking error can be defined as the divergence or deviation of a fund's return from the benchmarks return it is following. The tracking error can be calculated on the basis of corresponding benchmark return vis a vis quarterly or monthly average NAVs.

Evaluation of Mutual Funds

The purpose of evaluation of performance is to ensure that fund should continue to generate maximum profits with minimum underlying risk.

Generally, both Quantitative and Qualitative Parameters can be used to evaluate the performance of any Mutual Fund.

Quantitative Parameters

These parameters consist of quantitative data and numbers.

1. **Risk Adjusted Returns:** - Basically it is the return of a Mutual Fund relative to the risk it assumed as benchmarked against the market and industry risk.

2. **Benchmark Returns:** - Benchmark can be defined as the quality or set of standards against which performance of Mutual Fund can be measured. A good Mutual Fund performs over and above its benchmark during all phases of market, this excess return is known as 'Alpha'.

3. **Comparison to Peers:** - Similar to evaluating performance of Mutual Fund against Benchmark, the comparison of relative performance of fund with its peers (of same category) is another quantitative method because evaluation of performance in isolation does not have any meaning. Further there is a logic behind comparison with peers that it is fair to compare apples with apples not with oranges. A good mutual fund is supposed to consistently beat its peers in performance only then it is worthwhile to hold it.

4. **Comparison of Returns across different economic and market cycles:** - At the time of evaluating performance of any Mutual Fund it is not just looking across different time frames such as 6 months, 12 months etc. but performance during different economic and market cycles also needs to be evaluated because, due to some special economic or market condition a Mutual Fund might have outperformed/underperformed for a short time. It may not be necessary that such conditions shall be continued in future period for ever.

Financial Measures: - There are some financial measures that help in evaluation of performance of any Mutual Fund.

- **Expense Ratio:** - Ultimately impacts the return of a Mutual Fund Scheme.
- **Sharpe Ratio:** - This ratio measures the Mutual Fund's performance measured against the total risk (both systematic and unsystematic) taken.
- **Treynor Ratio:** - It measures performance of a mutual fund against the systematic risk it has taken.
- **Sortino Ratio:** - A variation of Sharpe Ratio that considers and uses downside deviation instead of total standard deviation in denominator.

5

Quantitative Parameters

(i) Quality of Portfolio: - Quality of stocks and securities in the portfolio of the Mutual Funds is an important qualitative parameter. The reason is that the quality of the portfolio plays a big role in achieving superior returns.

Not only that it is necessary that Mutual Fund should hold good quality stocks or securities, but it is also necessary the investment should be as per the objective of the Fund.

(ii) Track record and competence of Fund Manager: - The competence of a Fund Manager is assessed from his/her knowledge and ability to manage in addition to past performance.

(iii) Credibility of Fund House Team: - Team of Fund House also plays a big role towards the investors' interest.

Role of Fund Managers in Mutual Funds

The nature of Fund manager's role also depends on the fact that whether Fund is an Actively Managed Fund or a Passively Managed Fund.

Actively Managed Funds

Fund Manager's role in these funds is more crucial as through use of his extensive research, judgement and due diligence, he/she has to outperform the market and generate positive alpha. Right stock picking can help him to outperform.

Passively Managed Funds

Contrary to Actively Managed Funds, in these types of Funds, mainly Fund Manager's role is to match the return of the underlying index with the minimum Tracking Error.

In addition to the abovementioned primary role of a Fund Manager, following are other key roles of a Fund Manager

Compliances:
Nowadays there are a plethora of Regulations in the Capital Market. As a result, the number of Regulatory Compliances has increased multifold.

Constant Monitoring the Performance of the Fund:
The role of a Fund Manager does not end with selection of securities or avenues for investments, but he/ she also has to evaluate them on a continuous basis. It is the Mutual Fund Manager's decision to enter or exit market that maximises the wealth of unit holders.

Creation of Wealth and Protection:
This role can be considered as a fundamental role of a Fund Manager.

Control over the works outsourced to third parties:
In many cases some of the works of the Funds are required to be outsourced to any third party. In such cases, it is the duty of the Fund Manager to exercise proper control over functioning of the third party to ensure error free operations.

Role of FIIs in Mutual Funds

The FIIs plays an important role for Indian Economy through their investment in Mutual Funds because of following reasons:

Enhanced Corporate Governance:
Generally FIIs before making investment in any Mutual Fund carries out thorough due diligence of Corporate Governance. Hence, Corporate Governance is improved to a great extent.

Improved Competition in Market:
With the investment of FIIs in Mutual Funds improvement takes place in the capital market.

Improved Inflow of Capital in the economy:
With the investment of funds in Mutual Funds in the economy not only employment is generated but the position of Foreign Exchange also improves.

Chapter 9 – Derivatives Analysis and Valuation

What is a Derivative?

It 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). The underlying assets can be equity, forex and commodity.

Main users of Derivatives

Users	Purpose
Corporation	To hedge currency risk and inventory risk.
Individual Investors	For speculation, hedging and yield enhancement.
Institutional Investor	For hedging asset allocation, yield enhancement and to avail arbitrage opportunities.
Dealers	For hedging position taking, exploiting inefficiencies and earning dealer spreads.

Forward Contract

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 prenegotiated price in exchange of the delivery. In a forward contract, the contracting parties negotiate on, not only the price at which the commodity is to be delivered on a future date but also on what quality and quantity to be delivered and at what place. No part of the contract is standardized and the two parties sit across and work out each and every detail of the contract before signing it.

Future contract

Future contract is like forward contract with following different features

Features	Forward	Futures
Trading	Forward contracts are traded on personal basis or on telephone or otherwise.	Futures Contracts are traded in a competitive arena.
Size of Contract	Forward contracts are individually tailored and have no standardized size	Futures contracts are standardized in terms of quantity or amount as the case may be
Organized exchanges	Forward contracts are traded in an over-the-counter market.	Futures contracts are traded on organized exchanges with a designated physical location.
Settlement	Forward contracts settlement takes place on the date agreed upon between the parties.	Futures contracts settlements are made daily via. Exchange's clearing house.
Delivery date	Forward contracts may be delivered on the dates agreed upon and in terms of actual delivery.	Futures contracts delivery dates are fixed on cyclical basis and hardly takes place. However, it does not mean that there is no actual delivery.
Transaction costs	Cost of forward contracts is based on bid – ask spread.	Futures contracts entail brokerage fees for buy and sell order.
Marking to market	Forward contracts are not subject to 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.
Margins	Margins are not required in forward contract.	In futures contracts every participants is subject to maintain margin as decided by the exchange authorities
Credit risk	In forward contract, credit risk is born by each party and, therefore, every party has to bother for the creditworthiness.	In futures contract since the transaction is a two way transaction, the parties need not be bothered about the credit risk.

Pricing/Valuation of Forward/Future Contracts

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

In a normal market, the spot price is less than the futures price (which includes the full cost-of-carry) and accordingly the basis would be negative. Such a market, in which the basis is decided solely by the cost-of-carry is known as a Contango market. Basis can become positive, i.e., the spot price can exceed the futures price only if there are factors other than the cost-of-carry to influence the futures price. In case this happens, then basis becomes positive and the market under such circumstances is termed as a Backwardation Market or Inverted Market.

Basis will approach zero towards the expiry of the contract, i.e., the spot and futures prices converge as the date of expiry of the contract approaches. The process of the basis approaching zero is called Convergence.

Future price = Spot price + Carrying cost – Returns (dividends, etc).

Types of Futures Contracts

SINGLE STOCK FUTURES

A single stock futures contract is an agreement to buy or sell shares or stock such as Microsoft, Intel, ITC, or Tata Steel at a point in the future. The buyer has an obligation to purchase shares or stock and the seller has an obligation to sell shares or stock at a specific price at a specific date in the future. Thus, a stock futures contract is a standardized contract to buy or sell a specific stock at a future date at an agreed price.

INDEX FUTURES

A contract for stock index futures is based on the level of a particular stock index such as the S&P 500 or the Dow Jones Industrial Average or NIFTY or BSE Sensex. The agreement calls for the contract to be bought or sold at a designated time in the future based on the level of stock indexes.

Options Contract

An Option may be understood as a privilege, sold by one party to another, that gives the buyer the right, but not the obligation, to buy (call) or sell (put) any underlying say stock, foreign exchange, commodity, index, interest rate etc. at an agreed-upon price within a certain period or on a specific date regardless of changes in underlying's market price during that period.

The various kinds of stock options include Put and Call options, which may be purchased in anticipation of changes in stock prices, as a means of speculation or hedging.

A put gives its holder an option to sell, shares to another party at a fixed price even if the market price declines. A call gives the holder an option to buy, or call for, shares at a fixed price even if the market price rises.

Stock Options

Stock options involve no commitments on the part of the buyers of the option contracts to purchase or sell the stock. The option is usually exercised only if the price of the stock has risen above (in case of call option) or fallen below (in case of put option) the price specified at the time the option was given.

Stock Index Option

It is a call or put option on a financial index. Investors trading index options are essentially betting on the overall movement of the stock market as represented by a basket of stocks.

Parties to the Options

There are always two types of entities for an option transaction viz buyer and a seller (also known as writer of the option). So, for every call or put option purchased, there is always someone else selling/ buying it.

Premium for Options

In return for the premium received from the buyer, the seller of an option assumes the risk of having to deliver (if a call option) or taking delivery (if a put option) of the shares of the stock. Unless that option is covered by another option or a position in the underlying stock (opposite to the position taken via selling the option contracts), the seller's loss can be unlimited, meaning the seller can lose much more than the original premium received.

Types of Options

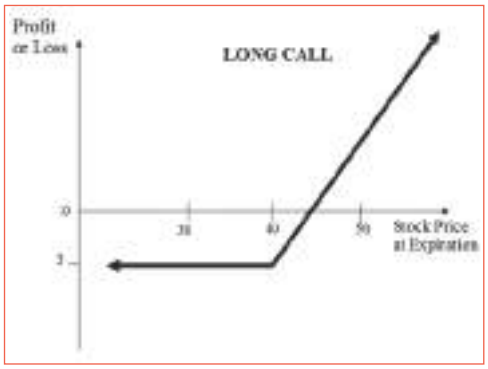
TYPES OF OPTIONS

An American, or American-style, option can be exercised at any time between the date of purchase and the expiration date.

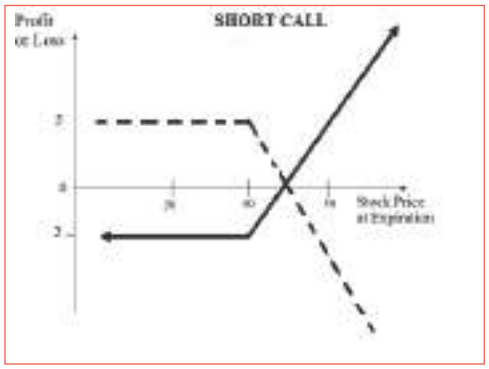
A European, or European-style, option can only be exercised on the expiration date. In Indian Market most of the options are European style options.

Pay-off scenarios

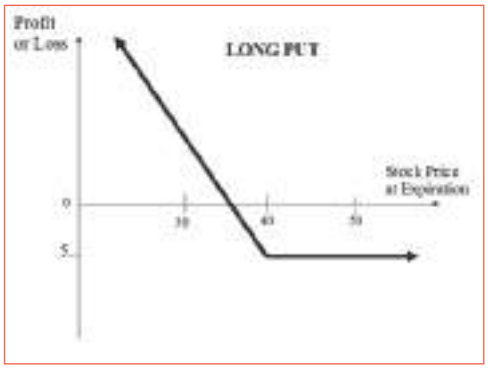
A. Pay-off for a Call Buyer



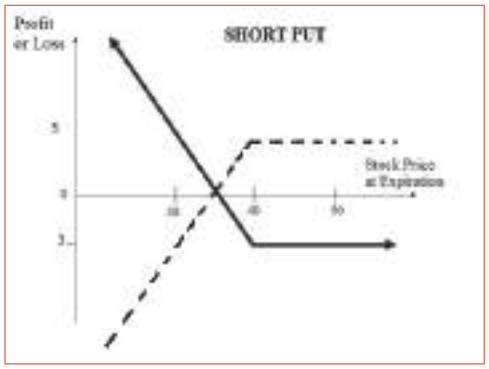
B. Pay-off for a Call Seller



C. Pay-off for a Put Buyer



D. Pay-off for a Put Seller



Option Valuation Techniques

- Binomial Model
- Risk Neutral Method
- Black Scholes Model

BINOMIAL MODEL

The Binomial Model breaks down the time to expiration into potentially a very large number of time intervals, or steps. This requires the use of probability and future discrete projections through which a tree of stock prices is initially produced working forward from the present to expiration.

RISK NEUTRAL METHOD

The basic argument in the risk neutral approach is that since the valuation of options is based on arbitrage and is therefore independent of risk preferences; one should be able to value options assuming any set of risk preferences and get the same answer as by using Binomial Model.

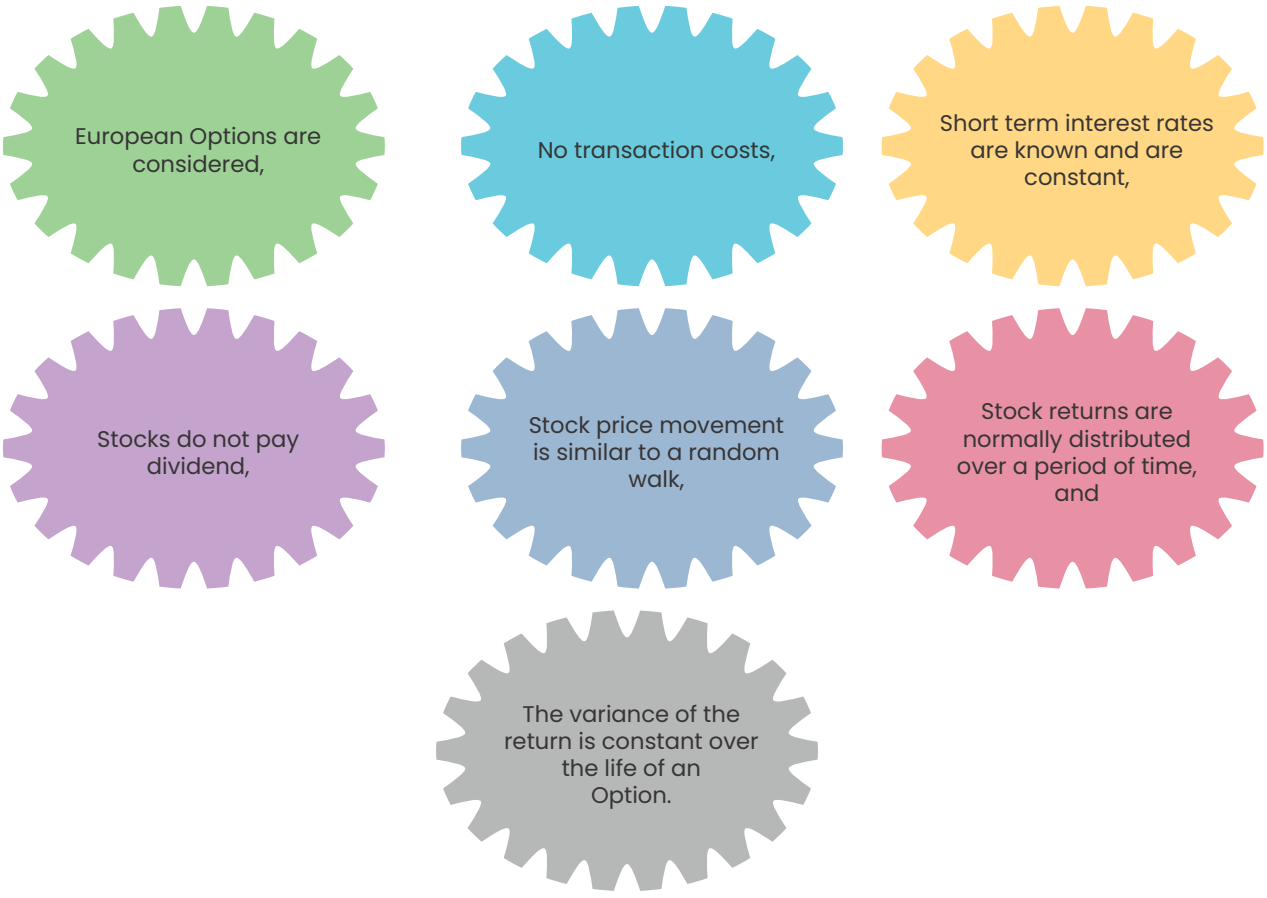
Using this model, we can derive the risk neutral probabilities and apply the same probabilities in the binomial model.

BLACK-SCHOLES MODEL

The Black-Scholes model is used to calculate a theoretical price of an Option. The Black-Scholes price is nothing more than the amount an option writer would require as compensation for writing a call and completely hedging the risk of buying stock.

The model is based on a normal distribution of underlying asset returns.

This model is based on following assumptions:



The formula for calculating the theoretical Option Price (OP) as per BS model is as follows:

$$OP = SN(d_1) - Xe^{-rt} N(d_2)$$

Where

$$d_1 = \frac{\ln\left(\frac{S}{X}\right) + \left(r + \frac{v^2}{2}\right)t}{v\sqrt{t}} \quad \text{and} \quad d_2 = d_1 - v\sqrt{t}$$

The variables are:

S = current stock price

X = strike price of the option

t = time remaining until expiration, expressed as a percent of a year

r = current continuously compounded risk-free interest rate

v = annual volatility of stock price (the standard deviation of the short-term returns over one year).

ln = natural logarithm

N(x)= standard normal cumulative distribution function (Area under Normal Curve)

e = the exponential function

Greeks

The Greeks are a collection of statistical values (expressed as percentages) that give the investor a better overall view of how a stock has been performing. These statistical values can be helpful in deciding what options strategies are best to use.

Factors Affecting Value of an Option

Before we discuss these statistical measure let us discuss the factors that affect the value of an option.

(a) Price Movement of the Underlying: The value of calls and puts are affected by changes in the underlying stock price in a relatively straightforward manner.

(b) Time till expiry: The option's future expiry, at which time it may become worthless, is an important and key factor of every option strategy.

(c) Volatility in Stock Prices: Volatility can be understood via a measure called Statistical (sometimes called historical) Volatility, or SV for short. SV tells you how volatile the stock has actually been over a given period of time.

(d) Interest Rate: Another feature which affects the value of an Option is the time value of money. The greater the interest rates, the present value of the future exercise price are less.

Now let us discuss the statistical measure

Exotic Options

Exotic options are the classes of option contracts with structure and features different from plain vanilla options i.e. American and European style options. Not only that Exotic options are different from these vanilla options in their expiration dates also.

Exotic Vs. Traditional Option

- An exotic option can vary in terms of pay off and time of exercise.
- These options are more complex than vanilla options.
- Mostly Exotic options are traded in OTC market.

Types of Exotic Options

Chooser Options: This option provides a right to the buyer of option after a specified period of time to decide whether purchased option is a call option or put option.

Compound Options: Also called split fee option or 'option on option'. Thus, it can be said in this option the underlying is an option.

Barrier options: Though it is similar to plain vanilla call and put options, but unique feature of this option is that contract will become activated only if the price of the underlying reaches a certain price during a predetermined period.

Binary Options: Also known as 'Digital Option', this option contract guarantees the pay-off based on the happening of a specific event.

Asian Options: These are the option contracts whose pay off are determined by the average of the prices of the underlying over a predetermined period during the lifetime of the option.

Bermuda Option: It is somewhat a compromise between a European and American options.

Basket Options: In this type of contracts the value of option instead of one underlying depends on the value of a portfolio i.e., a basket.

Spread Options: As the name suggests the payoff of these type of options depend on difference between prices of two underlying.

Look back options: Unlike other type of options whose exercise prices are pre-decided, in this option on maturity date the holder of the option is given a choice to choose a most favourable strike price depending on the minimum and maximum price of an underlying achieved during the life time of option.

Credit Derivatives

Credit Derivatives is summation of two terms, Credit + Derivatives. As we know that derivative implies value deriving from an underlying, and this underlying can be anything we discussed earlier i.e. stock, share, currency, interest etc.

Types of credit Derivatives

A. Collateralized Debt Obligations (CDOs)

While in securitization the securities issued by SPV are backed by the loans and receivables the CDOs are backed by pool of bonds, asset backed securities, REITs, and other CDOs.

Types of CDOs

Cash Flow Collateralized Debt Obligations (Cash CDOs): Cash CDO is CDO which is backed by cash market debt or securities which normally have low risk weight. This structure mainly relies on the collateral's risk weight and collateral's ability to generate sufficient cash to pay off the securities issued by SPV.

Synthetic Collateralized Debt Obligations: It is similar to Cash Flow CDOs but with the difference that instead of transferring ownerships of collateral to SPV (a separate legal entity), synthetic CDOs are structured in such a manner that credit risk is transferred by the originator without actual transfer of assets.

Arbitrage CDOs: In Arbitrage CDOs, the issuer captures the spread between the return realized collateral underlying the CDO and cost of borrowing to purchase these collaterals.

Risks involved in CDOs

Default Risk: - Also called 'credit risk', it emanates from the default of underlying party to the instruments.

Interest Rate Risk: - Also called Basis risk and mainly arises due to different basis of interest rates.

Liquidity Risk: - Another major type of risk by which CDOs are affected is liquidity risks as there may be mismatch in coupon receipts and payments.

Prepayment Risk: - This risk results from unscheduled or unexpected repayment of principal amount underlying the security.

Reinvestment Risk: - This risk is generic in nature as the CDO manager may not find adequate opportunity to reinvest the proceeds when allowed for substitutions.

Foreign Exchange Risk: - Sometimes CDOs are comprised of debts and loans from countries other than the country of issue.

B. Credit Default Swaps (CDSs)

It is a combination of following 3 words:

CREDIT
Loan given

DEFAULT
Non payment

SWAP
Exchange of Liability or Risk

Under this arrangement, one party (called buyer) needing protection against the default pays a periodic premium to another party (called seller), who in turn assumes the default risk.

Hence, in case default takes place then there will be settlement and in case no default takes place no cash flow will accrue to the buyer alike option contract and agreement is terminated.

Main Features of CDS

- CDS is a non-standardized private contract between the buyer and seller.
- They are normally not traded on any exchange and hence remains free from the regulations of Governing Body.
- The International Swap and Derivative Association (ISDA) publishes the guidelines and general rules used normally to carry out CDS contracts.
- CDS can be purchased from third party to protect itself from default of borrowers.
- An individual investor who is buying bonds from a company can purchase CDS to protect his investment from insolvency of that company.

Uses of Credit Default Swap

- **Hedging**- Main purpose of using CDS is to neutralize or reduce a risk to which CDS is exposed to.
- **Arbitrage**- It involves buying a CDS and entering into an asset swap.
- **Speculation-** CDS can also be used to make profit by exploiting price changes.

Parties to CDS

The initial borrowers – It is also called a 'reference entity', which are owing a loan or bond obligation.

Buyer – It is also called 'investor' i.e. the buyer of protection.

Seller – It is also called 'writer' of the CDS and makes payment to buyer in the event of credit event of reference entity.

Settlement of CDS

The main ways of settlement of CDS are:

(i) Physical Settlement: This is the traditional method of settlement. It involves the delivery of Bonds or debts of the reference entity by the buyer to the seller and seller pays the buyer the par value.

(ii) Cash Settlement: Under this arrangement seller pays the buyer the difference between par value and the market price of a debt (whatever may be the market value) of the reference entity.

Real Options

How Real Option is different from Financial Option

Basis	Financial Options	Real Options
Underlying	Have underlying assets that are normally traded in the market i.e. shares, stocks, bonds, commodity etc.	Have underlying the projects that are not traded in the market.
Pay-off	In most of the cases it is specified in the contracts and hence is fixed.	It is estimated from the project cash flows and hence can be varied.
Exercise Period	Mostly the period of these options is short and can go maximum upto 1 year.	The period of these options mostly starts from the end of 1st year and higher than the Financial Options.
Approach	Since these options are normally traded in the market they are "Priced".	Since these options are used to make decisions, they are "Valued".

Valuation of Real Options

The methods employed to valuation of real options are same as used in valuation of Financial Options.

Type of Real Options

A. Growth Options

The purposes of making such investments are as follows:

- Defining the competitive position of firm hence it is called strategic investments.
- Gaining knowledge about project's from profitability.
- Providing the manufacturing and making flexibility to the firm.

This case of real option is like European Call Option.

B. Abandonment Option

The option to abandon the project is similar to an American Put Option where option to abandon the project shall be exercised if value derived from project's assets is more than PV of continuing the project for one or more period.

C. Timing Option

In traditional capital budgeting the project can either be accepted or rejected, implying that this will be undertaken or forever not. However, in real life situation sometimes a third choice also arises i.e., delay the decision until later, i.e., option when to invest. This case of real option is like American Call Option.

Commodity Derivatives

Trading in commodity derivatives first started to protect farmers from the risk of the value of their crop going below the cost price of their produce. Derivative contracts were offered on various agricultural products like cotton, rice, coffee, wheat, pepper etc.

The first organized exchange, the Chicago Board of Trade (CBOT) -- with standardized contracts on various commodities -- was established in 1848. In 1874, the Chicago Produce Exchange - which is now known as Chicago Mercantile Exchange (CME) was formed.

CBOT and CME are two of the largest commodity derivatives exchanges in the world.

Necessary Conditions (Attributes) to Introduce Commodity Derivatives

The following attributes are considered crucial for qualifying for the derivatives trade.

- a commodity should be durable and it should be possible to store it;
- units must be homogeneous;
- the commodity must be subject to frequent price fluctuations with wide amplitude; supply and demand must be large;
- upply must flow naturally to market and there must be breakdowns in an existing pattern of forward contracting.

Investing in Commodity Derivatives

Commodity derivatives, which were traditionally developed for risk management purposes, are now growing in popularity as an investment tool. Most of the trading in the commodity derivatives market is being done by people who have no need for the commodity itself.

Certain special characteristics/benefits of Commodity derivatives trading are:

- To complement investment in companies that use commodities;
- To invest in a country's consumption and production;
- No dividends, only returns from price increases.

Commodity Market

In modern times, commodity markets represent markets where raw or primary products are exchanged. These raw commodities are traded on regulated, commodity exchanges in which they are bought and sold in standardized contracts.

Some of the advantages of commodity markets are:

- Most money managers prefer derivatives to tangible commodities;
- Less hassle (delivery, etc);
- Allows indirect investment in real assets that could provide an additional hedge against inflation risk.

Commodity Futures

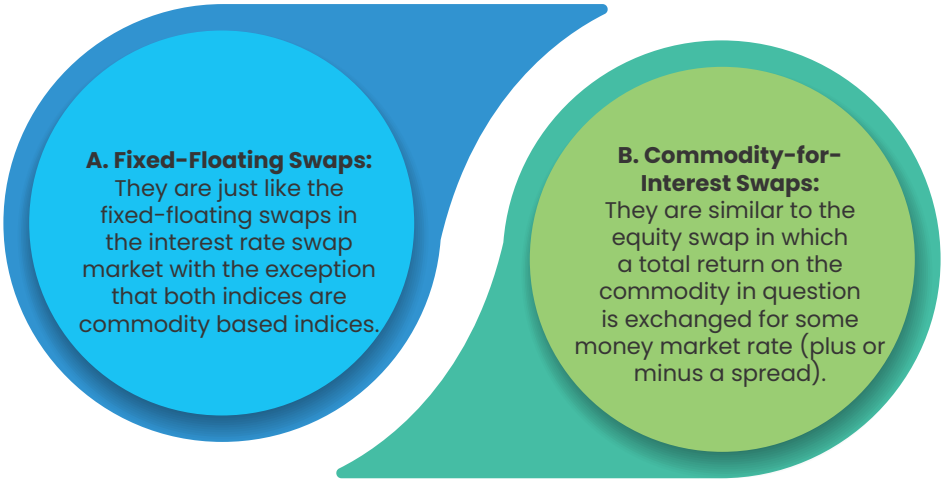
The process of trading commodities is also known as Futures Trading. Unlike other kinds of investments, such as stocks and bonds, when you trade futures, you do not actually buy anything or own anything. You are speculating on the future direction of the price in the commodity you are trading. This is like a bet on future price direction. The terms "buy" and "sell" merely indicate the direction you expect future prices will take.

Some of the advantages of commodity futures are:

- Easiest and cheapest way to invest in commodities
- 3 Major Categories like Agricultural products (soft commodities) –fibers, grains, food, livestock; Energy – crude oil, heating oil, natural gas; and Metals – copper, aluminium, gold, silver, platinum

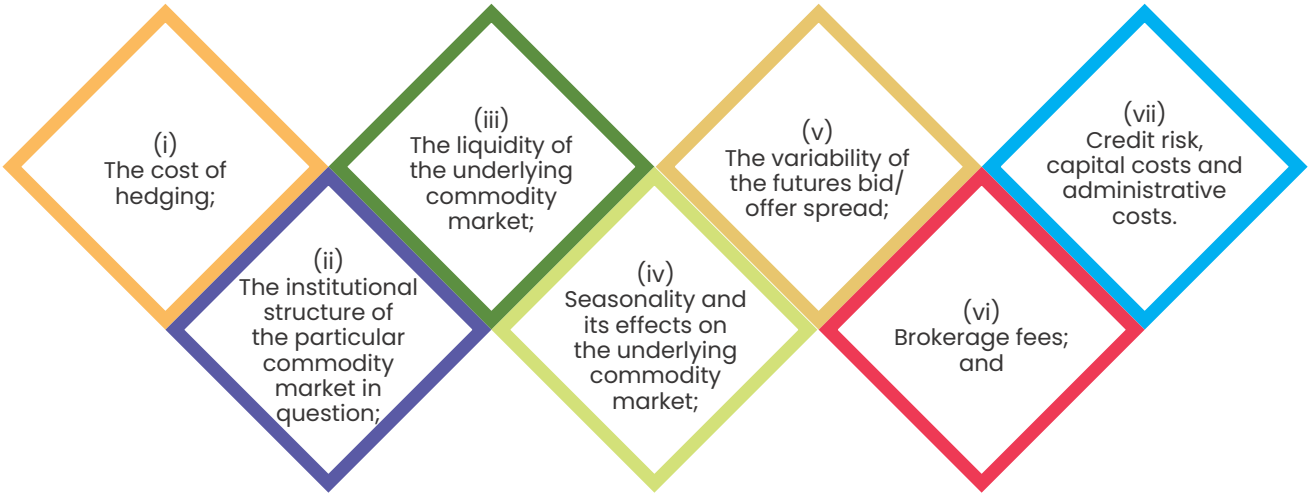
Commodity Swaps

There are two types of commodity swaps:



Valuing Commodity Swaps

Commodity swaps are characterized by some peculiarities. These include the following factors for which we must account:



Hedging with Commodity Derivatives

Commodity swaps and commodity derivatives are a useful and important tool employed by most leading energy, chemical and agricultural corporations in today's world.

Weather Derivatives

Weather derivatives represent an alternative tool to the usual insurance contract by which firms and individuals can protect themselves against losing out because of unforeseen weather events. Many factors differentiate weather derivatives from insurance contracts. The main difference is due to the type of coverage provided by the two instruments.

Electricity Derivatives

A. Electricity Forwards

Electricity Forward contracts represent the obligation to buy or sell a fixed amount of electricity at a pre-specified contract price, known as the forward price, at a certain time in the future (called maturity or expiration time).

B. Electricity Futures

Like other financial futures contracts, Electricity futures contracts are standardized contracts in terms of trading locations, transaction requirements and settlement procedures.

C. Electricity Swap

Electricity Swaps are financial contracts that enable their holders to pay a fixed price for underlying electricity, regardless of the floating electricity price, or vice versa, over the contracted time. They are typically established for a fixed quantity of power referenced to a variable spot price at either a generator's or a consumer's location.

Lessons from Derivative Mishaps

Following are some of the important lessons can be learnt from the above-mentioned case studies of Derivative Mishaps.

a. Don't buy any derivative product that you don't understand
b. Due diligence before making Treasury Department as a Profit Centre
c. Specify the Risk Limits
d. Separation of Front, Middle and Back Offices
e. Ensure that a hedger should not become a speculator
f. Carry out Stress Test, Scenario Analysis etc.

Chapter 10 – Foreign Exchange Exposure and Risk Management

Introduction

An exchange rate is, simply, the price of one nation's currency in terms of another currency, often termed the reference currency. For example, the rupee/dollar exchange rate is just the number of rupees that one dollar will buy. If a dollar will buy 100 rupees, the exchange rate would be expressed as Rs. 100/$ and the rupee would be the reference currency.

Equivalently, the dollar/ rupee exchange rate is the number of dollars one rupee will buy. Continuing the previous example, the exchange rate would be $ 0.01/Rs. (1/100) and the dollar would now be the reference currency. Exchange rates can be for spot or forward delivery.

The spot rate is the rate paid for delivery within two business days after the day the transaction takes place

If the rate is quoted for delivery of foreign currency at some future date, it is called the forward rate.

Role of SWIFT in Foreign Exchange

- Foreign Exchange Dealers/Traders use a network of communication to carry out their business transactions called SWIFT (Society for Worldwide Interbank Financial Telecommunication) which is purely a messaging system.
- Since each country has their own symbol to communicate their currency, to avoid miscommunication SWIFT has assigned codes to currencies of each country. These codes are 3 lettered codes and are used internationally in cross border communications.
- Some of the common codes used in communication are as follows:

Country/ Region	Currency	Code
USA	US Dollar	USD
UK	Pound	GBP
China	Chinese Renminbi/Yuan	CNY
Canada	Canadian Dollar	CAD
Australia	Australian Dollar	AUD
Hong Kong	Hong Kong Dollar	HKD
India	Indian Rupee	INR
Japan	Japanese Yen	JPY
New Zealand	New Zealand Dollar	NZD
Singapore	Singapore Dollar	SGD
Sweden	Swedish Krona	SEK
Switzerland	Swiss Franc	CHF
Europe	Euro	EUR

The SWIFT plays an important role in Foreign Exchange dealings because of the following reasons:

National and International Payment Gateways

A Payment Gateway is a virtual mode equivalent to physical mode of transfer of cash that authenticates and routes payment details in an extremely secure environment. The services ranges from collecting and sending payments to banks or to e-commerce sites for carrying out commercial transactions.

A Payment Gateway provides multiple benefits such as:

- 24x7x365 convenience
- Real time authorisation of credit/debit cards.
- Rapid, efficient transaction processing.
- Multiple payment options.
- Minimising risk by encrypting transactions and verifying other information.
- Flexible, powerful real-time reports generation.
- Facility for customer refund.
- Merchants can get rid of operating complex software and maintaining huge data.
- CA (Certifying Authority) authenticated secure servers.
- Collection of bulk data in a cost-efficient manner, with the additional benefit of being checked for card validity.
- Provision for multiple host interfaces.
- Comprehensive, simple administrative control.
- Gaining customers' support and merchants' trust.

Despite so many benefits there are some challenges that are hampering the growth of payment gateways such as:

(a) Payments may not happen at all simply because the customer may not have an account with the banks supporting the payment gateway.

(b) Some payment gateways have only limited number of banks

(c) There are problems of reliability, delivery, and limited payment avenues and general lack of trust among customers, and doubts about the service provider.

Nostro, Vostro and Loro Accounts

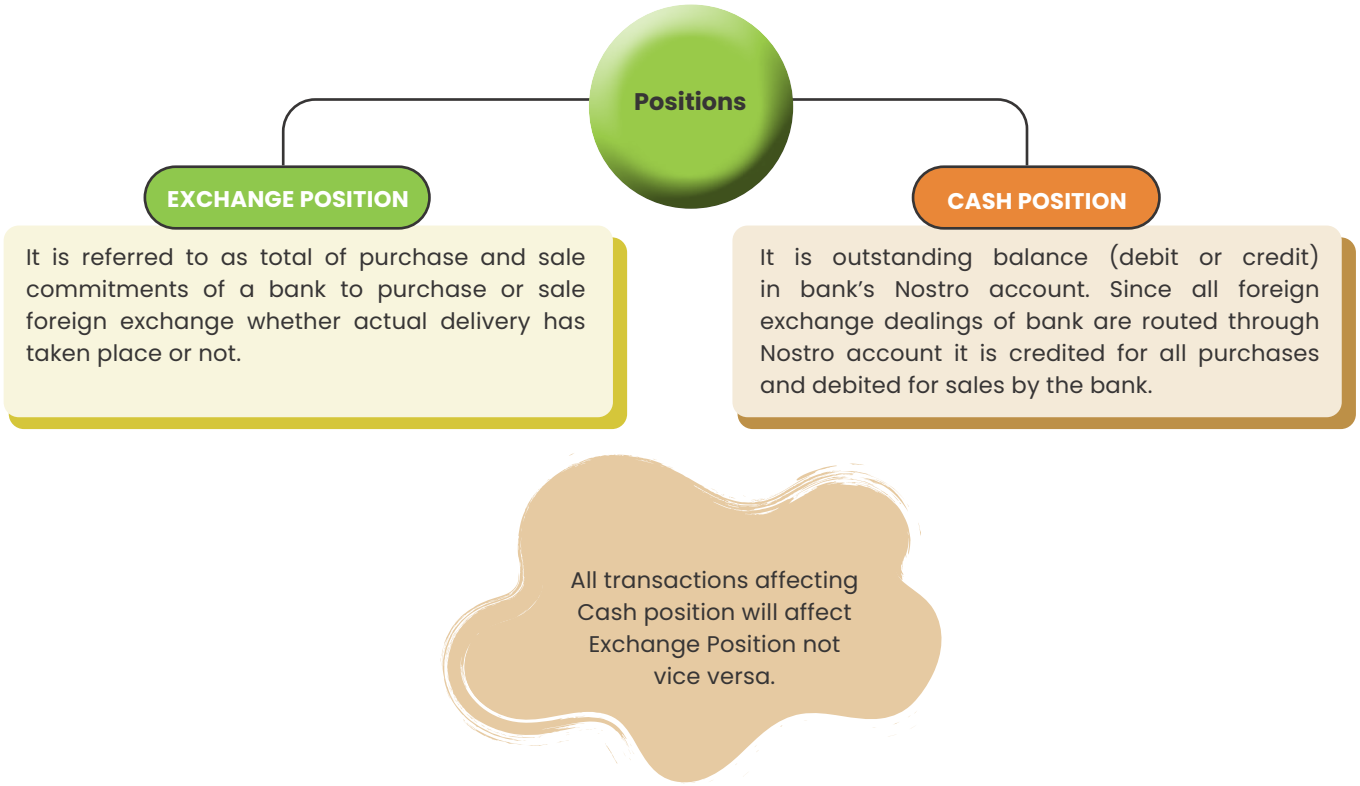
In interbank transactions, foreign exchange is transferred from one account to another account and from one centre to another centre. Therefore, the banks maintain three types of current accounts in order to facilitate quick transfer of funds in different currencies.

Types of Account maintained by Banks

Nostro Account is the bank's foreign currency account maintained by the bank in a foreign country and in the home currency of that country or "our account with you".

Vostro Account is the account which is maintained by a foreign bank with a local bank or "your account with us".

Loro Accounts is an account wherein a domestic bank use the account of third party banks which holds a Nostro account to settle foreign exchange transactions.



Exchange Rate Quotation

American Term Rates quoted in amounts of U.S. dollar per unit of foreign currency. ⟷ **European Term** Rates quoted in amounts of foreign currency per U.S. Dollar.

Direct Quote A direct quote is the home currency price of one unit foreign currency. For example, the quote $1 =₹48.00 is a direct-quote for an Indian. ⟷ Indirect quote is the foreign currency price of one unit of the home currency. The quote Re.1 =$0.0208 is an indirect quote for an Indian. ($1/₹48.00 =$0.0208 approximately)

Bid is the price at which the dealer is willing to buy another currency. ⟷ **Offer** is the rate at which dealer is willing to sell another currency. ⟷ **Spread** The difference between Bid and Offer is called the Spread.

Cross Rates

It is the exchange rate which is expressed by a pair of currency in which none of the currencies is the official currency of the country in which it is quoted.

Pips

PIP is the Price Interest Point. It is the smallest unit by which a currency quotation can change.

Forward exchange rate quotation

- Forward outright contracts are contracts where two parties agree to deliver a certain amount of currency at a fix rate at some time in future.
- Forward rate is not quoted like Spot Rate but always quoted with spot rate and the forward margin separately.
- The reader or user has to calculate the forward rate applicable by loading the forward margin into the spot rate.

Forward point determination

The number of forward points between the Spot and Forward rates is influenced by the present and forward interest rates, the 'length' of the forward and other market factors. Forward point is not a rate but a difference in the rate between two currencies, the currency which carries lower interest rate is always at a premium versus the other currency.

Broken period forward rate

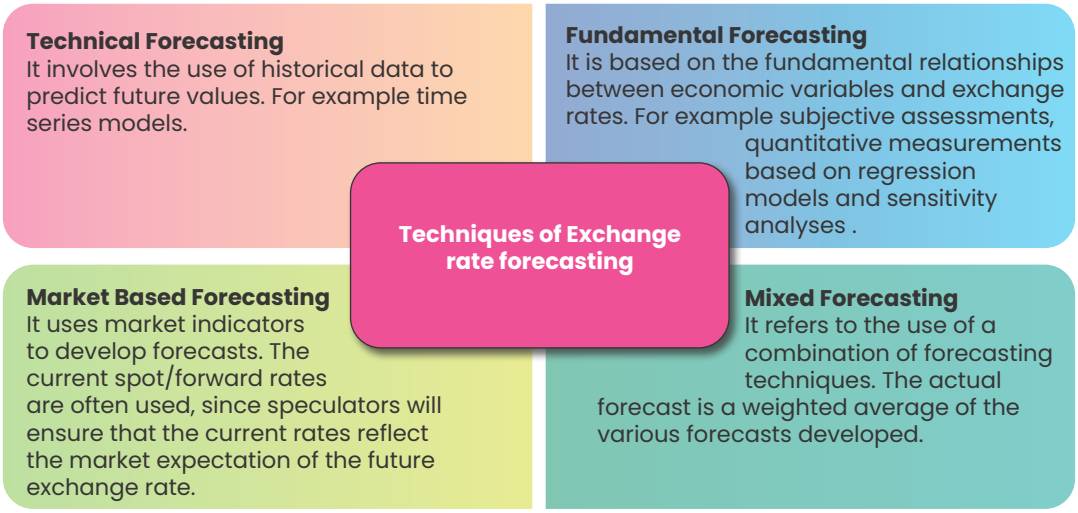
In customer transactions, the amounts are not only smaller & for odd amounts, but the due date could be also a non-standardized one. The broken period concept becomes relevant in such situations. Accordingly, it is presumed that the forward points 'grow' uniformly throughout and arithmetically proportionate manner for the applicable date is arrived at.

Merchant Rates

As a part of liberalization, banks got the freedom to quote their own rates. Since then, banks decide themselves what should be the margin depending on the bank's 'position'. However, settlement of all merchant transactions shall be affected on the principle of rounding off the Rupee amounts to the nearest whole Rupee i.e., without paise.

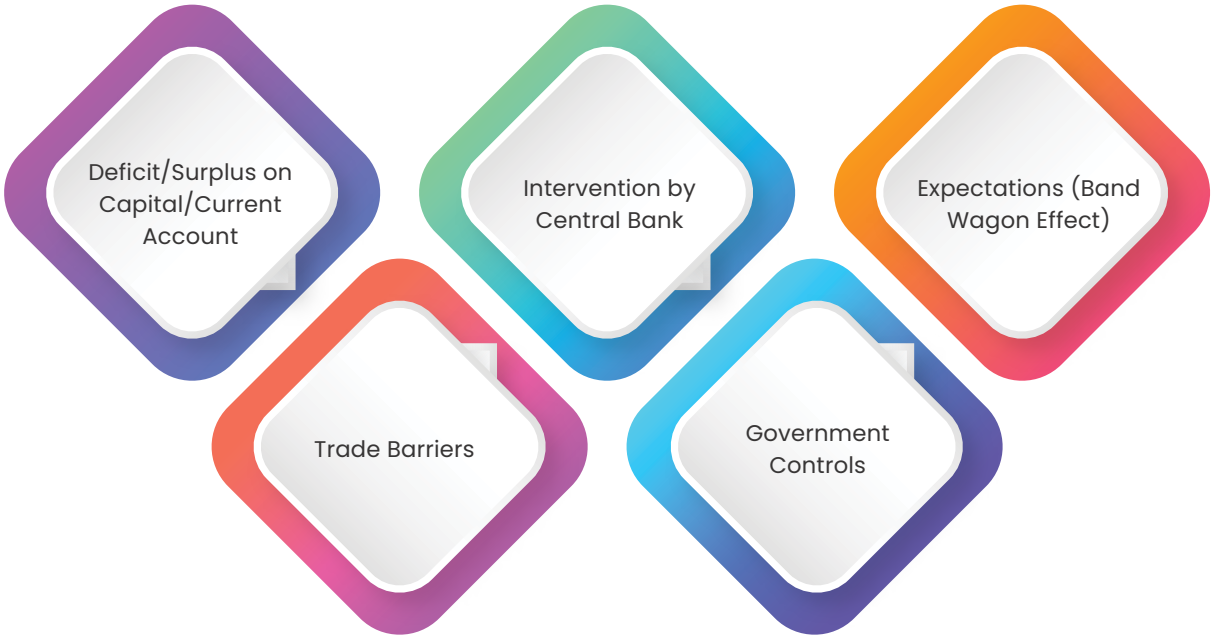
Exchange Rate Forecasting

Corporates need to do the exchange rate forecasting for taking decisions regarding hedging, short-term financing, short-term investment, capital budgeting, earnings assessments and long term financing.



Exchange Rate Determination

The major factors that affect the foreign exchange of any country are inflation rate and interest rate. The other factors that affect foreign exchange rate are as follows:



Exchange Rate Theories

There are three theories of exchange rate determination- Interest rate parity, Purchasing power parity and International Fisher effect.

Interest Rate Parity

Interest rate parity is a theory which states that "the size of the forward premium (or discount) should be equal to the interest rate differential between the two countries of concern."

Purchasing Power Parity (PPP) – There are two forms of PPP:

The ABSOLUTE FORM, also called the 'Law of One Price' suggests that "prices of similar products of two different countries should be equal when measured in a common currency".

The RELATIVE FORM of the Purchasing Power Parity tries to overcome the problems of market imperfections and consumption patterns between different countries.

International Fischer Effect (IFE)

According to IFE, if investors of all countries require the same real return, interest rate differentials between countries may be the result of differential in expected inflation.

Interest Rate Parity (IRP)

This theory which states that "the size of the forward premium (or discount) should be equal to the interest rate differential between the two countries of concern". When interest rate parity exists, covered interest arbitrage (means foreign exchange risk is covered) is not feasible, because any interest rate advantage in the foreign country will be offset by the discount on the forward rate.

As per Interest Rate Parity the forward rate can be found as follows:

$$(1+r_D) = \frac{F}{S} (1+r_F)$$

Where,

F = Expected forward rate

S = Spot Rate

r_D= Interest Rate of Domestic Country

r_F= Interest Rate of Foreign Country

Purchasing Power Parity (PPP)

This theory focuses on the 'inflation-exchange rate' relationship.

There are two forms of PPP theory:

Absolute Form- Also called the 'Law of One Price' suggests that "prices of similar products of two different countries should be equal when measured in a common currency". If a discrepancy in prices as measured by a common currency exists, the demand should shift so that these prices should converge.

Relative Form – An alternative version that accounts for the possibility of market imperfections such as transportation costs, tariffs, and quotas. It suggests that 'because of these market imperfections, prices of similar products of different countries will not necessarily be the same when measured in a common currency.'

As per Purchasing Power Parity the expected spot rate can be found as follows:

$$E(S_1) = S_0 \times \frac{(1+I_d)}{(1+I_f)}$$

Where,

$E(S_1)$ = Expected Spot Rate in time period 1

S_0 = Spot Rate

I_d= Inflation in the domestic country (home country)

I_f= Inflation in the of foreign country

International Fisher Effect (IFE)

According to this theory, 'nominal risk-free interest rates contain a real rate of return and anticipated inflation'. This means if investors of all countries require the same real return, interest rate differentials between countries may be the result of differential in expected inflation.

This theory suggests that foreign currencies with relatively high interest rates will depreciate because the high nominal interest rates reflect expected inflation. The nominal interest rate would also incorporate the default risk of an investment.

Comparison of PPP, IRP and IFE Theories

Theory	Key	Variables	Summary
Interest Rate Parity (IRP)	Forward rate premium (or discount)	Interest rate differential	The forward rate of one currency will contain a premium (or discount) that is determined by the differential in interest rates between the two countries.
Purchasing Power Parity (PPP)	Percentage change in spot exchange rate	Inflation rate differential	The spot rate of one currency with respect to another will change in reaction to the differential in inflation rates between two countries.
International Fisher Effect (IFE)	Percentage change in spot exchange rate	Interest rate differential	The spot rate of one currency with respect to another will change in accordance with the differential in interest rates between the two countries.

Foreign Exchange Market

The Foreign Exchange market is the market in which individuals, firms and banks buy and sell foreign currencies or foreign exchange. The purpose of the foreign exchange market is to permit transfers of purchasing power denominated in one currency to another i.e., to trade one currency for another.

Foreign Exchange Exposure

The foreign exchange exposure may be classified under three broad categories:

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.

Translation Exposure

Translation exposure occurs because of the need to "translate" foreign currency financial statements of foreign subsidiaries into a single reporting currency to prepare worldwide consolidated financial statements.

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.

Hedging Currency Risk

There are a range of hedging instruments that can be used to reduce risk. Broadly these techniques can be divided into **Internal Techniques** and **External Techniques**:

Internal Techniques

INVOICING IN DOMESTIC CURRENCY

Sellers usually wish to sell in their own currency or the currency in which they incur cost. This avoids foreign exchange exposure. For the buyer, the ideal currency is usually its own or one that is stable relative to it, or it may be a currency of which the purchaser has reserves.

LEADING AND LAGGING

Leading is the payment before due date. Lagging is delaying payment post due date.

NETTING

Netting involves associated companies, which trade with each other. The technique is simple. Group companies merely settle inter affiliate indebtedness for the net amount owing. Gross intra-group trade, receivables and payables are netted out.

MATCHING

Matching is a mechanism whereby a company matches its foreign currency inflows with its foreign currency outflows in respect of amount and approximate timing.

PRICE VARIATION

Price variation involves increasing selling prices to counter the adverse effects of exchange rate change.

ASSET & LIABILITY MANAGEMENT

Asset and liability management can involve aggressive or defensive postures. In the aggressive attitude, the firm simply increases exposed cash inflows denominated in currencies expected to be strong or increases exposed cash outflows denominated in weak currencies. In contrast, the defensive approach involves matching cash inflows and outflows according to their currency of denomination, irrespective of whether they are in strong or weak currencies.

External Techniques

Money Market Hedging

A Money Market Hedge is an agreement to exchange a certain amount of one currency for a fixed amount of another currency, at a particular date.

Derivative Instruments

A Derivatives transaction is a bilateral contract or payment exchange agreement whose value depends on - derives from - the value of an underlying asset, reference rate or index.

Forward Contract

Forward Rate – Premium and Discount

PREMIUM

When a currency is costlier in forward or say, for a future value date, it is said to be at a premium. In the case of direct method of quotation, the premium is added to both the selling and buying rates

DISCOUNT

If the currency is cheaper in forward or for a future value date, it is said to be at a discount. In case of direct quotation, the discount is deducted from both the selling and buying rate.

Fate of Forward Contract

- Delivery
- Cancellation
- Extension

Delivery

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.

Early Delivery The bank may accept the request of customer of delivery before the due date of forward contract provided the customer is ready to bear the loss, if any, that may accrue to the bank as a result of this.

Late Delivery Before this delivery (execution) takes place the provisions of FEDAI for Automatic Cancellation shall be applied.

Cancellation

Cancellation on Due Date 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.

Early Cancellation If a forward is required to be cancelled earlier than the due date of forward contract same shall be cancelled at opposite rate of original contract of the date that synchronizes with the date of original forward contract.

Late Cancellation Before this cancellation takes place the provisions of FEDAI for Automatic Cancellation shall be applied.

Extension

Extension on Due Date In case extension of due date, first original contract shall be cancelled at spot rate like cancellation on due date and new contract shall be rebooked at the forward rate for the new delivery period.

Extension before Due Date In this case 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.

Late Extension Before this Extension takes place the provisions of FEDAI for Automatic Cancellation shall be applied.

Automatic Cancellation

As per FEDAI Rule 6, a forward contract which remains overdue without any instructions from the customers on or before due date shall stand automatically cancelled within 3 working days afer maturity date. Though, customer is liable to pay the exchange difference arising therefrom but not entitled for the profit resulting from this cancellation.

Non-deliverable Forward Contract

A cash-settled, short-term forward contract on a thinly traded or non-convertible foreign currency, where the profit or loss at the time at the settlement date is calculated by taking the difference between the agreed upon exchange rate and the spot rate at the time of settlement, for an agreed upon notional amount of funds.

Rollover of Deliverable Forward Contract

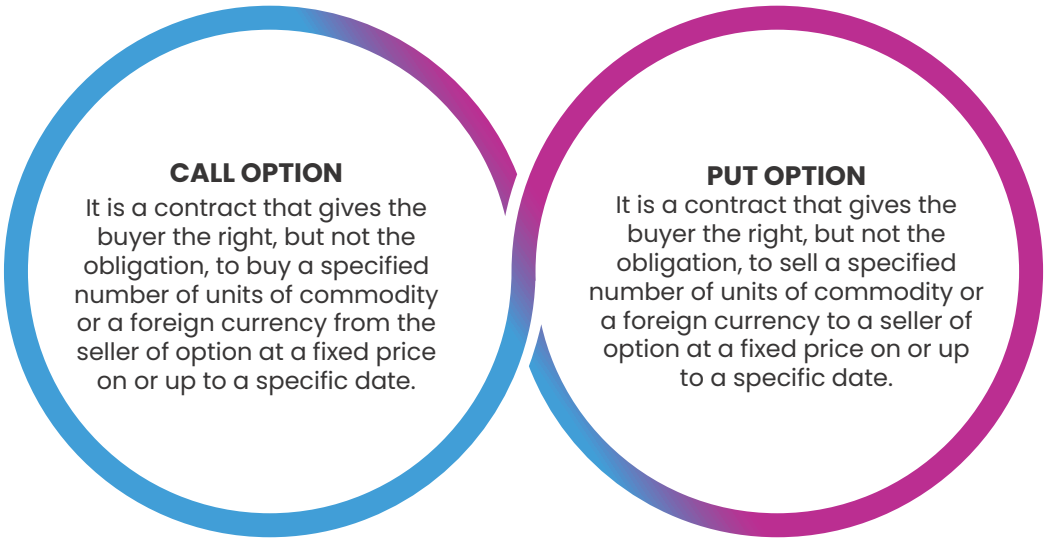
Rollover of Deliverable Forward Contract is a Contract wherein, as an Exporter or Importer you would like to rollover the contract which effectively means spot cancellation and booking of new contract for later date.

Futures Contracts

A basic futures contract is very similar to the forward contract in its obligation and payoff profile but following are major differences between Forward Contract and Futures Contract

Feature	Forward Contract	Futures Contract
Amount	Flexible	Standard amount
Maturity	Any valid business date agreed to by the two parties	Standard date. Usually, one delivery date such as the second Tuesday of every month
Furthest maturity date	Open	12 months forward
Currencies traded	All currencies	Majors
Cross rates	Available in one contract; Multiple contracts avoided	Usually requires two contracts
Market-place	Global network	Regular markets – futures market and exchanges
Price fluctuations	No daily limit in many currencies	Daily price limit set by exchange
Risk	Depends on counter party	Minimal due to margin requirements
Honouring of contract	By taking and giving delivery	Mostly by a reverse transaction
Cash flow	None until maturity date	Initial margin plus ongoing variation margin because of market to market rate and final payment on maturity date
Trading hours	24 hours a day	4 – 8 hours trading sessions

Option Contracts

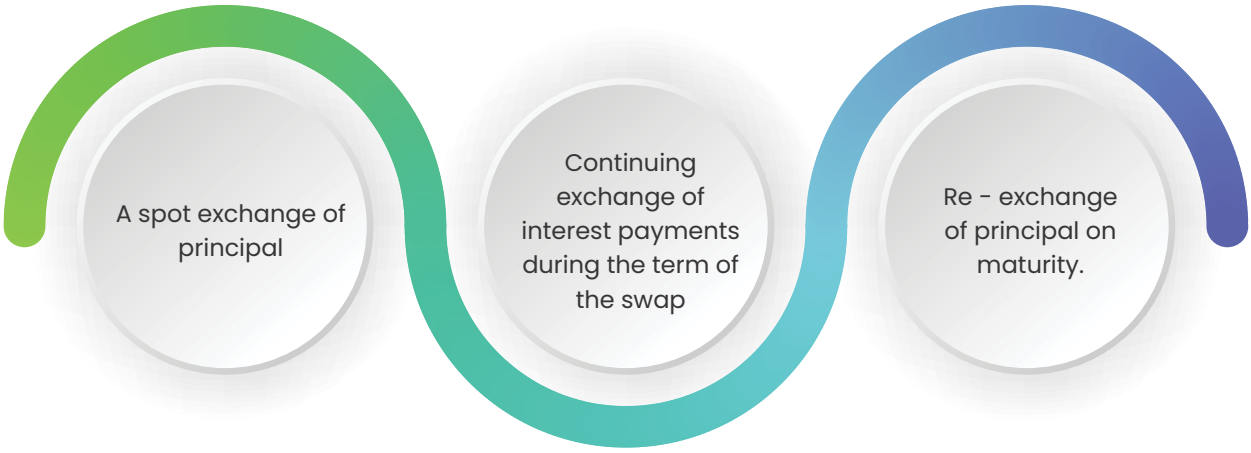


The holder of an ***American option*** has the right to exercise the contract at any stage during the period of the option, whereas the holder of a ***European option*** can exercise his right only at the end of the period.

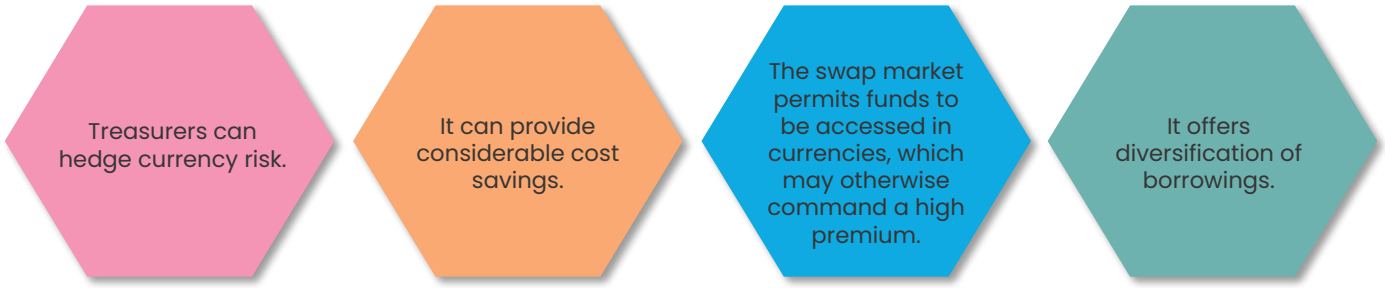
Distinction between Options and Futures

	Options	Futures
(a)	Only the seller (writer) is obliged to perform	Both the parties are obligated to perform.
(b)	Premium is paid by the buyer to the seller at the inception of the contract	No premium is paid by any party.
(c)	Loss is restricted while there is unlimited gain potential for the option buyer.	There is potential/risk for unlimited gain/loss for the futures buyer.
(d)	An American option contract can be exercised any time during its period by the buyer.	A futures contract has to be honoured by both the parties only on the date specified.

Currency Swaps



Benefits of Currency Swaps



COMMODITY SWAPS

It is a kind of series of Future Contracts involving settlement on the basis of notional amount over multiple dates at predetermined specified reference prices or related commodities indices. Although this swap strategy can be used for any type of commodity but is primarily used in hedging oil price risks.

EQUITY SWAPS

An equity swap is an arrangement in which total return on equity or equity index in the form of dividend and capital is exchanged with either a fixed or floating rate of interest.

Popular Derivative Products

Some of the popularly used derivative products are as follows:

FORWARD IMPORTER

This Product consists of an FX Transaction where the Counterparty will buy the Notional Amount of USD against INR at the forward rate under predefined conditions.

FORWARD EXPORTER

This Product consists of an FX Transaction where the Counterparty will sell the Notional Amount of USD against INR at the forward rate under predefined conditions.

FX CALL OPTION

This Product consists of an FX Transaction where the Counterparty (generally Importer) has a right to buy the Notional Amount of USD against INR at the relevant Strike Rate(s) under predefined conditions.

FX PUT OPTION

This Product consists of an FX Transaction where the Counterparty (generally exporter) has a right to sell the Notional Amount of USD against INR at the relevant Strike Rate(s) under predefined conditions.

IRS USD FLOATING TO FIXED

In this swap transaction one party pays periodic amounts in respect of each calculation period in a currency based on a fixed rate, and the other party pays periodic amounts in the same currency based on a floating rate that is reset periodically. Such periodic amounts calculations are based on predetermined notional amount(s) in that same currency. Notional amount(s) may be constant throughout the term of the transaction, or amortizing, accreting, or otherwise variable over the term.

Strategies for Exposure Management

A company's attitude towards risk, financial strength, nature of business, vulnerability to adverse movements, etc. shapes its exposure management strategies. There can be no single strategy which is appropriate to all businesses. Four separate strategy options are feasible for exposure management.

LOW RISK: LOW REWARD

This option involves automatic hedging of exposures in the forward market as soon as they arise, irrespective of the attractiveness or otherwise of the forward rate.

LOW RISK : REASONABLE REWARD

This strategy requires selective hedging of exposures whenever forward rates are attractive but keeping exposures open whenever they are not.

HIGH RISK : LOW REWARD

Perhaps the worst strategy is to leave all exposures unhedged.

HIGH RISK : HIGH REWARD

This strategy involves active trading in the currency market through continuous cancellations and re-bookings of forward contracts. This strategy should be done in full consciousness of the risks.

Chapter 11 – International Financial Management

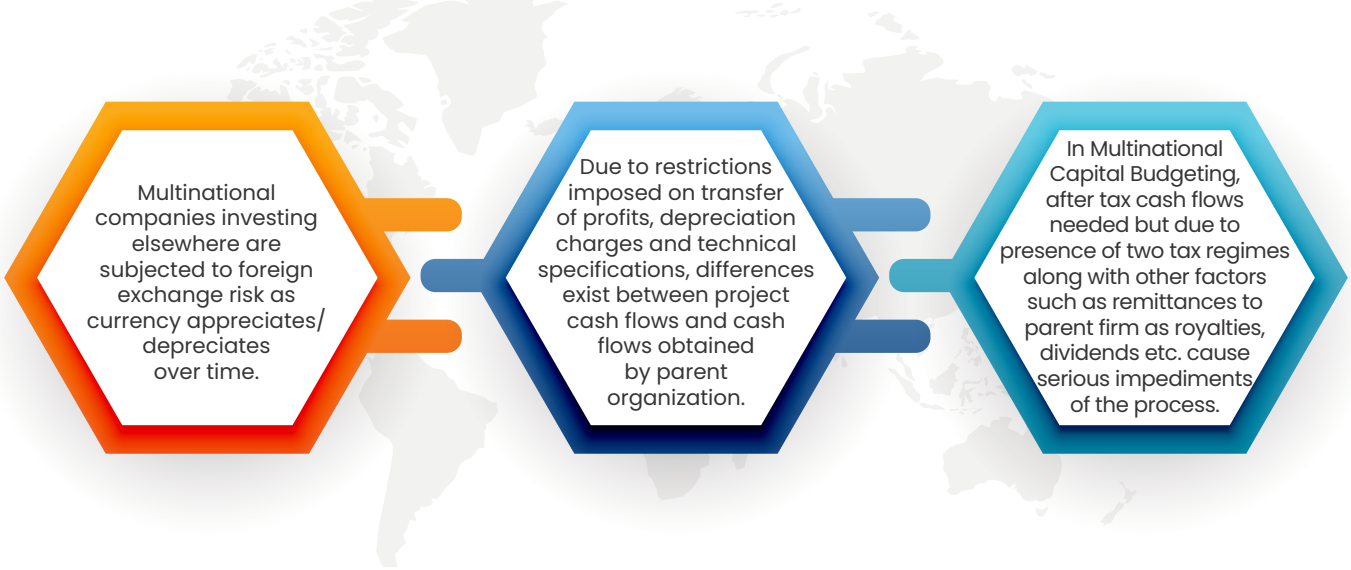
International Capital Budgeting

Complexities Involved

Multinational Capital Budgeting has to take into consideration different factors and variables which affect a foreign project and are complex in nature than domestic projects. The factors crucial in such a situation are:

- Cash flows from foreign projects have to be converted into currency of parent organization.
- Parent cash flows are quite different from project cash flows.
- Profits remitted to parent firm are subject to tax in both home as well as host country.
- Effect of foreign exchange risk on parent firm's cash flow.
- Changes in rates of inflation causing a shift in the competitive environment and thereby affecting cash flows over a specific time period.
- Restrictions imposed on cash flow distribution generated from foreign projects by the host country.
- Initial investment in host country to benefit from release of blocked funds.
- Political risk in the form of changed political events reduces the possibility of expected cash flows.
- Concessions/benefits provided by host country ensures upsurge in profitability position of foreign project.
- Estimation of terminal value in multinational capital budgeting is difficult since the buyers in parent company have divergent views on acquisition of the project.

Problems Affecting Foreign Investment Analysis



Project vis-à-vis Parent Cash Flows

- There exists a big difference between the project and parent cash flows due to tax rules, exchange controls.
- Evaluation of a project on the basis of own cash flows entails that the project should compete favorably with domestic firms and earn a return higher that the local competitors.
- An investment has to be evaluated on basis of net after tax operating cash flows generated. As both types of cash flows (operating and financial) are clubbed together, it is essential to see that financial cash flows are not mixed with operating cash flows.

Discount Rate and Adjusting Cash Flows

- The annual cash flows are discounted at a rate applicable to the project either at that of the host country or parent country.
- Instead of adjusting discount rate while considering risk it is worthwhile to adjust cash flows.
- Cash flows generated by the project and remitted to the parent during each period are adjusted for political risk, exchange rate and other uncertainties by converting them into certainty equivalents.

Adjusted Present Value

- The APV model is a value additive approach to capital budgeting process i.e. each cash flow is considered individually and discounted at a rate consistent with risk involved in the cash flow.
- The APV method uses different discount rates for different segments of the total cash flows depending on the degree of certainty attached with each cash flow.
- The APV model is represented as follows:

$$-I_0 + \sum_{t=1}^{n} \frac{X_t}{(1+k^*)^t} + \sum_{t=1}^{n} \frac{T_t}{(1+i_d)^t} + \sum_{t=1}^{n} \frac{S_t}{(1+i_d)^t}$$

Where

I_0	→	Present Value of Investment Outlay	k^*	→	Unlevered Cost of Capital
$\frac{X_t}{(1+k^*)^t}$	→	Present Value of Operating Cash Flow	T_t	→	Tax Saving in year t due to financial mix adopted
$\frac{T_t}{(1+i_d)^t}$	→	Present Value of Interest Tax Shields	S_t	→	Before tax value of interests subsidies in year t due to project specific financing
$\frac{S_t}{(1+i_d)^t}$	→	Present Value of Interest Subsidies	i_d	→	Before tax cost of debt

International Sources of Finance

Foreign Currency Convertible Bonds (FCCBs)

- A type of convertible bond issued in a currency different than the issuer's domestic currency i.e. the money being raised by the issuing company is in the form of a foreign currency.
- A convertible bond is a mix between a debt and equity instrument.
- Though acts like a bond by making regular coupon and principal payments, but these bonds also give the bondholder the option to convert the bond into stock.

Advantages

- The convertible bond gives the investor the flexibility to convert the bond into equity at a price or redeem the bond at the end of a specified period, normally three years if the price of the share has not met his expectations.
- Companies prefer bonds as it leads to delayed dilution of equity and allows company to avoid any current dilution in earnings per share that a further issuance of equity would cause.
- FCCBs are easily marketable as investors enjoy the option of conversion into equity resulting into capital appreciation. Further investor is assured of a minimum fixed interest earnings.

Disadvantages

- Exchange risk is more in FCCBs as interest on bonds would be payable in foreign currency. Thus, companies low debt equity ratios, large forex earnings potential only opt for FCCBs.
- FCCBs mean creation of more debt and a forex outgo in terms of interest which is in foreign exchange.
- In the case of convertible bonds, the interest rate is low, say around 3–4% but there is exchange risk on the interest payment as well as of re-payment if the bonds are not converted into equity shares.

American Depository Receipts (ADRs)

- Depository Receipts (DRs) issued by a company in USA is known as ADRs.
- ADR is generally created by deposit of securities of a non-United States company with a custodian bank in the country of incorporation of the issuing company.
- ADRs are USD denominated and are traded in the same way as are the securities of US companies.

Global Depository Receipts (GDRs)

- A Depository Receipt is basically a negotiable certificate, denominated in a currency not native to the issuer, that represents the company's publicly - traded local currency equity shares.
- Depository Receipts issued in US are called ADRs, which are denominated in USD and outside of USA, these are called GDRs.
- DRs are created when local currency shares of Indian company are delivered to custodian bank against which Depository bank issues depository receipts in USD.

Euro – Convertible Bonds (ECBs)

- A convertible bond is a debt instrument which gives the holders of the bond an option to convert the bond into a predetermined number of equity shares of the company.
- If the issuer company desires, the issue of such bonds may carry two options viz.
  - **Call Options** (Issuer's option) - where the terms of issue of the bonds contain a provision for call option, the issuer company has the option of calling (buying) the bonds for redemption before the date of maturity of the bonds.
  - **Put options** (Holder's option) - A provision of put option gives the holder of the bonds a right to put (sell) his bonds back to the issuer company determined price at a pre- and date.

Other Sources

- **Euro-Convertible Zero Coupon Bonds:** These bonds are structured as a convertible bond. No interest is payable on the bonds. But conversion of bonds takes place on maturity at a pre-determined price.
- **Euro-bonds with Equity Warrants:** These bonds carry a coupon rate determined by the market rates. The warrants are detachable. Pure bonds are traded at a discount. Fixed income funds may like to invest in these bonds for the purposes of regular income.
- **Syndicated bank loans:** It is one of the earlier ways of raising funds in the form of large loans from banks with good credit rating, can be arranged in reasonably short time and with few formalities. The maturity of the loan can be for a duration of 5 to 10 years. The interest rate is generally set with reference to an index, say, SOFR plus a spread which depends upon the credit rating of the borrower. Some covenants are laid down by the lending institution like maintenance of key financial ratios.
- **Euro-bonds:** These are basically debt instruments denominated in a currency issued outside the country of that currency for examples Yen bond floated in France. Primary attraction of these bonds is the refuge from tax and regulations and provide scope for arbitraging yields. These are usually bearer bonds and can take the form of

  (i) Traditional Fixed Rate Bonds.

  (ii) Floating Rate Notes (FRNs)

  (iii) Convertible Bonds.
- **Foreign Bonds:** Foreign bonds are denominated in a currency which is foreign to the borrower and sold at the country of that currency. Such bonds are always subject to the restrictions and are placed by that country on the foreigner's funds.
- **Euro Commercial Papers:** These are short term money market securities usually issued at a discount, for maturities less than one year.
- **Credit Instruments:** There are many types of credit instruments used in effecting foreign remittances. They differ in the speed, with which money can be received by the creditor at the other end after it has been paid in by the debtor at his end. The price or the rate of each instrument, therefore, varies with extent of the loss of interest and risk of loss involved.

International Financial Centre (GIFT CITY)

International Financial Centre (IFC) is the financial center that caters to the needs of the customers outside their own jurisdiction. Broadly, speaking IFC is a hub that deals with flow of funds, financial products and financial services even though in own land but with different set of regulations and laws.

Benefits of IFC

- Opportunity for qualified professionals working outside India come here and practice their profession.
- A platform for qualified and talented professionals to pursue global opportunities without leaving their homeland.
- Stops Brain Drain from India.
- Bringing back those financial services transactions presently carried out abroad by overseas financial institutions/entities or branches or subsidiaries of Indian Financial Market.
- Trading of complicated financial derivative can be started from India.

Constituents of IFC

Highly developed Infrastructure — A leading edge infrastructure is a prerequisite for creating a platform to offer internationally competitive financial services.

Destabilized political environment brings country risk for investment by foreign nationals. Hence, to accelerate foreign participation in growth of financial center, stable political environment is a prerequisite. — **Stable Political Environment**

Strategic Location — The geographical location of the finance center should be strategic such as near to airport, seaport and should have friendly weather.

The quality of life at the center should be good as center retains highly paid professionals from own country as well from outside. — **Quality Life**

Rationale Regulatory Framework — Rationale legal regulatory framework is another prerequisite of international finance center as it should be fair and transparent.

The economy should be sustainable and should possess capacity to absorb all the shocks as it will boost investors' confidence. — **Sustainable Economy**

GIFT City – India's International Financial Services Centre

To compete with its rival financial services centres situated in Dubai, Hong Kong etc. the idea of setting up an International Financial Center in India was coined in 2007. The main motive of setting up IFC in India was to retain the financial services businesses in India which moves out of India.

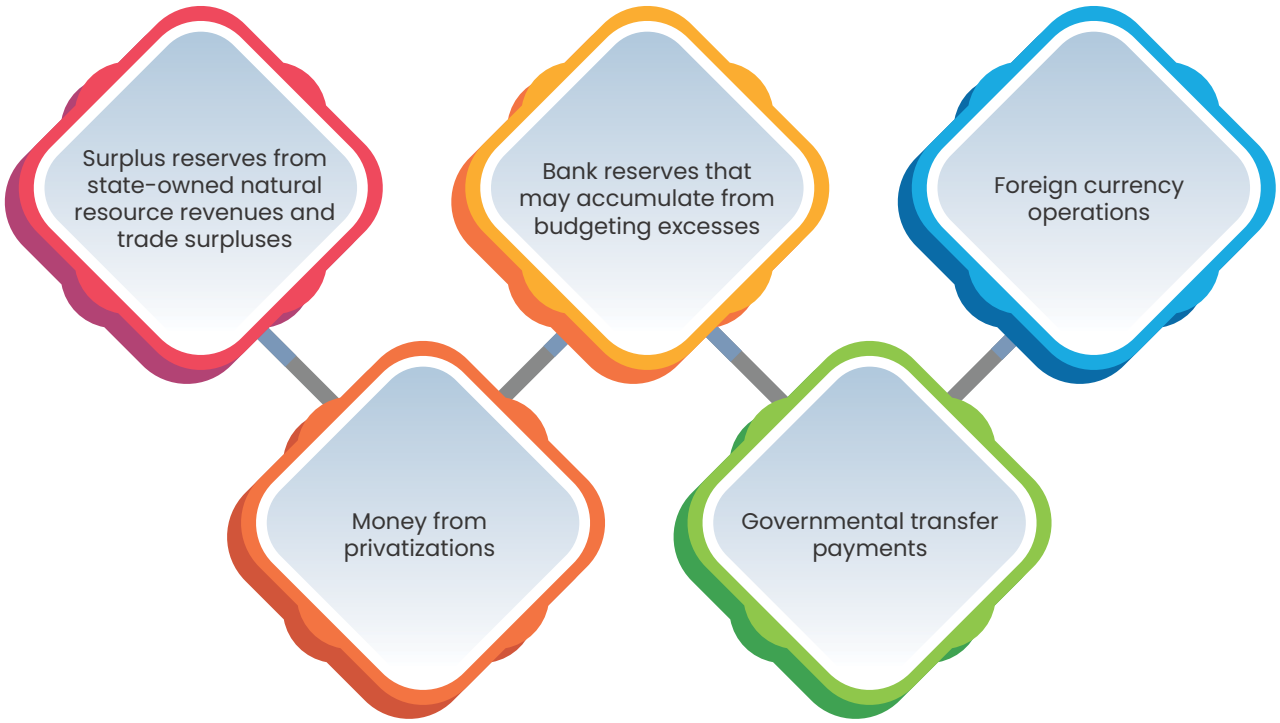
Since foreign investors normally remain hesitant to get registered in India GIFT city provides them a separate jurisdiction where it is easy to do business because of relaxed tax and other laws.

Accordingly, Government of India operationalized International Financial Services Centre (IFSC) at GIFT Multi Services SEZ in April 2015. The Union Budget 2016 provided competitive tax regime for the IFSC at GIFT SEZ.

Sovereign Funds

A Sovereign Wealth Fund (SWF) is a state-owned investment fund comprised of money generated by the government. This money generally derived by Government from country's own surplus reserves. SWFs provide a benefit for a country's economy and its citizens.

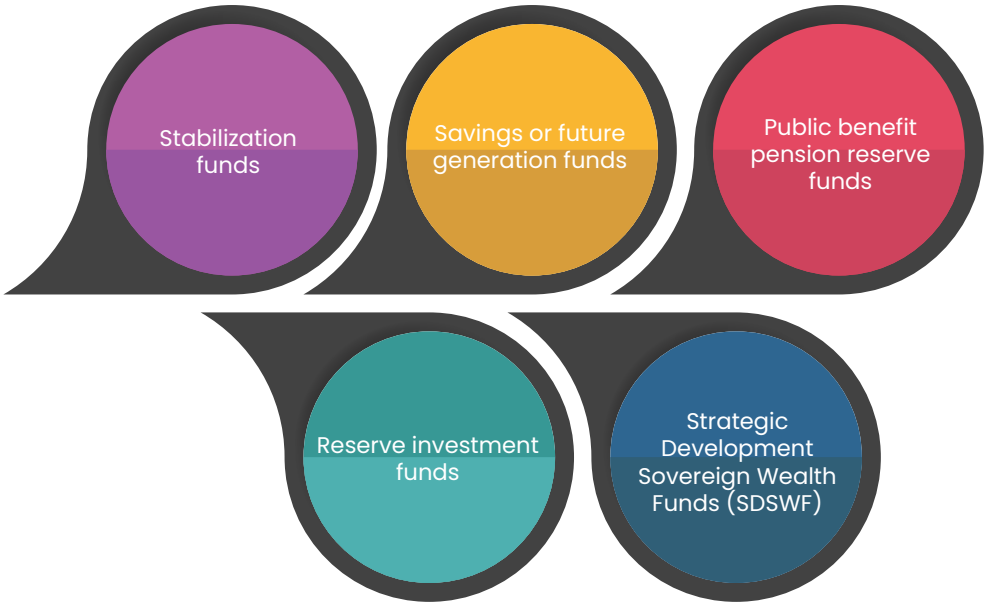
Popular Sources for Funding SWF



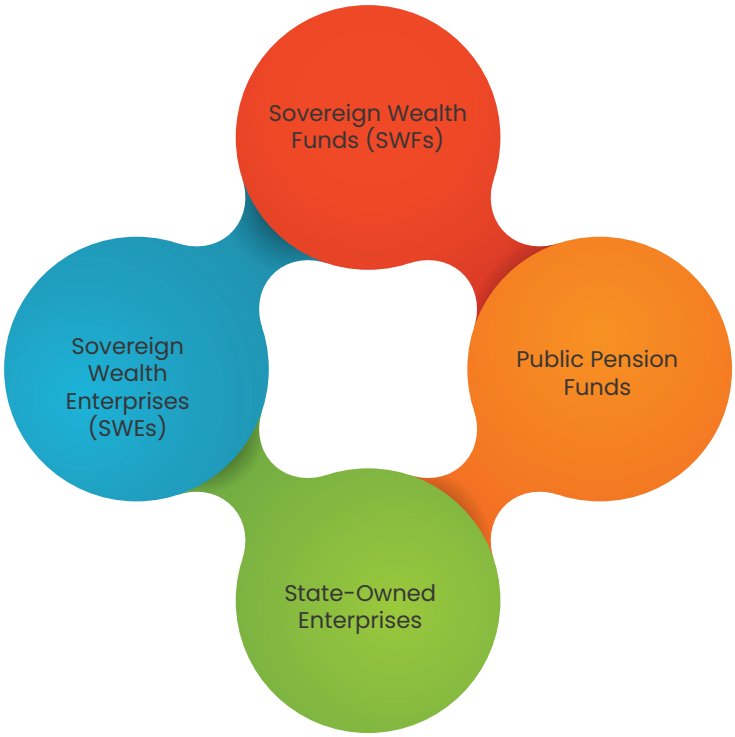
Common Objectives of SWF

- Protection & Stabilization of the budget and economy from excess volatility in revenues/exports
- Diversify from non-renewable commodity exports
- Earn better returns than returns on foreign exchange reserves
- Assist monetary authorities dissipate unwanted liquidity
- Increase savings for future generations
- Fund social and economic development
- Ensuring Sustainable long term capital growth for target countries
- Political strategy

Traditional Classification of SWFs



Types of Sovereign Investment Vehicles



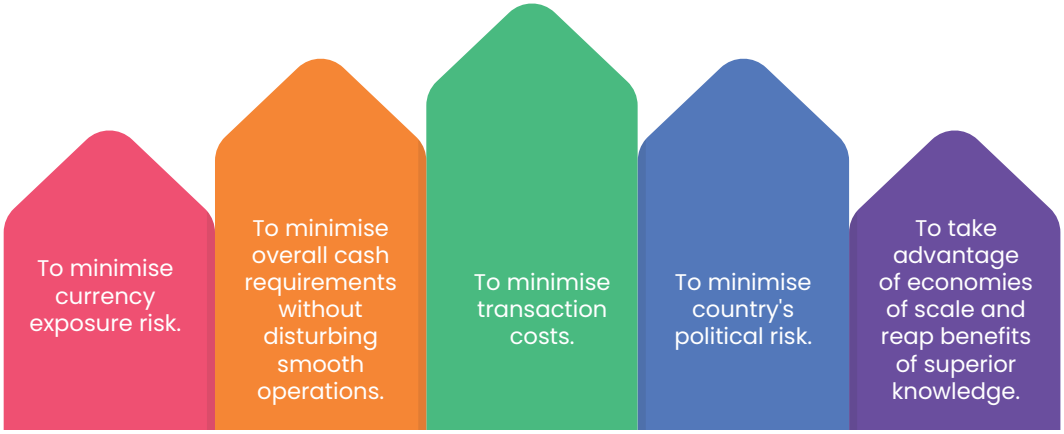
International Working Capital Management

The management of working capital in an international firm is much more complex as compared to a domestic one. The reasons for such complexity are:

- A multinational firm has a wider option for financing its current assets.
- Interest and tax rates vary from one country to the other.
- A multinational firm is confronted with foreign exchange risk due to the value of inflow/outflow of funds as well as the value of import/export are influenced by exchange rate variations.
- Restrictions imposed by the home or host country government towards movement of cash and inventory on account of political considerations affect the growth of MNCs.
- With limited knowledge of the politico-economic conditions prevailing in different host countries, a Manager of a multinational firm often finds it difficult to manage working capital of different units of the firm operating in these countries.
- Freedom to move funds from one location to another may not be available for MNCs operating in countries that have not subscribed to full capital convertibility (like India).

Multinational Cash Management

Objectives of an effective system of international cash management



Advantages of centralised cash management system

(a) To maintain minimum cash balance during the year.

(b) To manage judiciously liquidity requirements of the centre.

(c) To optimally use various hedging strategies so that MNC's foreign exchange exposure is minimised.

(d) To aid the centre to generate maximum returns by investing all cash resources optimally.

(e) To aid the centre to take advantage of multinational netting so that transaction costs and currency exposure are minimised.

(f) To make maximum utilization of transfer pricing mechanism so that the firm enhances its profitability and growth.

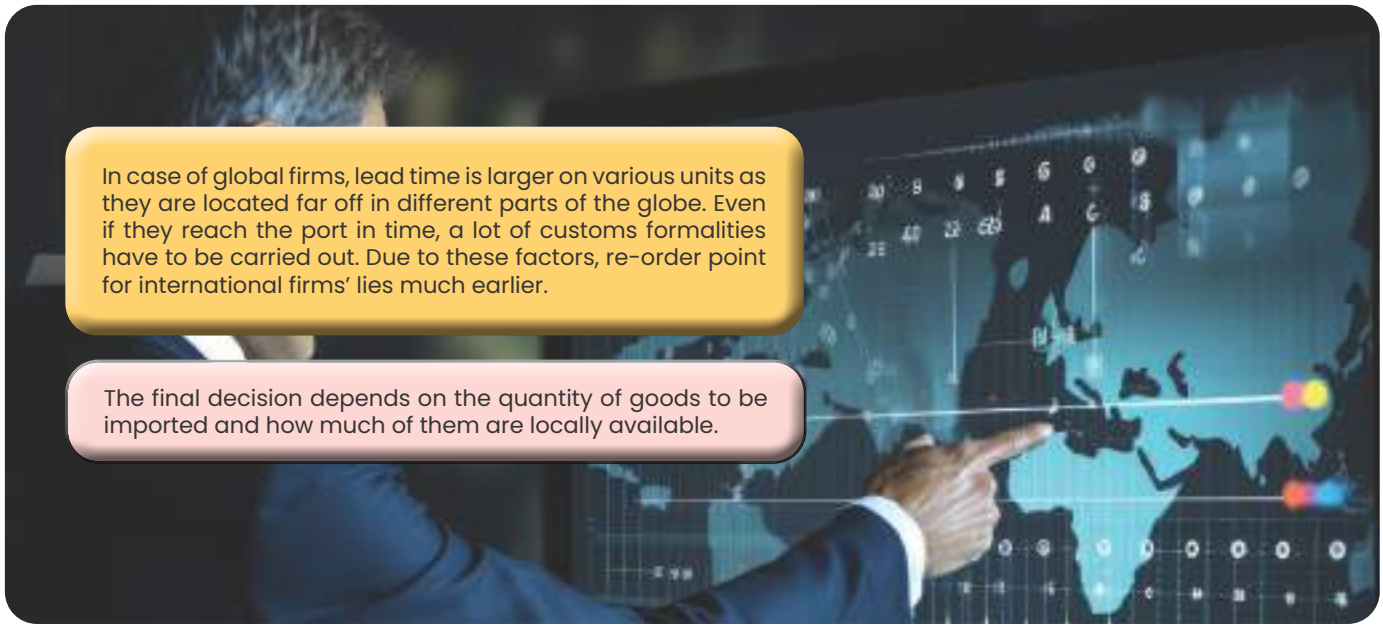
(g) To exploit currency movement correlations.

(h) Pooling of funds allows for reduced holding as a result the variance of the total cash flows for the entire group will be smaller than the sum of the individual variances.

Optimising cash Inflows

Numerous ways of optimizing cash inflows

International Inventory Management



In case of global firms, lead time is larger on various units as they are located far off in different parts of the globe. Even if they reach the port in time, a lot of customs formalities have to be carried out. Due to these factors, re-order point for international firms' lies much earlier.

The final decision depends on the quantity of goods to be imported and how much of them are locally available.

International Receivables Management

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, 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.

In case of Intra firm sales, the focus is on global allocation of firm's resources. Different parts of the same product are produced in different units established in different countries and exported to the assembly units leading to a large size of receivables. The question of quick or delayed payment does not affect the firm as both the seller and the buyer are from the same firm.

Chapter 12 – Interest Rate Risk Management

Introduction

The factors affecting interest rates are largely macro-economic in nature:

Demand/supply of money	When economic growth is high, demand for money increases, pushing the interest rates up and vice versa.
Inflation	The higher the inflation rate, the more interest rates are likely to rise.
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.

Benchmark Rates

The factors affecting interest rates are largely macro-economic in nature:

- As the name implies the benchmark interest is an interest rate that forms the basis for determination of other interest rates. These rates are also known as 'Reference Rates'.
- These rates are very important in any economy and banking system and especially in financial transactions as they not only form the basis of financial contracts such as bank overdrafts, loans, mortgages but are also used in other complex financial transactions.
- The benchmark rates are widely used in derivative transactions such as Forward, Future, Option Contract and especially Swap Contracts (discussed later in detail). The Benchmark rate also forms the basis for floating rate loans. Generally based on relative credit rating of the concerned entities basis points (BPs) are added over and above the benchmark rate for any financial transaction loan or issuance of Bonds etc.
- In financial transactions both domestic as well as international benchmark rates are used.
- The different ARRs are as follows:

Region	Rate	Regulator	Nature
USA	Secured Overnight Financing Rate (SOFR)	Federal Reserve Bank of New York	Secured
UK	Sterling Overnight Index Average (SONIA)	Bank of England	Unsecured
Europe	Euro-Short-Term Rate (€STER)	European Central Bank	Unsecured
Japan	Tokyo Overnight Average Rate (TONAR)	Bank of Japan	Unsecured
Switzerland	Swiss Average Rate Overnight (SARON)	SIX (Swiss Stock Exchange)	Secured

- In India though there are many benchmark interest rates such as Repo Rate, Prime Lending Rate, MCLR (Marginal Cost of Lending Rate) etc. but most of the common benchmark rates are MIBOR (Mumbai Interbank Offered Rate) and MIBID (Mumbai Interbank Bid Rate).
- While MIBOR is that interest rate at which bank will charge from borrower, the MIBID is that rate at which bank would like to borrow from other bank.

Interest Rate Risk

Interest risk is the change in prices of bonds that could occur because of change in interest rates. It also considers change in impact on interest income due to changes in the rate of interest. In other words, price as well as reinvestment risks require focus.

Types of Interest Rate Risk

GAP EXPOSURE

A gap or mismatch risk arises from holding assets and liabilities and offbalance sheet items with different principal amounts, maturity dates or re-pricing dates, thereby creating exposure to unexpected changes in the level of market interest rates. This exposure is more important in relation to banking business.

BASIS RISK

The risk that the interest rate of different assets, liabilities and offbalance sheet items may change in different magnitude.

EMBEDDED OPTION RISK

This risk arises on account of exercise of option for prepayment or premature withdrawal of instruments before their stated maturities on account of change in the interest rate.

YIELD CURVE RISK

Since there is an inverse relationship between yield and price of fixed income securities, price of these securities fall when yield i.e. Interest Rate rises and vice versa.

PRICE RISK

Price risk occurs when assets are sold before their stated maturities. In the financial market, bond prices and yields are inversely related. The price risk is closely associated with the trading book, which is created for making profit out of short-term movements in interest rates.

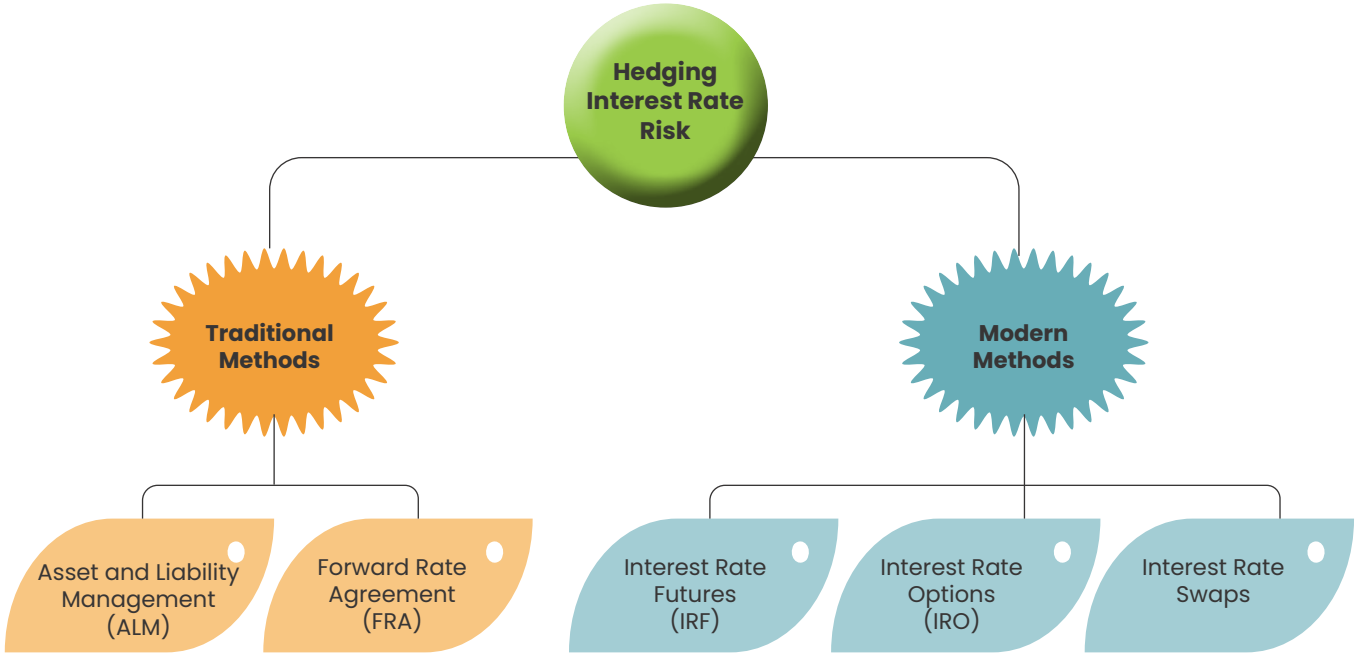
REINVESTMENT RISK

Uncertainty with regard to interest rate at which the future cash flows could be reinvested is called reinvestment risk.

Measuring Interest Rate Risk

- Before Interest Rate Risk (IRR) could be managed, they should be identified and quantified.
- The IRR measurement system should address all material sources of interest rate risk including gap or mismatch, basis, embedded option, yield curve, price, reinvestment and net interest position risks exposures.
- The IRR measurement system should also take into account the specific characteristics of each individual interest rate sensitive position and should capture in detail the full range of potential movements in interest rates.
- Different techniques for measurement of interest rate risk:
  - Maturity Gap Analysis (to measure the interest rate sensitivity of earnings),
  - Duration (to measure interest rate sensitivity of capital),
  - Simulation and
  - Value at Risk.
- While these methods highlight different facets of interest rate risk, many banks use them in combination, or use hybrid methods that combine features of all the techniques.

Hedging Interest Rate Risk



Traditional Methods

Asset and Liability Management (ALM)

Asset-Liability Management (ALM) is one of the important tools of risk management in commercial banks of India. It is the management of structure of balance sheet (liabilities and assets) in such a way that the net earnings from interest are maximized within the overall risk preference (present and future) of the institutions. It involves the proper use of discretionary element i.e. increase or decrease interest sensitive funds.

Forward Rate Agreements (FRAs)

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 in future. Unlike futures FRAs are not traded on an exchange thus are called OTC product.

Modern Methods

Interest Rate Futures

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. In IRF following are two important terms:

Conversion factor

All the deliverable bonds have different maturities and coupon rates. To make them comparable to each other, Conversion factor for each deliverable bond and for each expiry at the time is used. (Conversion Factor) x (Futures price) = Actual delivery price for a given deliverable bond.

Cheapest to Deliver (CTD):

The CTD is the bond that minimizes difference between the quoted Spot Price of bond and the Futures Settlement Price (adjusted by the conversion factor).

Interest Rate Options

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. Some of the important types of Interest Rate Options are as follows:

CAP OPTION

The buyer of an interest rate cap pays the seller a premium in return for the right to receive the difference in the interest cost on some notional principal amount any time a specified index of market interest rates rises above a stipulated "Cap Rate."

FLOOR OPTION

It is an OTC instrument that protects the buyer of the floor from losses arising from a decrease in interest rates. The seller of the floor compensates the buyer with a pay off when the interest rate falls below the strike rate of the floor.

INTEREST RATE COLLARS

It is a combination of a Cap and Floor. The purchaser of a Collar buys a Cap and simultaneously sells a Floor. A Collar has the effect of locking its purchases into a floating rate of interest that is bounded on both high side and the low side.

Interest Rate Swaps

In an interest rate swap, the parties to the agreement, termed the swap counterparties, agree to exchange payments indexed to two different interest rates. Total payments are determined by the specified notional principal amount of the swap, which is never actually exchanged.

Swap Dealers

The intermediary collected a brokerage fee as compensation, but did not maintain a continuing role once the transaction was completed. The contract was between the two ultimate swap users, who exchanged payments directly.

A fixed/floating swap is characterized by:

- a fixed interest rate;
- a variable or floating interest rate which is periodically reset;
- a notional principal amount upon which total interest payments are based; and
- the term of the agreement, including a schedule of interest rate reset dates (that is, dates when the value of the interest rate used to determine floating-rate payments is determined) and payment dates.

Timing of Payments

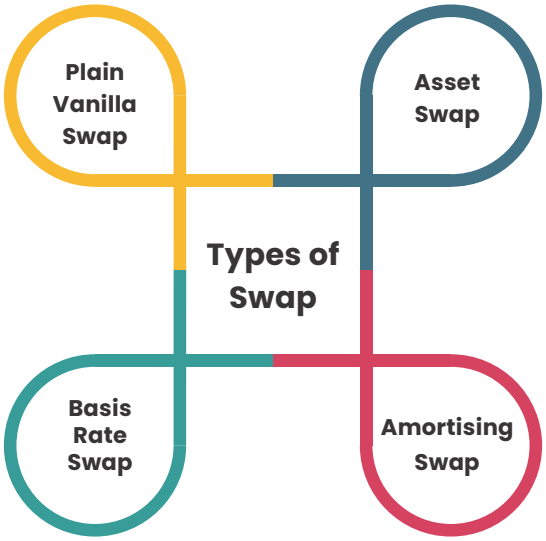
A swap is negotiated on its "trade date" and settlement takes effect two days later called "settlement date."

Price Quotation

The convention in the swap market is to quote the fixed interest rate as an All-In-Cost (AIC), which means that the fixed interest rate is quoted relative to a flat floating-rate index.

Types of Swap

Also called Generic Swap and it involves the exchange of a fixed rate loan to a floating rate loan. Floating rate basis can be SOFR, ESTER, SONIA, MIBOR Prime Lending Rate etc.



Like plain vanilla swaps with the difference that it is the exchange fixed rate investments such as bonds which pay a guaranteed coupon rate with floating rate investments such as an index.

Also, called Non-Generic Swap. Similar to plain vanilla swap with the difference payments based on the difference between two different variable rates. In other words two legs of swap are floating but measured against different benchmarks.

An interest rate swap in which the notional principal for the interest payments declines during the life of the swap. They are particularly useful for borrowers who have issued redeemable bonds or debentures. It enables them to interest rate hedging with redemption profile of bonds or debentures.

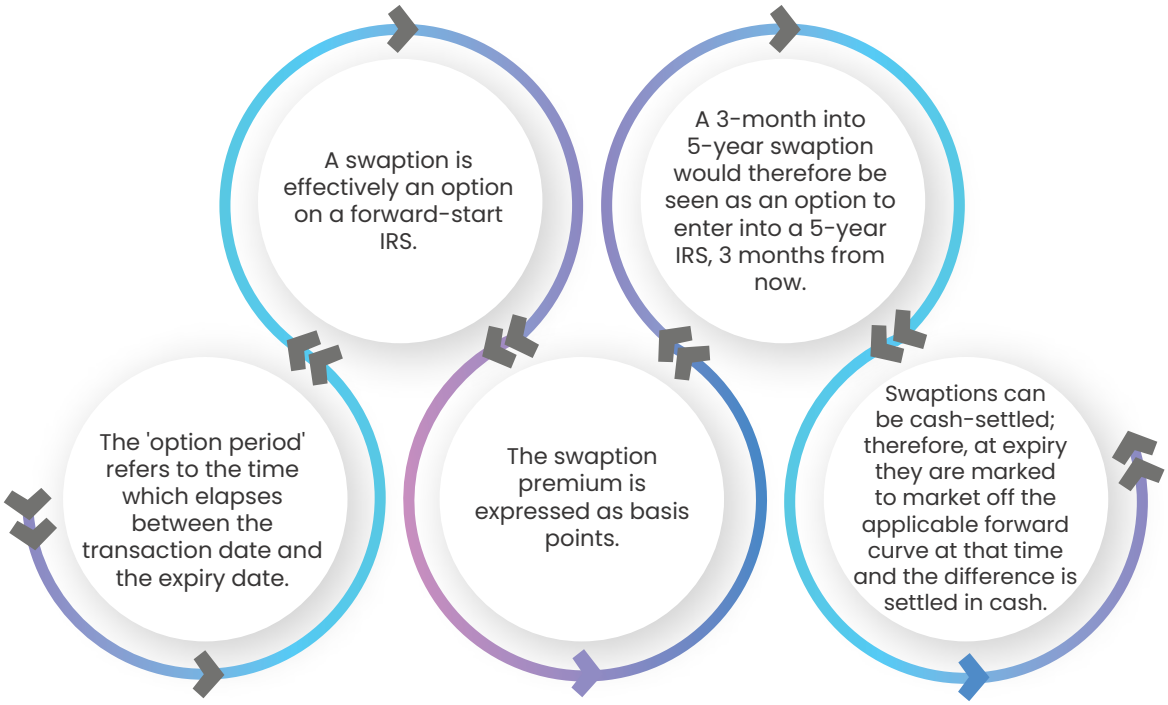
Swaptions

An interest rate swaption is simply an option on an interest rate swap. It gives the holder the right but not the obligation to enter into an interest rate swap at a specific date in the future, at a particular fixed rate and for a specified term.

A fixed rate payer swaption gives the owner of the swaption the right but not the obligation to enter into a swap where they pay the fixed leg and receive the floating leg.

A fixed rate receiver swaption gives the owner of the swaption the right but not the obligation to enter into a swap in which they will receive the fixed leg, and pay the floating leg.

Principal features of Swaptions



Pricing of Swaptions

The pricing methodology depends upon setting up a model of probability distribution of the forward zero-coupon curve which undoes a Market process.

Uses of Swaptions

(a) Swaptions can be applied in a variety of ways for both active traders as well as for corporate treasurers.

(b) Swap traders can use them for speculation purposes or to hedge a portion of their swap books.

(c) Swaptions have become useful tools for hedging embedded optionality which is common to the natural course of many businesses.

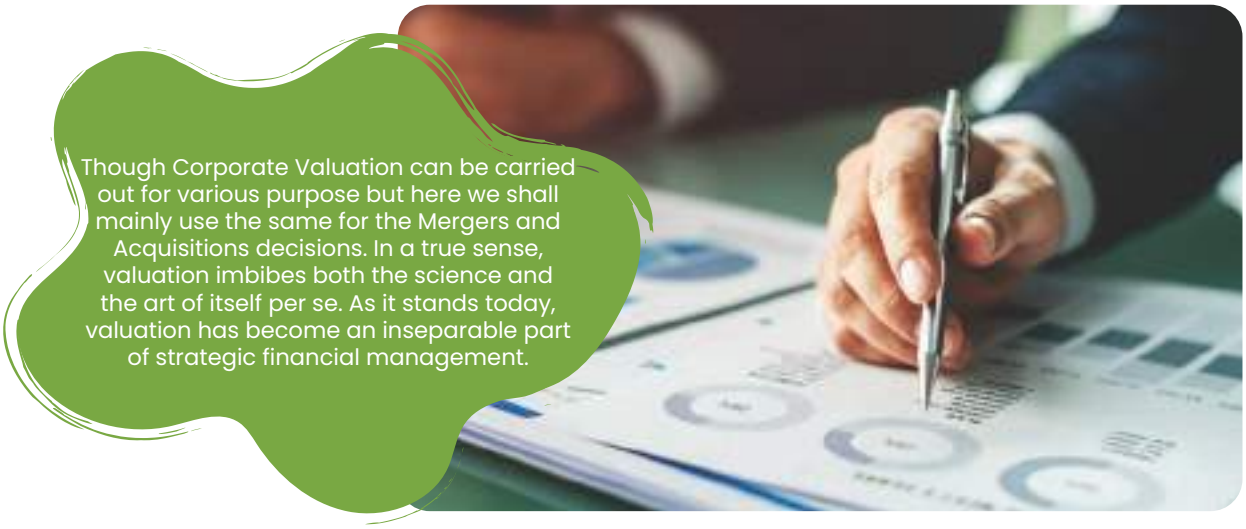
(d) Swaptions are useful to borrowers targeting an acceptable borrowing rate.

(e) Swaptions are also useful to those businesses tendering for contracts.

(f) Swaptions also provide protection on callable/puttable bond issues.

Chapter 13 – Business Valuation

Conceptual Framework of Valuation



Important Terms Associated with Valuation

The Concept of PV (Present Value) of cash flows	According to concept of TVM, a receipt of ₹ 1,000 twelve months hence would not be the same as of today becasue of the concept of 'Time Value of Money'.
The Concept of IRR (Internal Rate of Return)	IRR as a discount rate that will get the PVs of cash inflows equal to the investment.
ROI (Return on Investment)	ROI is the return over the investment made in an entity from a stakeholder's point of view.
Perpetual Growth Rate (Gordon Model)	The Gordon's model assumes a perpetual growth in dividend; thereby potential investor eyeing stable inflows will take the latest Dividend payout and factor it with his expected rate of return.
The term 'TV' (Terminal Value)	Terminal Value (TV) is also referred to as the 'Horizon Value' that the investor forecasts for valuing his investment at the exit point and mostly TV is estimated using a perpetual growth model as per the Gordon model.

Approaches/Methods of Valuation

Asset Based Approach

Being a straight forward method, the value of shares of target company is computed in terms of net assets acquired. This method is least important in case of IT companies where 'hard' assets make little importance as these companies' assets are intellectual property rights and human resources.

This approach further can be classified into following three methods:

A. Net Asset Value

The most simplest method also called 'Book Value' Method computes the value of the shares of the company as follows:

Net Fixed Asset = Fixed Assets + Net Current Assets – Long Term Debt

Though this method has the advantage of being simplest as it uses historical costs which are easily available, but it has little relevance as Balance Sheet is not a valuation device.

B. Net Realizable Value

Also called Liquidation Value or Adjusted Book Value it can be defined as realizable value of all assets after deduction of liquidation expenses and paying off liabilities. Though in some case liquidation expenses can be ignored if business of target company is acquired as a going concern.

C. Replaceable Value

This method involves valuation as per determination of the cost of group of assets and liabilities of equivalent company in the open market. This method has an advantage over Book Value as it takes into consideration proper valuation and generally it is slightly higher than Net Realizable Value as quick asset disposal is not encouraged.

Income Based Approach

This approach looks to overcome the drawbacks of using the asset-backed valuation approach by referring to the earning potential. This method is more suitable when acquiring company is intending to continue business of target company for foreseen future without selling or liquidating assets of the same. Accordingly, if any additional earning is there due to acquisition the same should also be considered in valuation.

There are two versions of this approach.

PE Ratio or Earning Yield Multiplier

This method is generally used for valuing listed companies whose PE Ratios are available. This approach has one benefit that it takes into account the expected growth rate of the company as well as market expectations.

The price or value of equity share can be calculated using the following equation:

Price Per Share = EPS x PE Ratio

Though mainly this method is followed for listed companies but PE Ratio of equivalent companies or the industry can be used to value the shares of the unlisted companies.

Capitalisation of Earning

In this method the value of business is calculated by capitalization of company's expected annual maintainable profit using appropriate required rate of return or yield or discounting rate.

Annual expected maintainable profit can be calculated using weighted average of previous years' profits after adjusting synergy benefits or economy of scales in the same profit.

The capitalization rate depends on many factors. The capitalization rate can be approximated as follows:

$$\text{Required Earning Yield} = \frac{\text{EPS}}{\text{SharePrice}}$$

$$\text{Reciprocal of PE Ratio} = \frac{1}{\text{PE Ratio}}$$

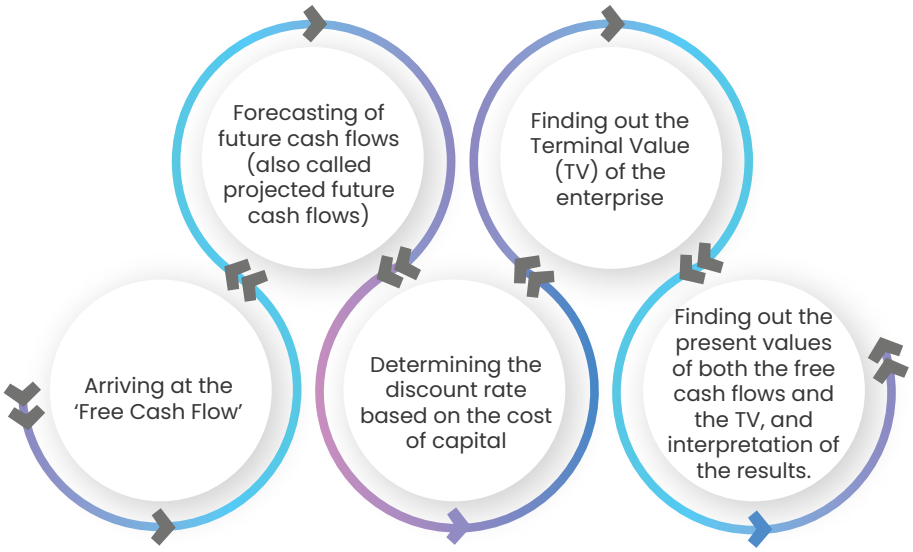
Using this method valuation of the company can be computed as follows:

$$\text{Capitalized Earning Value} = \frac{\text{Expected Annual Maintainable Profit}}{\text{Capitalization Rate or Required Earning Yield}}$$

Cash Flow Based Approach

As opposed to the asset based and income based approaches, the cash flow approach takes into account the quantum of free cash that is available in future periods, and discounting the same appropriately to match to the flow's risk.

There are essentially five steps in performing DCF based valuation:



Measuring Cost of Equity

An affermative way to look at value of an investment or a portfolio is to view returns as a direct benefit of assuming risks represent by CAPM.

Arbitrage Pricing Model

If a particular asset, say a stock, has its major influencers as the 'interest rate fluctuations' and the 'sectoral growth rate', then the stocks' return would be calculated by using the Arbitrage Pricing Theory (APT) in the following manner:

(a) Calculate the risk premium for both these two risk factors (beta for the risk factor 1 – interest rate, and beta of the risk factor 2 – sector growth rate; and,

(b) Adding the risk free rate of return.

Thus, the formula for APT is represented as –

$R_f + ß_1(RP_1) + ß_2(RP2) + ...ß_j(RP_n)$

It is thereby clear that APT strives to model E(R) as 'a linear function of various macro-economic factors' where sensitivity to changes in each factor is represented by a factor-specific beta coefficient.

Estimating Beta and Valuation of Unlisted Companies

The biggest challenge in calculation of the 'value' of a privately held enterprise is arriving at the Cost of Capital which in turn depends on Beta for the private firm.

This problem can also be faced in case of even an existing listed company which decides to invest in brand new line of business for it. In such a situation company should not use its WACC to evaluate this project. Instead of that it should assess the WACC for the appropriate risk level. For this the company needs Asset Beta or Ungeared Beta, which needs to be adjusted according to own gearing level. The Asset Beta represents only systematic risk of the underlying project or asset of the company and it does not represents any financial risk.

In other words it can be said that Asset Beta represents only company's business risk. Applying similar logic of calculation of WACC, the Asset Beta of the company can be calculated using following equation:

$$\beta_a = \beta_e \left[\frac{E}{E + D(1-t)}\right] + \beta_d \left[\frac{D(1-t)}{E + D(1-t)}\right]$$

$ß_a$ = Ungeared or Asset Beta

$ß_e$ = Geared or Equity Beta

$ß_d$ = Debt Beta

E = Equity

D = Debt

t = Tax Rate

From the above equation it can be seen that company's Equity Beta shall always be greater than Asset Beta. In case company is debt free then Equity Beta shall be equal to Asset Beta.

Thus, if we have been provided with figures of $ß_e$ of a company we can calculate $ß_a$, which shall be common for the industry or Pure Play firm.

Now let us see what steps are exactly involved in computation of Equity Beta for a new of business or project for the company.

Step 1

Identify the Pure Play firms or companies (engaged entirely in same business and also called proxy companies) and their Equity Betas to surrogate the Equity Beta of new Project or business.

Step 2

Once Beta of proxy companies have been identified we de-gear it and compute the Asset Beta as the different companies may have different gearing levels.

Step 3

In case if there is only one proxy company then Asset Beta of the same company shall be continued for further analysis. In case there are more than one proxy companies then we shall take average of Asset Betas of these companies. Otherwise we can also opt for the Asset Beta of the company that appears to be most appropriate.

Step 4

In next step we must re-gear the Asset Beta as per capital structure of the appraising company to reflect the financial risk using the following formula (changing the positions of Asset Beta mentioned earlier)

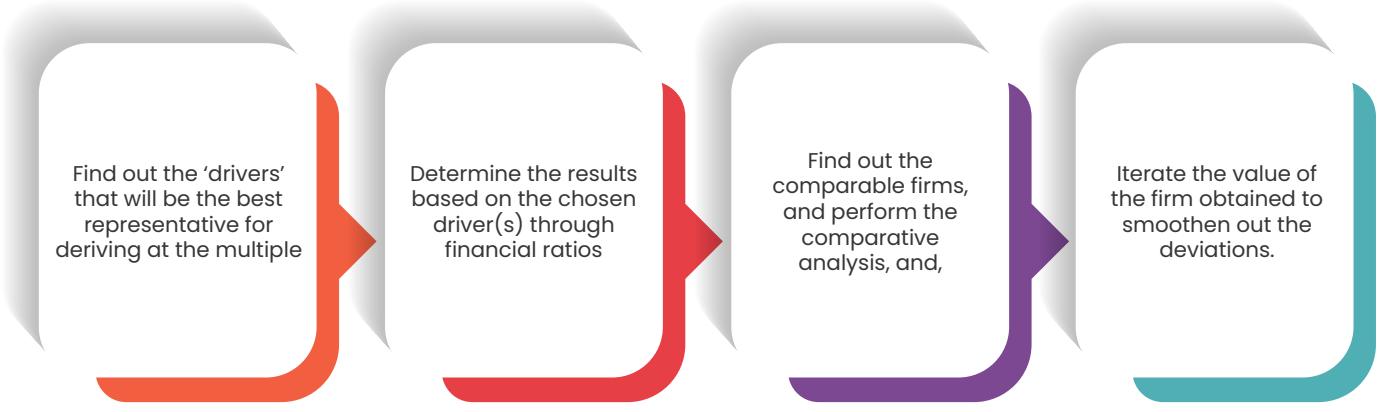
$$\beta_e = \beta_a \left[\frac{E + D(1-t)}{E} \right]$$

Step 5

In this step we can insert computed $ß_e$ in CAPM and can compute required rate of return for project under consideration or value of the business.

Relative Valuation

Relative Valuation is the method to arrive at a 'relative' value using a 'comparative' analysis to its peers or similar enterprises. Also referred to as 'Valuation by Multiples' it uses financial ratios to derive at the desired metric (referred to as the 'Multiple') and then compares the same to that of comparable firms i.e. ones having similar asset and risk dispositions and assumed to continue to do so over the comparison period. In the process, there may be extrapolations set to the desired range to achieve the target set. To elaborate



Other approaches to Value Measurement

Contemporary Approaches to Valuation

It is worth noting here that some of the concepts used in valuation have been borne out of the peculiarities of certain industries. An internet company would have virtually zero fixed assets – but a robust online presence and a huge brand recall value. This would give rise to a new method of valuation – Price Per Page visited. Or an online play store can be valued now using 'Price Per Subscriber'.

Chop-Shop Method

This approach attempts to identify multi-industry companies that are undervalued and would have more value if separated from each other. In other words as per this approach an attempt is made to buy assets below their replacement value. This approach involves following three steps:

Step 1: Identify the firm's various business segments and calculate the average capitalization ratios for firms in those industries

Step 2: Calculate a "theoretical" market value based upon each of the average capitalization ratios.

Step 3: Average the "theoretical" market values to determine the "chop-shop" value of the firm.

Economic Value Added

The core concept behind EVA is that a company generates 'value' only if there is a creation of wealth in terms of returns in excess of its cost of capital invested. So if a company's EVA is negative, it means the company is not generating value from the funds invested into the business. Conversely, a positive EVA shows a company is producing value from the funds invested in it. The formula to calculate EVA is as follows:

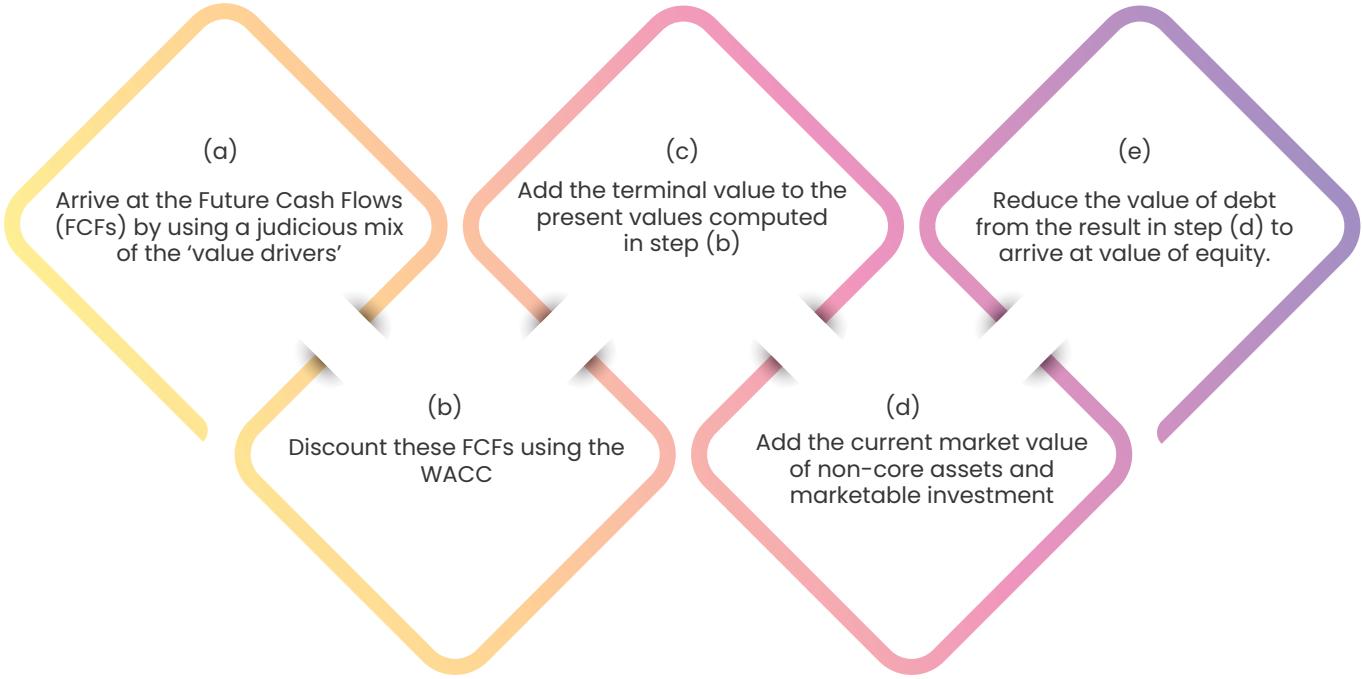
EVA = NOPAT - (Invested Capital x WACC) or NOPAT - Capital Charge

Market Value Added

The 'MVA' (Market Value Added) simply means the Current Market Value of the firm minus invested Capital. The MVA is also an alternative way to gauge performance efficiencies of an enterprise, albeit from a market capitalization point of view, the logic being that the market will discount the efforts taken by the management fairly.

Shareholder Value Analysis (SVA)

SVA take into its foray certain 'drivers' that can expand the horizon of value creation. The key drivers considered are of 'earnings potential in terms of sales, investment opportunities, and cost of incremental capital. The following are the steps involved in SVA computation:



Arriving at Fair Value

There is no single answer to method of valuation as correct one and it will be better if a range of values i.e. minimum acceptable by seller and maximum payable by the buyer could be determined. Ultimately the final deal would depend on the negotiation among the parties.

Following approaches can be adopted to solve the question especially involving evaluation and synthesis skill assessment requirements.

Going Concern and Non-Going Concern Valuation

Non-Going Concern Valuation

- It is also known as Liquidation Valuation because it is the net value realised after disposing off all the assets and discharging all the liabilities.
- Valuation based on non-going concern should be applied only when investors are of view that the firm has no longer value as a going concern.

Going Concern Valuation

Going-concern value of a firm will be greater than its liquidation value because when it is acquired as on basis the value of its assets and considers the value of its future profitability, intangible assets, and goodwill and hence the acquired firm can charge premium for the same.

Valuation of Distressed Companies

Conventional methods are not usefully deployed when valuing companies in distress as:

- Assumption of perpetuity of cash flows may not be relevant in case of distressed firm because of negative cash flows.
- Such firms, estimating cash flows is difficult, since there is a high risk of bankruptcy.
- Discount rates have to be adjusted for the probabilities of failures of the companies to be used in case of distressed companies.

Methods of Valuation of distressed companies

Modified Discounted Cash Flow Valuation

- Requires probability distributions for the cashflows to estimate the expected cashflow in each period.
- Discount rates are also estimated:
  - →Using updated debt to equity ratios and unlevered beta to estimate the cost of equity.
  - →Using updated measures of the default risk of the firm to estimate the cost of debt.
  - →In case of inability to estimate the entire distribution, probability of distress shall be estimated for each period and used as the expected cashflow

  Expected cash flow$_t$ = Cash flow$_t$ *(1 - Probability of distress$_t$)

DCF Valuation + Distress Value

- Value the business as a going concern by looking at the expected cashflows it will have if it follows the path back to financial health.
- Determine the probability of distress over the lifetime of the DCF analysis.
- Estimate the distress sale value as a percentage of book value or as a percentage of DCF value of equity estimated as a going concern.

  Use the following formula: Value of Equity= DCF value of equity (1 - Probability of distress) + Distress sale value of equity (Probability of distress)

Adjusted Present Value Model

- First the value of firm is computed without debt (the unlevered firm) and then effect of debt on firm value is adjusted in the same: Firm Value = Unlevered Firm Value + (Tax Benefits of Debt - Expected Bankruptcy Cost from the Debt)
- The expected bankruptcy cost can be estimated as the difference between the unlevered firm value and the distress sale value:

  Expected Bankruptcy Costs = (Unlevered firm value - Distress Sale Value)× Probability of Distress

Relative Valuation

- Relative Valuation multiples such as Revenue and EBITDA multiples are used after adjustment to value distressed firms than healthy firms because multiples such as Price Earnings or Price to Book Value etc.

Valuation of Start Ups

Most Common Globally Accepted Methods

Earning/ Cash Flow Approach

- In this approach, estimated cash flows for the foreseeable future are discounted to present value and business is valued accordingly

Asset approach

- This approach is generally used when the business is not a going concern viz. during liquidation, untimely losses etc.
- The assets and liabilities are valued based on their current realisable value and that is considered as value of the business.

Market approach

- This approach assigns the value of a business based on the value of comparable companies in same/ similar industries, adjusted for their specific parameters.

Why traditional methods cannot be applied?

- Each of the commonly used methods discussed above pre-suppose an established business – which is profitable, has established competitors and generates cash using its assets.
- However, this is missing in new age startups whose value can lie majorly in the concept and potential rather than numbers with a track record.

Failure of Traditional Methods

Method	Why does it fail in case of new age startups
Income approach	Since there are no or minimal positive cash flows, it isn't easy to value the business correctly.
Asset approach	There are two reasons why this approach does not work for new age startups: i. Startups have negligible assets because a large chunk of their assets are in the form of intellectual property and other intangible assets. ii. Start ups are new, but usually operate under the going concern assumption.
Market approach	New-age startups are disruptors. They generally function in a market without established competitors. Their competition is from other startups working in the same genre.

Value Drivers for startups

While every startup can be vastly different, we now take a look at a few key value drivers and their impact on the valuation of a startup.

Product

The uniqueness and readiness of the product or service offered by significantly impact the company's valuation.

Management

It is imperative to consider the credentials and balance of the management.

Traction

The better the traction, the more valuable the startup will be.

Revenue

While revenues are not mandatory, their existence is a better indicator than merely demonstrating traction and makes the startup more valuable.

Industry attractiveness

As good as the idea may be, to sustainably scale, various factors like logistics, distribution channels and customer base significantly impacts the startup value.

Demand - supply

If the industry is attractive, there will be more demand from investors, making the industry's individual company more valuable.

Competitiveness

The lesser the competitors, the more valuable the startup will be.

Methods for valuing Startups

Berkus Approach

Basic value → Technology → Execution → Strategic relationships in its core market, and → Production and consequent sales

Cost-to-Duplicate Approach

Taking into account all costs and expenses associated with the startup and its product development, including the purchase of its physical assets.

Comparable Transactions Method

The question being answered is, "How much were similar startups valued at?"

Scorecard Valuation Method

Scorecard Method is another option for pre-revenue businesses.
First, we find the average pre-money valuation of comparable companies. Then, we consider how the business stacks up according to the following qualities.

- Strength of the team: 0-30%
- Size of the opportunity: 0-25%
- Product or service: 0-15%
- Competitive environment: 0-10%
- Marketing, sales channels, and partnerships: 0-10%
- Need for additional investment: 0-5%
- Others: 0-5%

Then we assign each quality a comparison percentage, can be made on the scale of 100%. After that exercise is undertaken for each startup quality and the sum of all factors is computed:

a. Par (100%),
b. Below average (<100%), or
c. Above average (>100%)

First Chicago Method

This method combines a Discounted Cash Flow approach and a market approach to give a fair estimate of startup value. It works out:

- Worst-case scenario
- Normal case scenario
- Best-case scenario

Valuation is done for each of these situations and multiplied with a probability factor to arrive at a weighted average value.

Venture Capital Method

- The method incorporates this understanding and uses the relevant time frame in discounting a future value attributable to the firm.
- The post-money value is calculated by discounting the rate representing an investor's expected or required rate of return.
- The investor seeks a return based on some multiple of their initial investment. For example, the investor may seek a return of 10x, 20x, 30x, etc., their original investment at the time of exit.
- Investors seek a return equal to some multiple of their initial investment or will strive to achieve a specific internal rate of return based on the level of risk they perceive in the venture.

Valuation of Digital Platforms

Few illustrations based on the kind of services provided are as under:

CATEGORY	DESCRIPTIONS
Marketplace	Multiple buyers are matched to multiple suppliers.
Search engine	Multiple people looking for information are matched to multiple sources of information.

CATEGORY	DESCRIPTIONS
Repository	Multiple suppliers 'deposit' their materials into a type of library, to be retrieved by users at a later moment.
Digital communication	Multiple users to send messages and/or documents to a variety of other people, or interact in real time via voice as well as video.
Digital community	On a digital community platform, people who want to remain virtually connected for a longer period of time can find each other and interact.
Payments Platform	On a digital payment platform, matching takes place between those owing money and those wanting to be paid.

Principals of Valuation for Digital Platform

Income Approach

Valuation methods under the Income Approach lay emphasis on projected financial performance.

Top Down Approach

- Often referred to as Total Addressable Market ('TAM').
- Starts with analysis of the total potential market for the Platform on a global or domestic level.
- The next step is to estimate the share in this target market, and the time to reach such share.
- These are often referred to as Serviceable Addressable Market ('SAM') and Serviceable Obtainable Market ('SOM').

Bottom-Up Approach

- Top-Down Approach can be ambitious for a company at a nascent stage as estimating market size and market share poses its practical challenges.
- Under the Platform can estimate its earnings based on the limited resources it has.
- Promoters of such platform can deploy appropriate strategies to target high margin sales and cost cutting methodologies to generate more cash for the Platform.
- This is more in line to making efficient capital budgeting decision.

Under both the scenarios i.e. Top-Down or Bottom-up, the value of a digital platform will depend on the quality of the financial forecasts.

Market Approach

MARKET APPROACH

Market Approach values a company by drawing a comparison from similar valued companies based on multiples like profit to earnings ('P/E') ratio, Enterprise Value to Earnings before Interest, Tax, Depreciation and Amortization ('EV/EBITDA') ratio, Price to Book Value ratio, Price to Revenue/Sales Ratio.

The selection of comparable to draw such comparison is vital and parameters like the market capitalization, revenue, Profit margins, capital structure etc. are used while making the selection.

Such comparison becomes difficult due to the following reasons:

- The listed comparables are scarce and even absent for many platforms.
- The underlying value specifically Profit, and EBITDA may be negative for certain digital platforms.
- Such digital platforms are capital-lite making their Book Value very low.

DUE TO ABOVE COMPLEXITY, THIS APPROACH LAYS EMPHASIS ON REVENUE OF A DIGITAL PLATFORM.

Cost Approach

The value based on the sum total of the cost to build the same platform.

The asset behind the digital platform is, the code written & the numbers of hours spent to write the code by the developers, is the primary cost of the platform.

The understanding of the business, the revenue model, the quality of management, and the risk-reward parameters determine the value of the digital platform.

Valuation of Professional/ Consultancy Firms

Like any other business valuation understanding the present and projected industry trends plays a significant role in determining an accurate valuation amount but experts generally look at the firm's historical data to compare them with industry Key Performance Indicators (KPIs) and benchmarks.

The main source of information are Audited Annual Statements and Income Tax Returns etc.

Although Valuation experts plan for future growth and compare it to the projected trends after conversations with management but there is an inherent risk associated with using future earnings potential, as results may or may not materialize.

In addition to analysis of financial statements and their comparison to industry standards, normalisation of net income and cash flows is another important aspect. This step allows comparison of firms on equal footing.

One commonly used method to analyse the extent that a firm meets expectations in comparison to current industry benchmarks and KPIs.

To accurately value a professional services firm each piece of information contributes importantly.

Impact of ESG on Valuation

Environmental, Social, Governance (ESG) is a framework designed to be embedded into an organization's strategy that considers the needs and ways in which to generate value for all organizational stakeholders (such as employees, customers and suppliers and financiers).

Focusing on ESG issues can bring out risk and opportunities for the company's ability for sustainable value creation.

The key environmental aspects under consideration are climate change and natural resource scarcity. It covers social issues like diversity and inclusivity, labor practices, health & safety, and cyber security

The impact of each factor can be incorporated in computation of expected cash flows as follows:

E of ESG

- The risk of this factor (Environment) can be incorporated by carrying out 2-degree scenario analysis i.e. if temperature of the plant is increased by 2 degrees.
- Similarly, adjustment in cash flows can be made by considering carbon points.

S of ESG

- The risk of this factor (Social) can be considered by adjusting the impact of social measures cost on the revenue such as better labour working conditions, CSR, and other welfare measures for the various stakeholders.

G of ESG

- The risk of this factor (Governance) can be considered by adjusting the impact of poor governance on revenue in the form of penalty, fines, taxes etc.

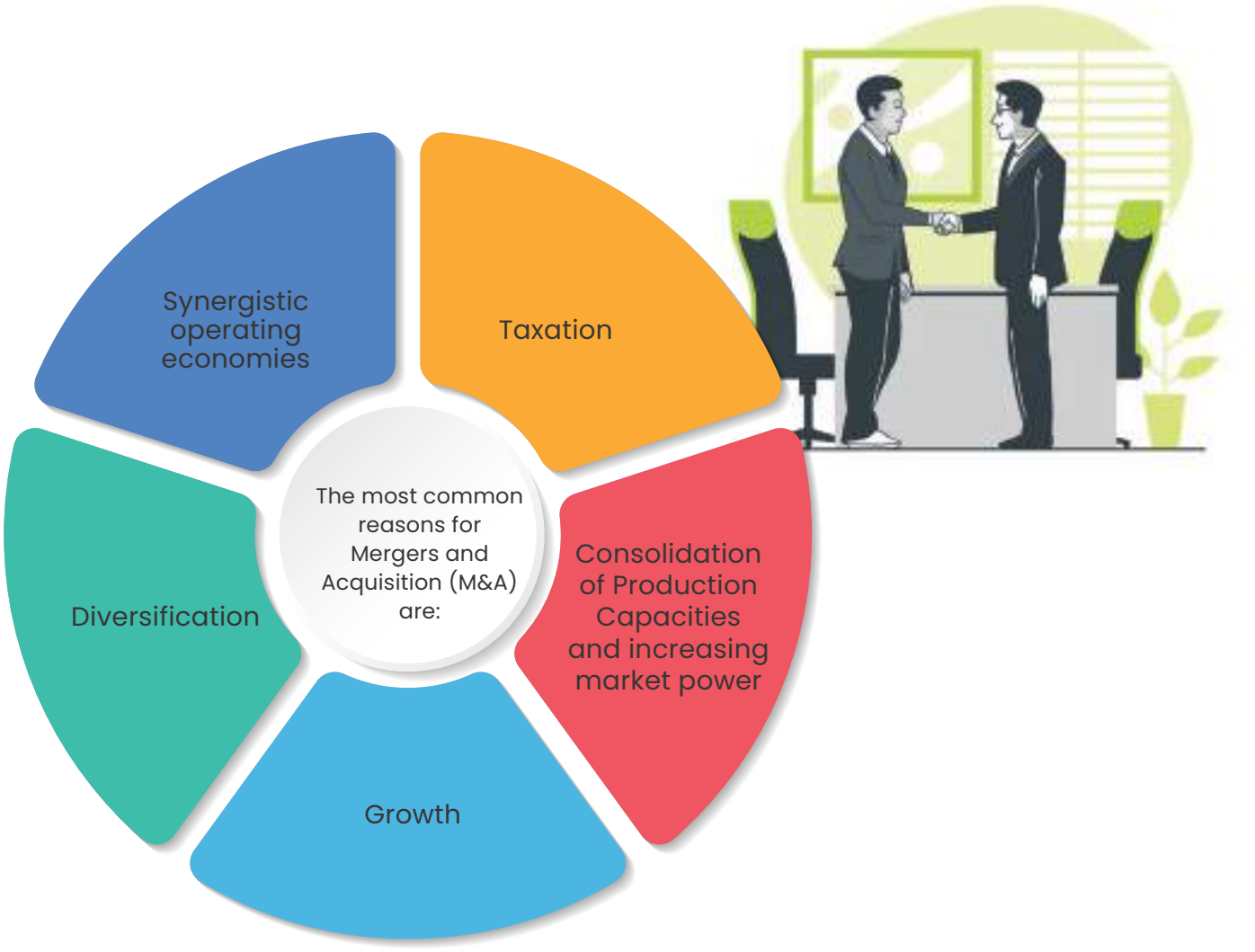
Chapter 14 – Mergers, Acquisitions and Corporate Restructuring

Conceptual Framework

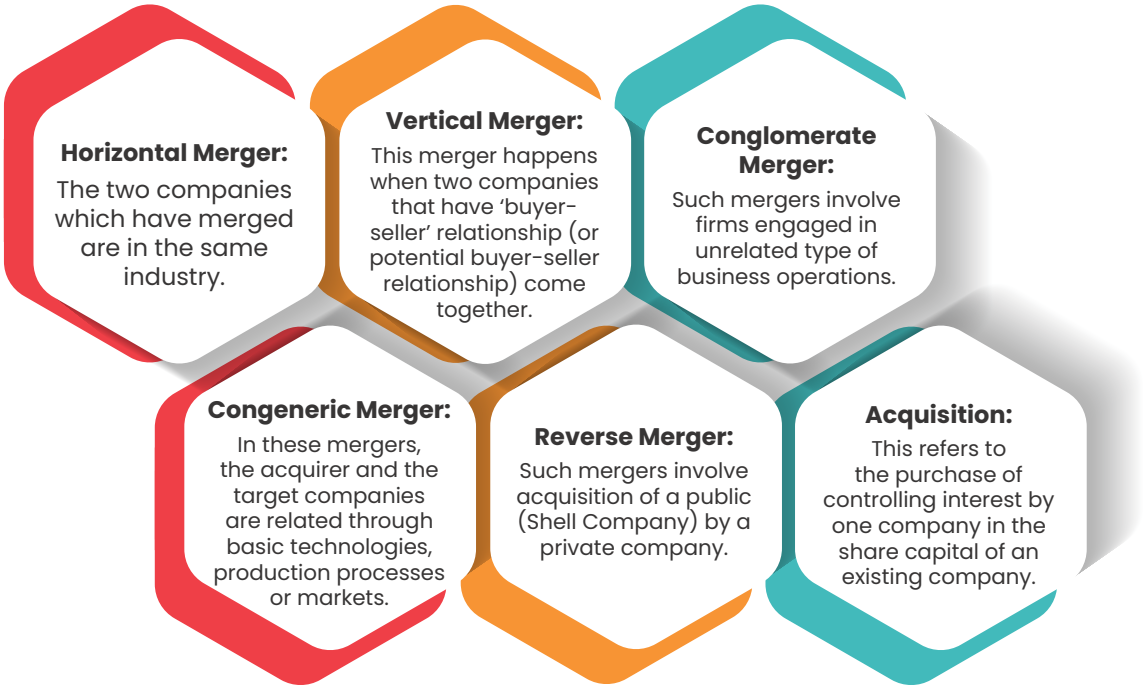
The terms 'mergers; 'acquisitions' and 'takeovers' are often used interchangeably in common parlance. However, there are differences. While merger means unification of two entities into one, acquisition involves one entity buying out another and absorbing the same. In India, in legal sense merger is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

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

Rationale for Mergers and Acquistions



Forms (Types) of Mergers



Financial Framework

A. Gains from Mergers or Synergy

The first step in merger analysis is to identify the economic gains from the merger. There are gains if the combined entity is more than the sum of its parts.

That is, Combined value > (Value of acquirer + Stand-alone value of target)

The difference between the combined value and the sum of the values of individual companies is usually attributed to synergy.

Value of acquirer + Stand-alone value of target + Value of synergy = Combined value

B. Scheme of Amalgamation or Merger

The scheme of any arrangement or proposal for a merger is the heart of the process and has to be drafted with care.

An essential component of a scheme is the provision for vesting all the assets and liabilities of the transferor company in its transferee company.

It is equally important to define the **effective date** from which the scheme is intended to come into operation.

Another aspect relates to the **valuation of shares** to decide the exchange ratio.

C. Financial Evaluation

Financial evaluation addresses the following issues:

(a) What is the maximum price that should be paid for the target company?

(b) What are the principal areas of Risk?

(c) What are the cash flow and balance sheet implications of the acquisition? And,

(d) What is the best way of structuring the acquisition?

D. Arranging Finance for Acquisition

One of the most important decisions is how to pay for the acquisition – cash or stock or part of each and this would be part of the Definitive Agreement.

If the acquisition is an 'all equity deal', the CFO's can breathe easy. However, if cash payout is significant, the acquirer has to plan for financing the deal. Sometimes acquirers do not pay all of the purchase consideration as, even though they could have sufficient funds. This is part of the acquisition strategy to keep the war chest ready for further acquisitions.

Another reason to pay by shares would be when the acquirer considers that their company's shares are 'overpriced' in the market.

Financing the acquisition can be quite challenging where the acquisition is an LBO.

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.

Takeover Defensive Tactices

Take Over Strategies

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

Street Sweep: This refers to the technique where the acquiring company accumulates larger number of shares in a target before making an open offer.

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.

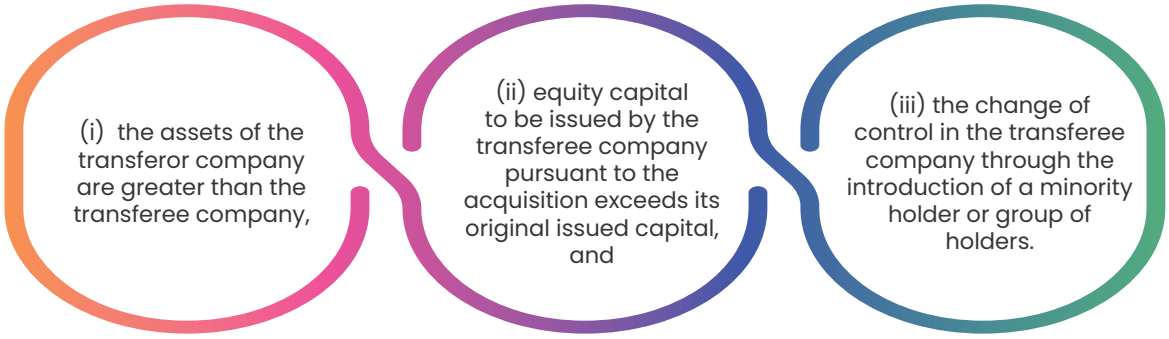
Brand Power: This refers to entering into an alliance with powerful brands to displace the target's brands and as a result, buyout the weakened company.

Defensive Tactics

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.
Poison Pill	The tactics used by the acquiring company to make it unattractive to a potential bidder is called poison pills.
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
White Knight	In this, a target company offers to be acquired by a friendly company to escape from a hostile takeover.
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.
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 acquirer's interest for takeover.
Pac-man	This strategy aims at the target company making a counter bid for the acquirer company.

Reverse Merger

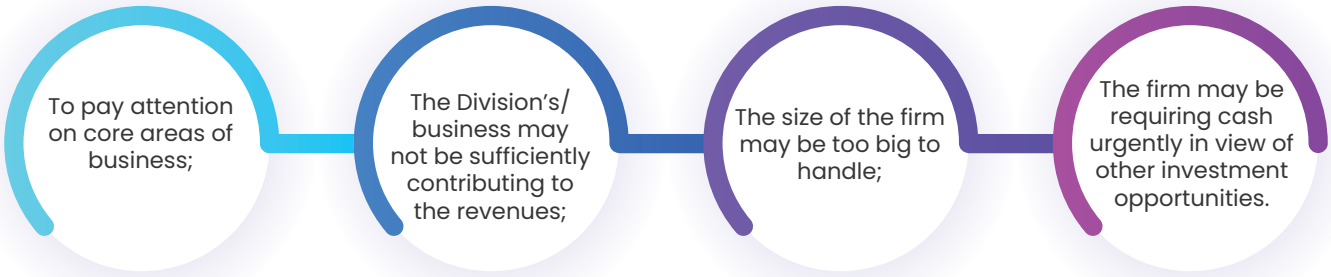
The concept of takeover by reverse bid, or of reverse merger, is thus not the usual case of amalgamation of a sick unit which is non-viable with a healthy or prosperous unit but is a case whereby the entire undertaking of the healthy and prosperous company is to be merged and vested in the sick company which is non-viable.
The three tests to be fulfilled before an arrangement can be termed as a reverse takeover are specified as follows:



Reverse merger leads to the following benefits for the acquiring company

Divestiture

It means a company selling one of the portions of its divisions or undertakings to another company or creating an altogether separate company. There are various reasons for divestment or demerger viz.,



Seller's Perspective

It is necessary to remember that for every buyer there must be a seller. Although the methods of analysis for selling are the same as for buying, the selling process is termed **divestiture**. The decision to sell a company is at least as important as buying one but selling generally lacks the kind of planning that goes into buying.

Following are some of the 'sell-side' imperatives.

- Competitor's pressure is increasing.
- Sale of company seems to be inevitable because company is facing serious problems like:
  - → No access to new technologies and developments
  - → Strong market entry barriers. Geographical presence could not be enhanced
  - → Badly positioned on the supply and/or demand side
  - → Critical mass could not be realised
  - → Inefficient utilisation of distribution capabilities
  - → New strategic business units for future growth could not be developed
  - → Not enough capital to complete the project
- Window of opportunity: Possibility to sell the business at an attractive price
- Focus on core competencies
- In the best interest of the shareholders – where a large well-known firm brings-up the proposal, the target firm may be more than willing to give-up.

Different Forms

Sell off / Partial Sell off	A sell off is the sale of an asset, factory, division, product line or subsidiary by one entity to another for a purchase consideration payable either in cash or in the form of securities. Partial Sell off, is a form of divestiture, wherein the firm sells its business unit or a subsidiary to another because it deemed to be unfit with the company's core business strategy.
Spin-off	In this case, a part of the business is separated and created as a separate firm.
Split-up	This involves breaking up of the entire firm into a series of spin off. The parent firm no longer legally exists and only the newly created entities survive.
Equity Carve outs	This is like spin off, however, some shares of the new company are sold in the market by making a public offer, so this brings cash.
Demerger or Division of Family-Managed Business	Many of these companies are arranging to hive off their unprofitable businesses or divisions with a view to meeting a variety of succession problems.

Financial Restructuring

Financial restructuring refers to a kind of internal changes made by the management in Assets and Liabilities of a company with the consent of its various stakeholders. This is a suitable mode of restructuring for corporate entities who have suffered from sizeable losses over a period of time. It may be said that financial restructuring (also known as internal re-construction) is aimed at reducing the debt/payment burden of the corporate firm. This results into:

- Reduction/Waiver in the claims from various stakeholders;
- Real worth of various properties/assets by revaluing them timely;
- Utilizing profit accruing on account of appreciation of assets to write off accumulated losses and fictitious assets (such as preliminary expenses and cost of issue of shares and debentures) and creating provision for bad and doubtful debts.

Ownership Restructuring

Going Private	This refers to the situation wherein a listed company is converted into a private company by buying back all the outstanding shares from the markets.
Management Buy Outs	Buyouts initiated by the management team of a company are known as a management buyout. In this type of acquisition, the company is bought by its own management team.
Leveraged Buyout	An acquisition of a company or a division of another company which is financed entirely or partially (50% or more) using borrowed funds is termed as a leveraged buyout.
Equity buyback	This refers to the situation wherein a company buys back its own shares back from the market. This results in reduction in the equity capital of the company. This strengthens the promoter's position by increasing his stake in the equity of the company.

Unlocking the Value Through Mergers & Acquisitions and Business Restructuring

The value is unlocked through mergers, acquisitions, and business restructuring because of following reasons:

- Horizontal growth helps to achieve optimum size, enlarge the market share, curb competition and use of unutilised capacity;
- Vertical combination helps to economise costs and eliminate avoidable taxes /duties;
- Diversification of business;
- Mobilising financial resources by utilising the idle funds lying with another company for the expansion of business.
- Merger of an export, investment or trading company with an industrial company or vice versa with a view to increase cash flow;

Merging subsidiary company with the holding company with a view to improving cash flow;

Taking over a 'shell' company which may have the necessary industrial licences etc., but whose promoters do not wish to proceed with the project.

An amalgamation may also be resorted to for the purpose of nourishing a sick unit in the group and this is normally a merger for keeping up the image of the group.

The business restructuring helps the company in:

- Positioning the company to be more competitive,
- Surviving an adverse economic climate,
- Positioning the company into in an entirely new direction.

Premium and Discount

Premiums and discounts are typically attached to a business valuation, based on the situation. These could be market share premium, controlling stake premium, brand value premium, small player discount or unlisted company discount.

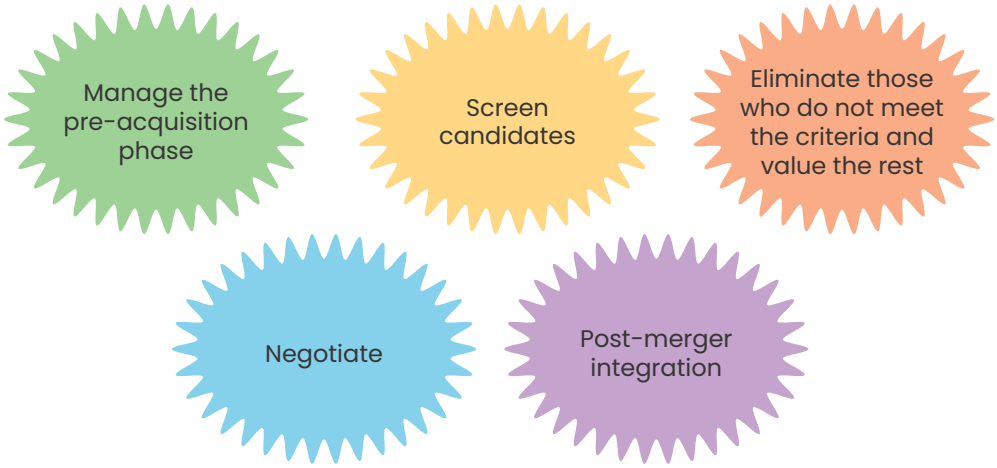
In addition, it may be required to work out various potential scenarios in each methodology and arrive at the likely probabilities of each while deriving the values.

Timing is very critical while divesting a business since valuation depends on the timing.

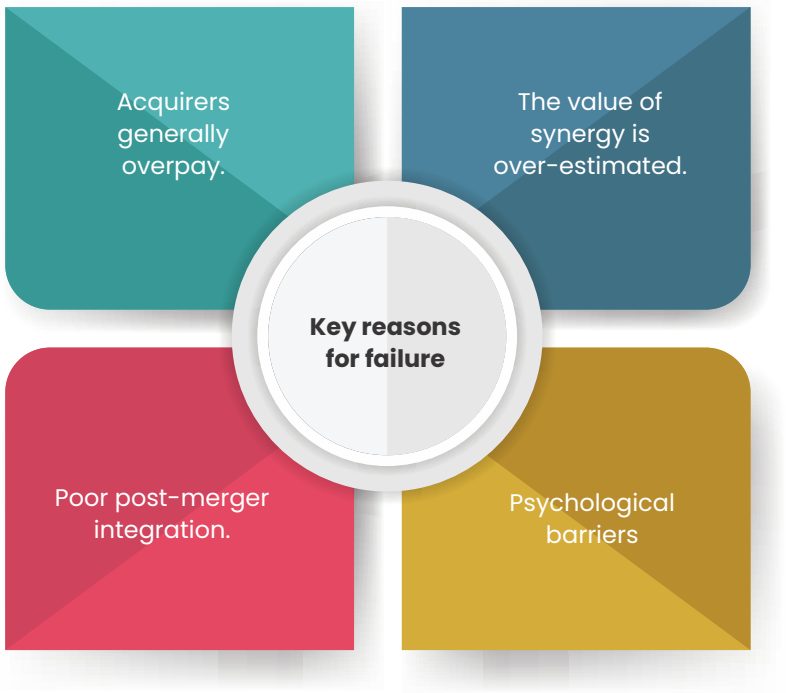
The basis for M&A is the expectation of several future benefits arising out of **synergies** between businesses.

Mergers and Acquisitions Failures

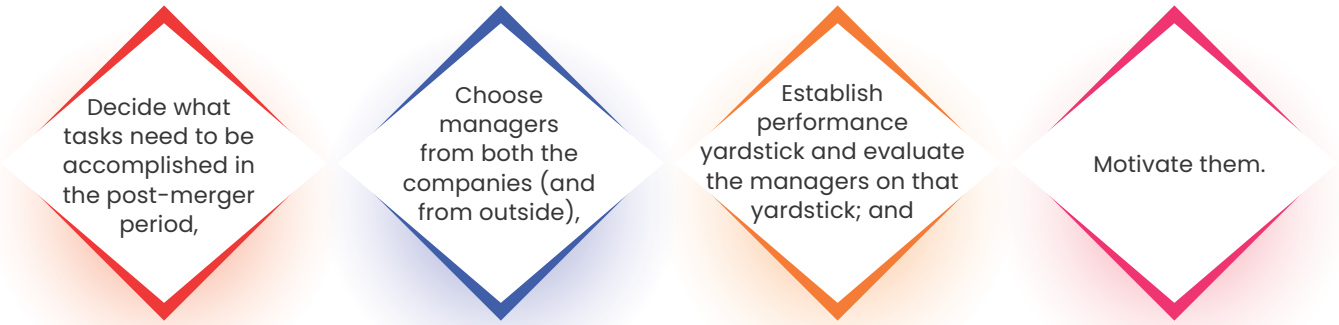
Five principal steps in successful m&a programme



Key reasons for failure are

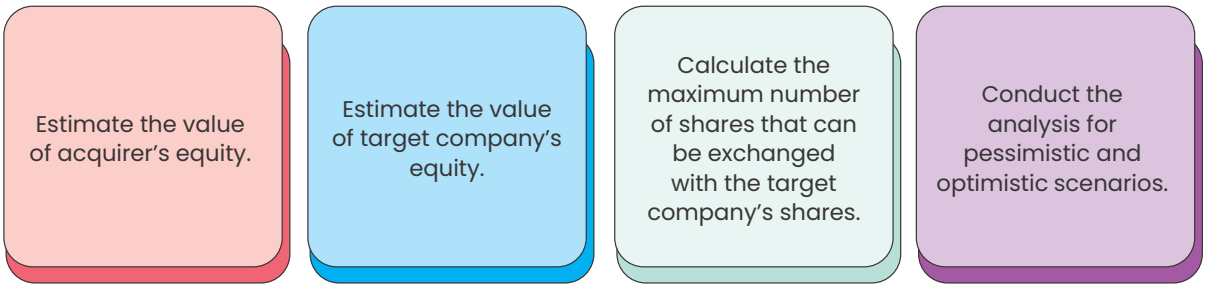


To make a merger successful



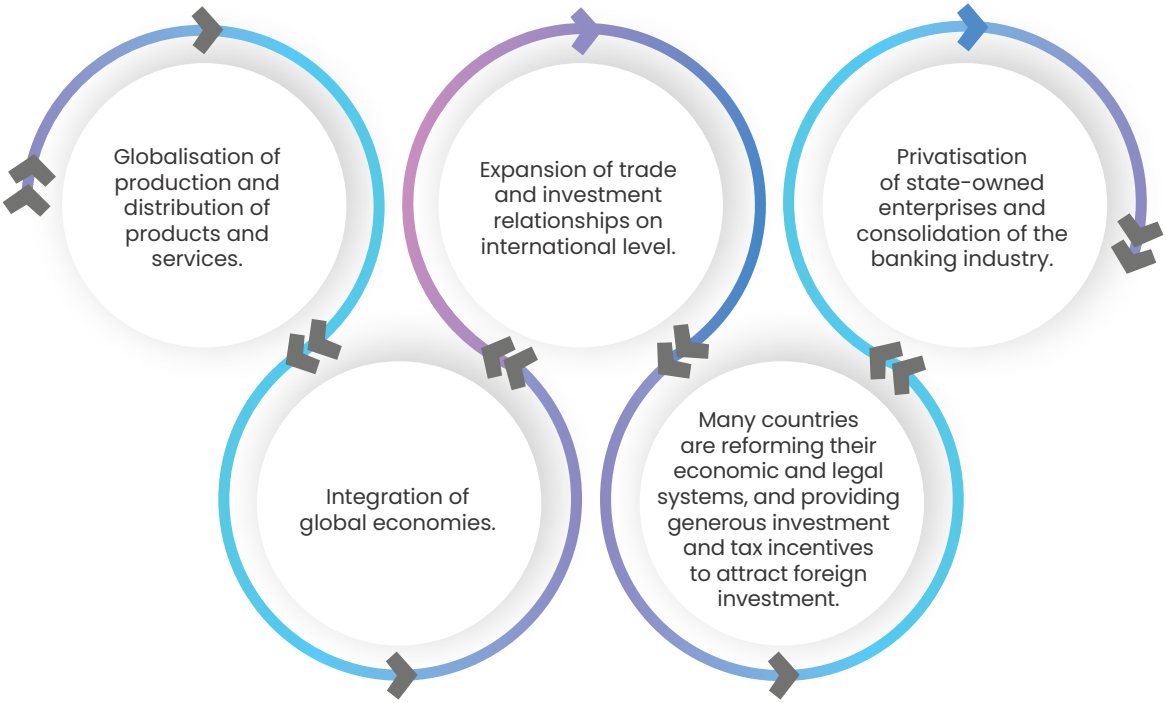
Acquisition through Shares

The acquirer can pay the target company in cash or exchange shares in consideration. The analysis of acquisition for shares is slightly different. The steps involved in the analysis are:



Cross–Border Mergers and Acquisitions

Cross-Border Mergers and Acquisitions are deals between foreign companies and domestic companies which usually take place in the country where the target company has to be acquired. Major factors that motivate multinational companies to engage in cross-border merger and acquisitions in Asia include the following:

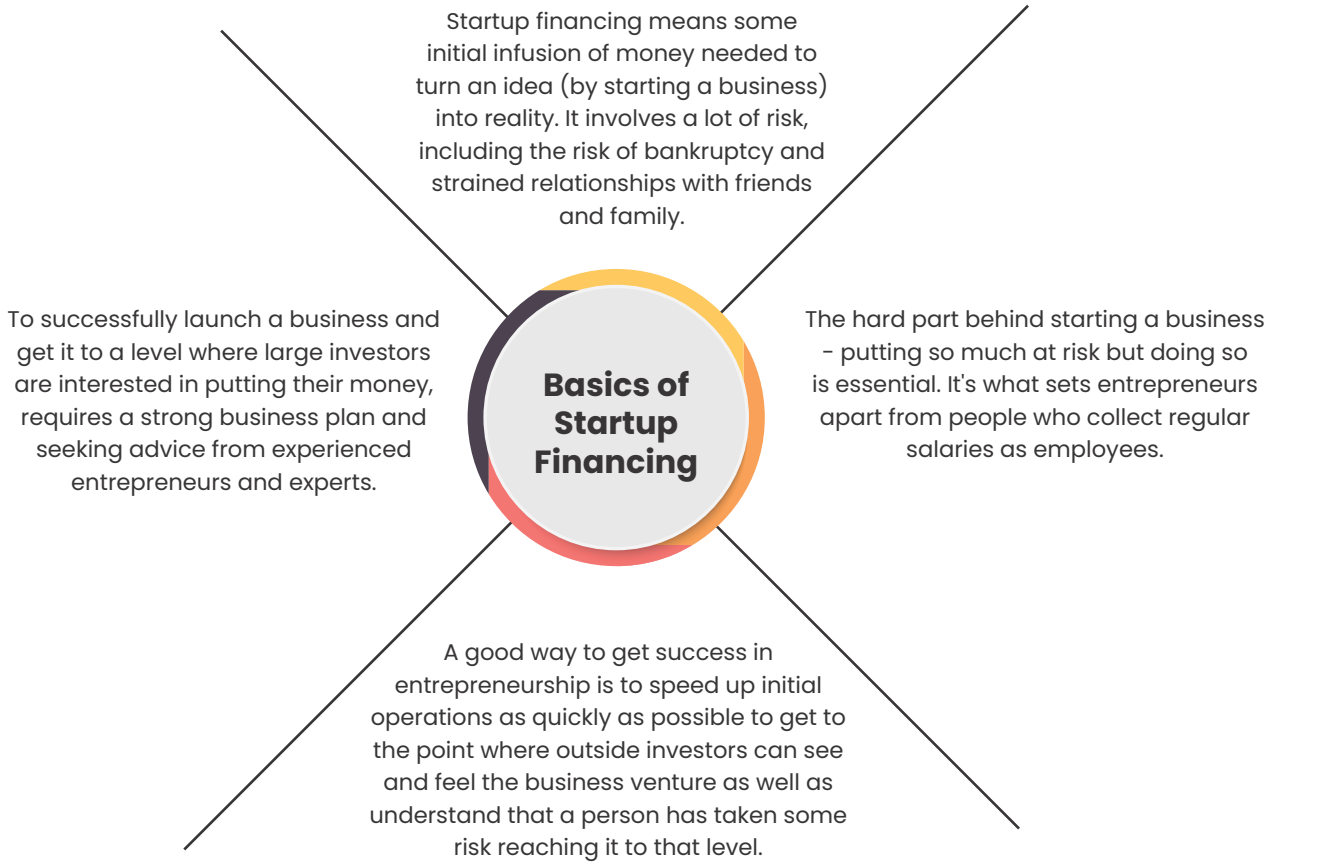


Special Purpose Acquisition Companies

- In recent times, the concept of Special Purpose Acquisition Companies (SPACs) has come into existence wherein an entity is set up with the objective to raise funds through an IPO to finance a merger or acquisition of an unidentified target within a specific time.
- It is commonly known as a blank cheque company.
- The main objective of SPAC is to raise money, despite not having any operations or revenues. The money raised from the public is kept in an escrow account, which can be accessed while making the acquisition.
- In case the acquisition is not made within stipulated period of the IPO, the SPAC is delisted, and the money is returned to the investors.
- Shareholders have the option to redeem their shares if they are not interested in participating in the proposed merger.
- Finally, if the merger is approved by shareholders, it is executed, and the target private company or companies become public entities. Once a formal merger agreement has been executed the SPAC target is usually publicly announced.
- The current regulatory framework in India does not support the SPAC transactions.
- SPAC approach offers several advantages over traditional IPO, such as providing companies access to capital, even when market volatility and other conditions limit liquidity.
- The merger of a SPAC with a target company presents several challenges.

Chapter 15 – Startup Finance

Basics of Startup Financing



Innovative ways to Finance a Startup

Personal financing	This is important because most of the investors will not put money into a deal if they see that you have not contributed any money from your personal sources.
Personal credit lines	Banks are very cautious while granting personal credit lines. They provide this facility only when the business has enough cash flow to repay the line of credit.
Family and friends	These are the people who generally believe in you, without even thinking that your idea works or not. However, the loan obligations to friends and relatives should always be in writing as a promissory note or otherwise.
Peer-to-peer lending	In this process a group of people come together and lend money to each other. Many small and ethnic business groups having similar faith or interest generally support each other in their start up endeavors.
Crowdfunding	Crowdfunding is the use of small amounts of capital from a large number of individuals to finance a new business initiative.
Microloans	Microloans are small loans that are given by individuals at lower interest rates to new business ventures.
Vendor financing	Vendor financing is the form of financing in which a company lends money to one of its customers so that he can buy products from the company itself.
Purchase order financing	Purchase order financing companies often advance the required funds directly to the supplier. This allows the completion of transaction and profit flows up to the new business.
Factoring accounts receivables	When the goods are sold on credit, and the credit period (i.e. the date upto which payment shall be made) is for example 6 months, the factoring company will pay most (say 80-90%) of the outstanding amount upfront. The balance amount will be paid on due date once the factoring company has received the full amount from customer after deducting its interest charges.

Pitch Presentation

- 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.
- Can be made either during face to face meetings or online meetings with potential investors, customers, partners, and co-founders.

Points to be kept in mind while preparing a pitch presentation

INTRODUCTION : To start with, first step is to give a brief account of yourself i.e. who are you? What are you doing? But care should be taken to make it short. Also, use this opportunity to get your investors interested in your company.

TEAM : The next step is to introduce the audience to the people behind the scenes. The reason is that the investors will want to know the people who are going to make the product or service successful.

PROBLEM : Further, the promoter should be able to explain the problem that the startup is going to solve and solutions emerging from it.

SOLUTION : It is very important to describe in the pitch presentation as to how the company is planning to solve the problem.

MARKETING/SALES : This can include profiles of target customers, but one should be prepared to answer questions about how the promoter is planning to attract the customers.

PROJECTIONS OR MILESTONES : Projected financial statements can be prepared which gives potential investors a brief idea about where is the business heading. It tells us that whether the business will be making profit or loss.

Financial projections include three basic documents that make up a business's financial statements i.e. Income Statement , Cash Flow Statement, Balance Sheet.

COMPETITION : It is necessary to highlight in the pitch presentation as to how the products or services are different from their competitors.

BUSINESS MODEL : The term business model is a wide term denoting core aspects of a business including purpose, business process, target customers, offerings, strategies, infrastructure, organizational structures, sourcing, trading practices, operational processes and policies including culture.

FINANCING : If a startup has raised money, it is preferable to talk about how much money has already been raised, who invested money and how that money has been used.

Concept of Unicorn

A privately start-up is referred as a Unicorn if it has following features:

(i) A privately held start-up.

(ii) Valuation of start-up reaches US$ 1 Billion.

(iii) Emphasis is on the rarity of success of such start-up.

(iv) Other common features are new ideas, disruptive innovation, consumer focus, high on technology etc.

A start-up may be Unicorn at one point of time and may not be at another point of time in case the valuation of any start-up slips below US$ 1 billion it can lose its status of 'Unicorn'.

Modes of Financing for Startups

Sources of Financing

Bootstrapping

An individual is said to be boot strapping when he or she attempts to start 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.
- 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.
- Here are some of the methods in which a startup firm can bootstrap:

Trade Credit

When a person is starting his business, suppliers are reluctant to give trade credit. They will insist on payment of their goods supplied either by cash or by credit card. The next step is to pay a visit to the supplier's office. One can also borrow to pay for the good sold but there is interest cost also. So, trade credit is one of the most important way to reduce the amount of working capital one needs. This is especially true in retail operations.

Factoring

This is a financing method where accounts receivable of a business organization is sold to a commercial finance company to raise capital. The factor then gets hold of the accounts receivable and assumes the task of collecting the receivables as well as doing what would've been the paperwork. Factoring can be performed on a non-notification basis. It means customers may not be told that their accounts have been sold.

Leasing

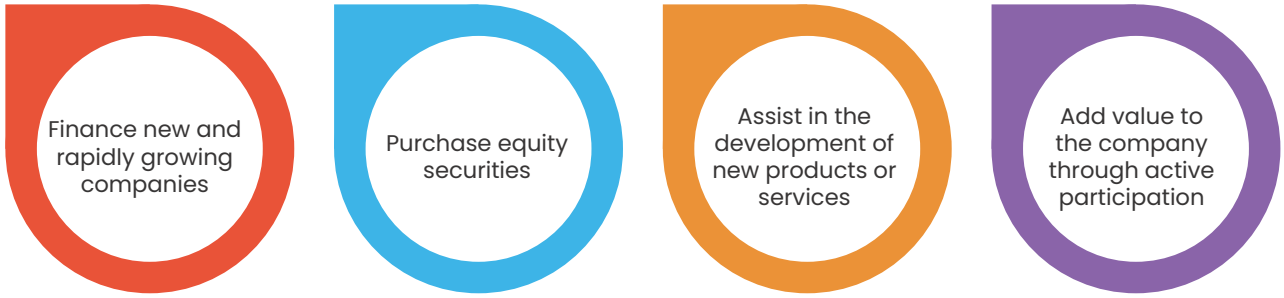
Another popular method of bootstrapping is to take the equipment on lease rather than purchasing it. It will reduce the capital cost and help lessee (person who take the asset on lease) to claim tax exemption. So, it is better to a take a photocopy machine, an automobile, or a van on lease to avoid paying out lump sum money which is not at all feasible for a startup organization.

Angel Investors

- Angel investors invest in small startups or entrepreneurs. Often, angel investors are among an entrepreneur's family and friends.
- The capital angel investors provide may be a one-time investment to help the business propel or an ongoing injection of money to support and carry the company through its difficult early stages.
- Angel investors provide more favorable terms compared to other lenders, since they usually invest in the entrepreneur starting the business rather than the viability of the business.
- Angel investors are focused on helping startups take their first steps, rather than the possible profit they may get from the business. This makes their approach slightly different from venture capitalists.
- Angel investors are also called informal investors, angel funders, private investors, seed investors or business angels.
- Angel investors typically use their own money, unlike venture capitalists that take care of pooled money from many other investors and place them in a strategically managed fund.
- Though angel investors usually represent individuals, the entity that actually provides the fund may be a limited liability company, a business, a trust or an investment fund, among many other kinds of vehicles.
- Angel investors who seed startups that fail during their early stages lose their investments completely. This is why professional angel investors look for opportunities for a defined exit strategy, acquisitions or initial public offerings (IPOs).

Venture Capital Fund

- Venture Capital Fund means investment vehicle that manage funds of investors seeking to invest in startup firms and small businesses with exceptional growth potential.
- Venture Capitalists generally



Characteristics of Venture Capital Financing

Advantages of bringing VC in the company

- Injects long- term equity finance which provides a solid capital base for future growth.
- Sharing both the risks and rewards as business partner.
- Providing practical advice and assistance to the company based on past experience.
- The venture capitalist also has a network of contacts in many areas that can add value to the company.
- Capable of providing additional rounds of funding required to finance growth.
- Preparing a company for an Initial Public Offering (IPO) of its shares.
- They can also facilitate a trade sale.

Stages of funding for VC

Financial Stage	Period (Funds locked in years)	Risk Perception	Activity to be financed
Seed Money	7-10	Extreme	For supporting a concept or idea or R&D for product development and involves low level of financing.
Start Up	5-9	Very High	Early-stage firms that need funding for expenses associated with marketing and product development.
First Stage	3-7	High	Started commercial production and marketing.
Second Stage	3-5	Sufficiently high	Expanding market and growing working capital needs though not earning profit.
Third Stage	1-3	Medium	Market expansion, acquisition & product development for a profit-making company. Also called Mezzanine Financing.
Fourth Stage	1-3	Low	Facilitating public issue i.e. going public. Also called Bridge Financing.

VC Investment Process

Deal Origination

- VC operates directly or through intermediaries. Mainly practicing Chartered Accountants work as intermediaries and through them VC gets the deal.
- Here the company would give a detailed business plan which consists of business model, financial plan and exit plan.

Screening

- Once the deal is sourced the same would be sent for screening by the VC. The screening is generally carried out by a committee consisting of senior level people of the VC
- Once the screening happens, it would select the company for further processing.

Due Diligence

- Once the decision is taken to proceed further, the VC would now carry out due diligence.
- This is mainly the process by which the VC tries to verify the veracity of the documents taken. This is generally handled by external bodies, mainly renowned consultants.

Deal Structuring

- The deal is structured in such a way that both parties win. In many cases, the convertible structure is brought in to ensure that the promoter retains the right to buy back the share.
- Besides, in many structures to facilitate the exit, the VC may put a condition that promoter must sell a part of his/ her stake along with the VC.

Post Investment Activity

- In this section, the VC nominates its nominee in the board of the company. The company must adhere to certain guidelines like strong MIS, strong budgeting system, strong corporate governance and other covenants of the VC and periodically keep the VC updated about certain milestones.

Exit plan

- One way is 'sell to third party(ies)'. This sale can be in the form of IPO or Private Placement to other VCs.
- The second way to exit is that promoter would give a buy back commitment at a pre agreed rate (generally between IRR of 18% to 25%). In case the exit is not happening in the form of IPO or third-party sell, the promoter would buy back.

Venture Capital Funds in India

- Venture Capital in India stated in the decade of 1970, when the Government of India appointed a committee to tackle the issue of inadequate funding to entrepreneurs and start-ups. However, it is only after ten years that the first all India venture capital funding was started by IDBI, ICICI and IFCI.
- VC investing got considerably boosted by the IT revolution in 1997, as the venture capitalists became prominent founders of the growing IT and telecom industry.
- Many of these investors later floundered during the dotcom bust and most of the surviving ones shifted their attention to later stage financing, leaving the risky seed and start-up financing to a few daring funds.

Structure of Venture Capital Fund in India

DOMESTIC FUNDS	OFFSHORE FUNDS – OFFSHORE STRUCTURE	OFFSHORE FUNDS – UNIFIED STRUCTURE
Domestic funds i.e. one which raises funds domestically are usually structured as: (i) a domestic vehicle for the pooling of funds from the investor, and (ii) a seperate investment adviser that carries those duties of asset manager.	• Under this structure, an investment vehicle (an LLP or an LP organized in a jurisdiction outside India) makes investments directly into Indian portfolio companies. • The assets are managed by an offshore manager, while the investment advisor in India carries our the due diligence and identifies deals.	• When domestic investors are expected to participate in the fund, a unified structure is used. • Overseas investors pool their assets in an offshore vehicle that invests in a locally managed trust, whereas domestic investors directly contribute to the trust. This is later used to make the local portfolio investments.

Startup India Initiative

- Startup India scheme was initiated by the Government of India on 16th of January, 2016.
- As per GSR Notification 127 (E) dated 19th February 2019, an entity shall be considered as a Startup:
  i. Up to a period of ten years from the date of incorporation/ registration, if it is incorporated as a private limited company (as defined in the Companies Act, 2013) or registered as a partnership firm (registered under section 59 of the Partnership Act, 1932) or a limited liability partnership (under the Limited Liability Partnership Act, 2008) in India.
  ii. Turnover of the entity for any of the financial years since incorporation/ registration has not exceeded one hundred crore rupees.
  iii. Entity is working towards innovation, development or improvement of products or processes or services, or if it is a scalable business model with a high potential of employment generation or wealth creation.
  iv. Provided that an entity formed by splitting up or reconstruction of an existing business shall not be considered a 'Startup'.
- Apart from the support from government, there are quite a few other reasons why India became such a sustainable environment for start-ups to thrive in. Some of the major reasons are:
  (i) **The Pool of Talent** - Our country has a big pool of talent. There are millions of students graduating from colleges and B-schools every year. Many of these students use their knowledge and skills to begin their own ventures, and that has contributed to the startup growth in India.
  (ii) **Cost Effective Workforce** - India is a young country with over 10 million people joining the workforce every year. The workforce is also cost effective. So, compared to some other countries, the cost of setting up and running a business is comparatively lower.
  (iii) **Increasing use of the Internet** - India has the second-largest internet user base after China, and companies as well as start-ups are leveraging this easy access to the internet.
  (iv) **Technology** - There have been major developments in software and hardware systems due to which data storage and recording has become an easy task. Indian startups are now increasingly working in areas of artificial intelligence and blockchain technologies which is adding to the growth of businesses.
  (v) **Variety of Funding Options Available** - Start-up owners can approach angel investors, venture capitalists, seed funding stage investors, etc. The easing of Foreign Direct Investment norms and opening up of majority of sectors to 100% automatic route has also opened the floodgates for foreign funding in the Indian start-up ecosystem.

Succession Planning in Business

Why is there a need for succession planning?

Risk mitigation

If existing leader quits, then searches can take six-nine months for suitable candidate to close. Keeping an organization without leader can invite disruption, uncertainty, conflict and endangers future competitiveness

Cause removal

If the existing leader is culpable of gross negligence, fraud, willful misconduct, or material breach while discharging duties and has been barred from undertaking further activities by court, arbitral tribunal, management, stakeholders or any other agency.

Talent pipeline

Succession planning keep employees motivated and determined as it can help them obtaining more visibility around career paths expected, which would help in retaining the knowledge bank created by company over a period of time and leverage upon the same.

Conflict Resolution Mechanism

This planning is very helpful in promoting open and transparent communication and settlement of conflicts.

Aligning

In family owned business succession planning helps to align with the culture, vision, direction and values of the business.

Business succession strategy

1 EVALUATE KEY LEADERSHIP POSITIONS

To evaluate which roles are critical, risk or impact assessment can be performed. Generally, these are such positions which would bring transformation to the entire business or create strategic direction for the organization.

2 MAP COMPETENCIES REQUIRED FOR ABOVE POSITIONS

In this step, one needs to identify qualifications, behavioral and technical competencies required to perform the role successfully.

3 IDENTIFY COMPETENCIES OF CURRENT WORKFORCE

Identifying what are possible internal options that can deliver results as expected in Step-2, and also if there is a need for training and development of certain skills required.

4 BRIDGE LEADER

In family owned business appointment of an outsider as 'bridge leaders' will help to develop the business and prepare young family members for leadership role.

Challenges

- Founder mindset might be different than the corporate mindset
- Premature for startups to implement business succession
- Founders are the face of startups