## SBAA3014-SECURITY AND PORTFOLIO MANAGEMENT

## COURSE OBJECTIVES

> To familiarize the students on the concept of Securities Market.
> To know the techniques of Investment Management.
> To gain knowledge on various strategies followed by investment practitioners

## UNIT 1 FINANCIAL MARKET <br> 9 Hrs.

Financial Market- Primary Market - Methods of floating new issues, Book building - Role of primary market - Regulation of primary market, Secondary Market-Stock Exchanges- Meaning - Features - Functions -NSE - BSE - Indices; DEMAT, Trading Account - Stock Brokers.

## UNIT 2 INVESTMENT

Meaning, Characteristics and objectives of Investment - Difference alternatives. Security Risk and return calculations -Types of risks.

## UNIT 3 SECURITY ANALYSIS

Security analysis-Fundamental analysis- Technical analysis- Tools \& Charting techniques.
UNIT 4 PORTFOLIO MANAGEMENT
9 Hrs.
Introduction \& process - Traditional / Modern Portfolio - Portfolio risk\& return calculation of two and three security portfolios Correlation coefficient.

UNIT 5 PORTFOLIO SELECTION AND REVISION
9 Hrs.
Markowitz portfolio model-Utility curves in portfolio selection -Capital asset pricing model -Capital market line \& Security market line - Portfolio performance - Sharpe's, Treynor's and Jensen's index - Portfolio revision.

Max. 45 Hrs.

## COURSE OUTCOMES

On completion of the course, student will be able to
CO1 - Describe the various financial markets.
CO2 - Develop the basic knowledge on investment and various avenues.
CO3 - Decide to trade based on fundamental and technical analysis.
CO4 - Compute on the portfolio risk and return.
CO5 - Construct optimal portfolio and empirical applications of asset pricing models.
CO6 - Develops students to understand and apply ethical standards in the investment profession.

## SCHOOL OF MANAGEMENT STUDIES

## Financial Market

Definition: Financial Market refers to a marketplace, where creation and trading of financial assets, such as shares, debentures, bonds, derivatives, currencies, etc. take place. It plays a crucial role in allocating limited resources, in the country's economy. It acts as an intermediary between the savers and investors by mobilising funds between them.

The financial market provides a platform to the buyers and sellers, to meet, for trading assets at a price determined by the demand and supply forces.

## Functions of Financial Market

The functions of the financial market are explained with the help of points below:
It facilitates mobilisation of savings and puts it to the most productive uses.
It helps in determining the price of the securities. The frequent interaction between investors helps in fixing the price of securities, on the basis of their demand and supply in the market.

It provides liquidity to tradable assets, by facilitating the exchange, as the investors can readily sell their securities and convert assets into cash.

It saves the time, money and efforts of the parties, as they don't have to waste resources to find probable buyers or sellers of securities. Further, it reduces cost by providing valuable information, regarding the securities traded in the financial market.

The financial market may or may not have a physical location, i.e. the exchange of asset between the parties can also take place over the internet or phone also.

## Classification of Financial Market



Fig:1

## 1. By Nature of Claim

- Debt Market: The market where fixed claims or debt instruments, such as debentures or bonds are bought and sold between investors.
- Equity Market: Equity market is a market wherein the investors deal in equity instruments. It is the market for residual claims.


## 2. By Maturity of Claim

- Money Market: The market where monetary assets such as commercial paper, certificate of deposits, treasury bills, etc. which mature within a year, are traded is called money market. It is the market for short-term funds. No such market exist physically; the transactions are performed over a virtual network, i.e. fax, internet or phone.
- Capital Market: The market where medium and long term financial assets are traded in the capital market. It is divided into two types:
- Primary Market: A financial market, wherein the company listed on an exchange, for the first time, issues new security or already listed company brings the fresh issue.
- Secondary Market: Alternately known as the Stock market, a secondary market is an organised marketplace, wherein already issued securities are traded between investors, such as individuals, merchant bankers, stockbrokers and mutual funds.


## 3. By Timing of Delivery

- Cash Market: The market where the transaction between buyers and sellers are settled in real-time.
- Futures Market: Futures market is one where the delivery or settlement of commodities takes place at a future specified date.


## 4. By Organizational Structure

- Exchange-Traded Market: A financial market, which has a centralised organisation with the standardised procedure.
- Over-the-Counter Market: An OTC is characterised by a decentralised organisation, having customised procedures.

Since last few years, the role of the financial market has taken a drastic change, due to a number of factors such as low cost of transactions, high liquidity, investor protection, transparency in pricing information, adequate legal procedures for settling disputes, etc.

## Capital Market

Definition: Capital Market, is used to mean the market for long term investments, that have explicit or implicit claims to capital. Long term investments refers to those investments whose lock-in period is greater than one year.

In the capital market, both equity and debt instruments, such as equity shares, preference shares, debentures, zero-coupon bonds, secured premium notes and the like are bought and sold, as well as it covers all forms of lending and borrowing.

Capital Market is composed of those institutions and mechanisms with the help of which medium and long term funds are combined and made available to individuals, businesses and government. Both private placement sources and organized market like securities exchange are included in it.

## Functions of Capital Market

- Mobilization of savings to finance long term investments.
- Facilitates trading of securities.
- Minimization of transaction and information cost.
- Encourage wide range of ownership of productive assets.
- Quick valuation of financial instruments like shares and debentures.
- Facilitates transaction settlement, as per the definite time schedules.
- Offering insurance against market or price risk, through derivative trading.
- Improvement in the effectiveness of capital allocation, with the help of competitive price mechanism.

Capital market is a measure of inherent strength of the economy. It is one of the best source of finance, for the companies, and offers a spectrum of investment avenues to the investors, which in turn encourages capital creation in the economy.

## Types of Capital Market

The capital market is bifurcated in two segments, primary market and secondary market:


Fig:2

1. Primary Market: Otherwise called as New Issues Market, it is the market for the trading of new securities, for the first time. It embraces both initial public offering and further public offering. In the primary market, the mobilisation of funds takes place through prospectus, right issue and private placement of securities.
2. Secondary Market: Secondary Market can be described as the market for old securities, in the sense that securities which are previously issued in the primary market are traded here. The trading takes place between investors, that follows the original issue in the primary market. It covers both stock exchange and over-the-counter market.

## Primary Market

Definition: Primary Market is a form of the capital market wherein new securities are sold by the companies for the very first time to the investors, to raise funds and that is why it is also acknowledged as New Issues Market (NIM).

The process of selling the new securities, in the primary market is called underwriting, which is performed by a group called as underwriters or security dealers.

The underwriting service is offered by financial institutions such as investment banks, insurance companies, etc. The underwriting companies guarantee payment if there is any loss and accepts the risk which occurs as a consequence of such guarantee.

The main function of the primary market is to mobilize the investible money from the savers to the companies or young entrepreneurs who seek funds to set up new businesses or expand the existing venture, by issuing securities.

## Types of Issue of Securities in Primary Market

There are several types of issue of securities in the primary market which are discussed as under:


Fig 3

1. Public Issue: Public issue is when a company enters the market, to raise money from all kinds of investors. The securities offered for sale to the new investors, so as to become a shareholder in the issuer company, is called Public Issue.

- Initial Public Offer: Initial Public Offer or IPO, as the name suggests, is the fresh issue of equity shares or convertible securities, or exiting shares or convertible securities by an unlisted company for the very first time i.e. the shares are not previously traded or offered for sale to the general public. This is often followed by listing and trading of the company's securities on the stock exchange.
- Further Public Offer: Otherwise called as Follow on offer or FPO, refers to the fresh issue of securities to the general public made by a company already listed on the stock exchange, so as to raise additional funds.

2. Right Issue: Right Issue is an offer to the company's existing shareholders to buy further new shares of the company at a discount, as a part of the dividend of pre-emption rights. It helps the firms to raise additional funds, without going to the public. It invites its existing shareholders to subscribe for its fresh issue in the proportion of their shareholdings on the record date in the concern.
3. Bonus Issue: When a company issues fully paid additional shares to the company's existing shareholders for free. The issue is made from the company's free reserves or securities premium account, in a specific proportion to the shareholding on a specific record date.
4. Private Placement: When a company's stocks or bonds are sold directly to a selected group of people, say 50 to 200 people, called as private investors or institutions, instead of offering the same to the general public is called private placement. Hence, in case of a private placement there are only a handful of subscribers to the company's shares. However, it is capable of raising money, more quickly as compared to offering shares for sale in the open market.

- Preferential Allotment: Preferential Issue is one in which the specified securities are allotted by a listed company to a selected group on a preferential basis. The issuing company needs to adhere to the provisions relating to pricing, lock-in period, disclosures, and so on.
- Qualified Institutional Placement: When a company, which is already listed in a stock exchange issues shares or debentures (fully or partly convertible) or any other kind of security not including warrants, which are convertible in nature, to Qualified Institutional Buyer (QIB), is called as Qualified Institutional Placement (QIP).
- Institutional Placement Programme: Institution Placement Programme or IPP implies a further public issue of equity shares by a listed firm or group of promoters of a listed company, wherein the offer and allocation are made to Qualified Institutional Buyers only.

Note: Qualified Institutional Buyers includes mutual fund, venture capital fund, scheduled commercial bank, state industrial development corporation, national investment fund, insurance fund, provident fund, pension fund, etc.

In a nutshell, Primary Market is a market where new long term securities are created and issued to the public for sale through IPO, that helps the company, public sector institutions and governments to raise funds. These funds are injected by the company in new projects and also to expand or upgrade the existing projects

## Book Building

## Meaning of Book Building:

Every business organisation needs funds for its business activities. It can raise funds either externally or through internal sources. When the companies want to go for the external sources, they use various means for the same. Two of the most popular means to raise money are Initial Public Offer (IPO) and Follow on Public Offer (FPO).

During the IPO or FPO, the company offers its shares to the public either at fixed price or offers a price range, so that the investors can decide on the right price. The method of offering shares by providing a price range is called book building method. This method provides an opportunity to the market to discover price for the securities which are on offer.

## Definition of Book Building:

Book Building may be defined as a process used by companies raising capital through Public Offerings-both Initial Public Offers (IPOs) and Follow-on Public Offers (FPOs) to aid price and demand discovery. It is a mechanism where, during the period for which the book for the offer is open, the bids are collected from investors at various prices, which are within the price band specified by the issuer. The process is directed towards both the institutional investors as well as the retail investors. The issue price is determined after the bid closure based on the demand generated in the process.

## Book Building vs. Fixed Price Method:

The main difference between the book building method and the fixed price method is that in the former, the issue price to not decided initially. The investors have to bid for the shares within the price range given. The issue price is fixed on the basis of demand and supply of the shares.

On the other hand, in the fixed price method, the price is decided right at the start. Investors cannot choose the price. They have to buy the shares at the price decided by the company. In the book building method, the demand is known every day during the offer period, but in fixed price method, the demand is known only after the issue closes.

## Book Building in India:

The introduction of book-building in India was done in 1995 following the recommendations of an expert committee appointed by SEBI under Y.H. Malegam. The committee recommended and SEBI accepted in November 1995 that the book-building route should be open to issuer companies, subject to certain terms and conditions. In January 2000, SEBI came out with a compendium of guidelines, circulars and instructions to merchant bankers relating to issue of capital, including those on the book-building mechanism.

## Book Building Process:

The principal intermediaries involved in a book building process are the companies, Book Running Lead Manager (BRLM) and syndicate members are the intermediaries registered with SEBI and eligible to act as underwriters. Syndicate members are appointed by the BRLM. The book building process is undertaken basically to determine investor appetite for a share at a particular price. It is undertaken before making a public offer and it helps determine the issue price and the number of shares to be issued.

The following are the important points in book building process:

1. The Issuer who is planning an offer nominates lead merchant banker(s) as 'book runners'.
2. The Issuer specifies the number of securities to be issued and the price band for the bids.
3. The Issuer also appoints syndicate members with whom orders are to be placed by the investors.
4. The syndicate members put the orders into an 'electronic book'. This process is called 'bidding' and is similar to open auction.
5. The book normally remains open for a period of 5 days.
6. Bids have to be entered within the specified price band.
7. Bids can be revised by the bidders before the book closes.
8. On the close of the book building period, the book runners evaluate the bids on the basis of the demand at various price levels.
9. The book runners and the Issuer decide the final price at which the securities shall be issued.
10. Generally, the number of shares is fixed; the issue size gets frozen based on the final price per share.
11. Allocation of securities is made to the successful bidders. The rest bidders get refund orders.

## How is the Price Fixed?

All the applications received till the last dates are analyzed and a final offer price, known as the cut-off price is arrived at. The final price is the equilibrium price or the highest price at which all the shares on offer can be sold smoothly. If the price quoted by an investor is less than the final price, he will not get allotment.

If price quoted by an investor is higher than the final price, the amount in excess of the final price is refunded if he gets allotment. If the allotment is not made, full money is refunded within 15 days after the final allotment is made. If the investor does not get money or allotment in a month's time, he can demand interest at 15 per cent per annum on the money due.

## Secondary Market

Definition: Secondary market, colloquially known as the stock market is the market which provides a platform to the investors to trade in initially issued securities.

This means that the securities, such as shares, bonds, debentures, futures, options, etc. are originally issued by the Corporates, Central and State government, and public bodies, in the primary market to the public, through IPO (Initial Public Offer). After that, the stock is listed and traded in the secondary market among the investors. For this very reason, it is referred to as Aftermarket.

As the trading is performed among the investors, the sale proceeds go to the investors rather than the issuer company. It is a marketplace where securities are traded with a considerable degree of security, liquidity and transparency regularly without any difficulty or delay.

## What is a Stock Broking?

Stock Brokers are the members of the exchange who acts as a link to facilitate the transaction of retail and institutional investors, and the service provided by them is called Stock Broking. A certain amount is charged by the stockbroking firms as a commission or fee for the service provided, called Brokerage.

Stockbrokers belong to brokerage firms, who trades stocks both on the exchange and OTC (over the counter), wherever they get the best price and liquidity for the securities.

The stockbrokers need to be registered with the exchange board, to start their operations, that is why they are also called as shareholder's registered representative or trading representative.

Further, they need to adhere to the recommended code of conduct to perform the transaction. The brokers get into the transaction, either on their own account or on behalf of their clients, i.e. investors.

## Functions of Secondary Market

Upcoming points will tell you the functions performed by the secondary market:


Growth of Primary Market


Economic Indicator


Price
Determination


Safety of
Transactions


Mobilization of
Funds
Fig:4

- Growth of primary market: Secondary Market assists in the growth of the primary market by providing a ready market to the investors, i.e. mutual funds, financial institutions and other investors, a ready and continuous market for their securities.
- Economic Indicator: Whenever there is a change in government or its policies or any international event, it ultimately affects the secondary market. This is due to the fact the secondary market is highly sensitive to the changing conditions of the economy as a whole.

Hence, when the secondary market is performing good, it is a sign of a stable economic condition of the country.

- Price determination: In the secondary market, the price of the securities depends on its demand and supply. So, companies with high growth prospects and earning good profits, obviously have a high demand in the market. That is why the price of shares of such companies will be high comparatively.
- Safety of Transactions: As the trading is performed through a highly encrypted electronic system amongst its members with a high degree of transparency and within the framework of rules and regulations of the exchange board, makes it completely secure and safe.

Furthermore, it allows the purchase and sale of only those securities which are listed with the exchange and for the purpose of listing, the exchange itself confirms the soundness and genuineness of the company whose securities are being listed.

- Mobilization of funds: It participates in the economic growth of the country by allocating the funds of the investors in the most productive and profitable sector, i.e. industrial and commercial establishments, which facilitates the mobilization of savings for investments, resulting in capital formation.


## Bombay Stock Exchange(BSE)

The Bombay Stock Exchange was established in the year 1875 and is also called the Stock Exchange Mumbai. Before establishing the BSE, the group of the five stockbrokers was there who used to conduct the different meetings in front of the Mumbai town hall under a banyan tree.

- But gradually, over time, the number of brokers in the meeting increases, and because of this, the venue of the meeting used to change frequently. After a few decades, in 1874, the group of brokers moved to Dalal Street for their meetings and made it their permanent location.
- It was then established in the year 1875 as Native Shares and Stock Broker's Association in the following year, thereby providing it an official organization. After decades of its working, it became the first exchange in India that was recognized as the exchange in 1957 under the Securities Contracts (Regulation) Act by the government

After some years of its recognition, in the year 1986, a tool was developed to measure the Bombay stock exchange's overall performance known as the SENSEX, which is the stock market index consisting of the 30 well established as well as financially sound companies that are listed on the Bombay stock exchange.

- In 1995, the Bombay stock exchange switched to the electronic trading system known as BOLT (BSE On-Line Trading). Also, it became the first stock exchange in the world, which introduced an internet trading system at a centralized level.


## National Stock Exchange of India Limited (NSE)

National Stock Exchange of India Limited (NSE) is the leading stock exchange of India, located in Mumbai, Maharashtra. It is under the ownership of Some leading financial institutions, Banks, and Insurance companies. NSE was established in 1992 as the first dematerialized electronic exchange in the country. NSE was the first exchange in the country to provide a modern, fully automated screenbased electronic trading system that offered easy trading facilities to investors spread across the length and breadth of the country.

As of June 2020, the National Stock Exchange had accumulated $\$ 2.27$ trillion in total market capitalization, making it one of the world's largest stock exchange. The flagship index, the NIFTY

50 , represents the majority of total market capitalization listed on the exchange. The index itself covers 12 sectors of the Indian economy across 50 stocks.

The National Stock Exchange has been a pioneer in Indian financial markets, being the first electronic limit order book to trade derivatives and ETFs. The exchange supports more than 3,000 Very Small Aperture Terminal (VSAT) terminals, making the NSE the largest private wide-area network in the country. Girish Chandra Chaturvedi is the Chair of the Board of Directors and Vikram Limaye is the Managing Director and CEO of the exchange.

## STOCK MARKET INDEX

A stock market index is a statistical measure which shows changes taking place in the stock market. To create an index, a few similar kinds of stocks are chosen from amongst the securities already listed on the exchange and grouped together.

The criteria of stock selection could be the type of industry, market capitalisation or the size of the company. The value of the stock market index is computed using values of the underlying stocks. Any change taking place in the underlying stock prices impact the overall value of the index. If the prices of most of the underlying securities rise, then the index will rise and vice-versa.

In this way, a stock index reflects overall market sentiment and direction of price movements of products in the financial, commodities or any other markets.

## Understanding Depository System in India

## Dematerialisation (demat)

Dematerialisation is the process by which physical certificates of securities owned by an investor are converted to an equivalent number of securities in electronic form.

## Rematerialization (remat)

Rematerialization is the process of converting securities held in electronic form in a demat account back in physical certificate form.

Regulatory Framework of Secondary Market
3. Depositories act 1996

Depository is a place where financial securities are held in dematerialised form. It is responsible for maintenance of ownership records and facilitation of trading in dematerialised securities.

There are two depositories which are functional in India
1.National Securities Depository Ltd (NSDL) and
2.Central Securities Depository Ltd (CDSL).

Various Depository Participants (DPs) linked to each one of them in India. a Depository Participant (DP) is described as an Agent (law) of the depository. They are the intermediaries between the depository and the investors.

## Difference between a Bank and a Depository

| BANK-DEPOSITORY - AN ANALOGY |  |
| :--- | :--- |
| DANK | DEPOSITORY |
| Holds funds in an account | Holds securities in an account |
| Transfers funds between <br> accounts on the instruction <br> of the account holder | Transfers securities between <br> accounts on the instruction of the <br> BO account holder |
|  | Facilitates transfer of ownership <br> Facilitates transfer without <br> having to handle money |
| Facilitates safekeeping of <br> money | Facilitates safekeeping of securities |

## PREREQUISITES TO STOCK MARKET INVESTMENT

- PAN CARD
- BANK ACCOUNT
- DEMAT ACCOUNT
- BROKER
- TRADING ACCOUNT


## STOCK BROKER

A stockbroker, also known as a broker is a financial market representative who operates in securities. Their primary job role dictates obtainment of purchase and sale orders and execution of the same. Market participants or investors rely on their expertise and knowledge regarding market dynamics to invest in stocks and other investment options.
Share brokers either work individually or as part of a brokerage firm.

A broker is officiated post their registration with a recognised stock exchange such as Bombay Stock Exchange or by working for a brokerage firm. Such brokers levy a charge in the form of commission, fee, or mark-up. This charge widely varies from broker to broker. Some dealers charge a flat fee, whereas some levy a percentage of the securities value traded.

## TYPES OF SHARE MARKET BROKERS

Traditional or full-time brokers: This kind of brokers provides a vast assortment of products and services to its customers. These services involve securities' trading, investment advice, retirement planning, management of investment portfolio, taxes on capital gains, etc. Fulltime stockbrokers charge a hefty commission, however, given the range of their services, such cost might justify.

Discount brokers: Discount or online stock brokers dominate the band of brokers. Along with their inexpensive nature, they also offer convenience to the laymen in terms of time and place utility. Market participants do not need to personally meet discount brokers and carry out their investment through the internet

Jobbers: These are independent brokers who trade in securities for their own sake and not on behalf of other investors. They are not licensed to trade in someone else's name and cannot levy commission from others. They quote two prices on stocks, one of which is the buy price quote and the other is the sale price quote. The gap between these two prices is their profit margin.

Arbitrageurs: This subset of stockbrokers is known to purchase securities from one stock exchange at a lower price and then sell the same at a higher price in a different stock exchange.
Online brokers also known as direct-access brokers cater to active day trading clients with the smallest commissions often priced on a per-share basis, which is needed when scaling in and out of positions. These firms provide direct-access platforms with charting and routing capabilities with access to electronic communication networks (ECN), market makers, specialists, dark pools and multiple exchanges. Speed and access are the top benefits of direct-access brokers, often allowing for point-and-click executions and programmable hot-keys. Complex stock and options orders can be placed on these platforms. The heavy-duty platforms often carry a monthly fee composed of software fees and exchange fees. as speedy order fills.

## PART - A

1. Write a note on Financial Market,
2. Explain the objectives of Stock Exchanges.
3. What is Primary Market and Secondary Market?
4. How does Book Building differ from Private Placement?
5. Write short notes on i)OTCEI ii) Insider Trading
6. Write short notes on i) IPO ii) FPO
7. Write short note on: Stock Exchange
8. Write short notes on i) BSE ii) NSE
9. Write short note on: i)DEMAT ii)REMAT
10. Write short note on Listing of Securities

## PART - B

1. Draw and explain Financial Markets with its players.
2. Write about the Rights, Powers and Functions of SEBI in new issue market..
3. Bring out the functions of NSE
4. Bring out the functions of BSE.
5. Bring out the features of Stock Exchange.
6. Write a lucid note on the structure of primary and secondary markets in India.
7. Discuss methods of issue of securities in primary market.
8. Discuss book building process
9. Discuss various types of Stock brokers in India.
10. What are the different ways in which securities can be offered to investors in India?

## Reference:

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2. Security Analysis and Portfolio Management, 2nd Edition,Pandian Punithavathy,Vikas Publishing Hose Pvt.ltd.,New Delhi 110014.
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SCHOOL OF MANAGEMENT STUDIES

UNIT II SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT - SBAA 3014

## INVESTMENT

## Introduction:

The money a person earns is partly spent and the rest saved for meeting future expenses. Instead of keeping the savings idle he may like to use savings in order to get return on it in the future. This is called Investment.

The term investment refers to exchange of money wealth into some tangible wealth. The money wealth here refers to the money (savings) which an investor has and the term tangible wealth refers to the assets the investor acquires by sacrificing the money wealth. By investing, an investor commits the present funds to one or more assets to be held for some time in expectation of some future return in terms of interest or dividend and capital gain.

## Definition:

"Investment may be defined as an activity that commits funds in any financial/marketable or physical form in the present with an expectation of receiving additional return in the future."

For example, a Bank deposit is a financial asset, the purchase of gold is a physical asset and the purchase of bonds and shares is marketable asset.
"Investment is the commitment of current funds in anticipation of receiving larger inflow of funds in future, the difference being the income". An investor hopes to be compensated for (i) forgoing present consumption, (ii) for the effects of inflation, and (iii) for taking a risk.

## Features:

There are three basic features common to all types of investment:

1. There is a commitment of present funds.
2. There is an expectation of some return or benefits from such commitment in future, and
3. There is always some risk involved in respect of return and the principal amount invested.

## OBJECTIVES OF INVESTMENT:

## 1. RETURN:

Investors expect a good rate of return from their investments. Return from investment may be in terms of revenue return or income (interest or dividend) and/or in terms of capital return (capital gain i.e. difference between the selling price and the purchasing price). The net return is the sum of revenue return and capital return.

For example, an investor purchases a share (Face Value FV Rs.10) for Rs.130. After one year, he receives a dividend of Rs. 3 (i.e. $30 \%$ on FV of Rs.10) from the company and sells it for Rs. 138. His total return is Rs.11, i.e., Rs. 3 + Rs.8. The normal rate of return is Rs. 11 divided by Rs. 130 i.e., $8.46 \%$.

In the same case, if he is able to sell the share only for Rs.128, then his net return is Re. 1 (i.e., Rs. 3 - Rs.2) only. The annual rate of return in this case is $0.77 \%$ (i.e., $1 / 130$ )
a) Expected Return:

The expected return refers to the anticipated return for some future period. The expected return is estimated on the basis of actual returns in the past periods.

## b) Realised Returns:

The realized return is the net actual return earned by the investor over the holding period. It refers to the actual return over some past period.

## 2. RISK:

Variation in return i.e., the chance that the actual return from an investment would differ from its expected return is referred to as the risk. Measuring risk is important because minimizing risk and maximizing return are interrelated objectives.

## 3. LIQUIDITY:

Liquidity, with reference to investments, means that the investment is saleable or convertible into cash without loss of money and without loss of time. Different types of investments offer different type of liquidity.

Most of financial assets provide a high degree of liquidity. Shares and mutual fund units can be easily sold at the prevailing prices. An investor has to build a portfolio containing a good proportion of investments which have relatively high degree of liquidity.Cash and money market instruments are more liquid than the capital market instruments which in turn are more liquid than the real estate investments. For ex, money deposited in savings a/c and fixed deposit a/c in a bank is more liquid than the investment made in shares or debentures of a company.

## 4. SAFETY:

An investor should take care that the amount of investment is safe. The safety of an investment depends upon several factors such as the economic conditions, organization where investment is made, earnings stability of that organization, etc. Guarantee or collateral available against the investment should also be taken care of. For ex,
$>$ Bonds issued by RBI are completely safe investments as compared with the bonds of a private sector company.
$>$ Like wise it is more safer to invest in debenture than of preference shares of a company
$>$ Accordingly, it is more safer to invest in preference shares than of equity shares of a company, the reason being that in case of company liquidation, order of payment is debenture holders, preference share holds and then equity share holders.

## 5. TAX BENEFITS:

Investments differ with respect to tax treatment of initial investment, return from investment and redemption proceeds. For example, investment in Public Provident Fund (PPF) has tax benefits in respect of all the three characteristics. Equity Shares entails exemption from taxability of dividend income but the transactions of sale and purchase are subject to Securities Transaction Tax or Tax on Capital gains. Sometimes, the tax treatment depends upon the type of the investor.

The performance of any investment decision should be measured by its after tax rate of return. For example, between $8.5 \%$ PPF and $8.5 \%$ Debentures, PPF should be preferred as it is exempt from tax while debenture is subject to tax in the hands of the investors.

## 6. REGULARITY OF INCOME:

The prime objective of making every investment is to earn a stable return. If returns are not stable, then the investment is termed as risky. For example, return (i.e. interest) from Savings a/c, Fixed deposit a/c, Bonds \& Debentures are stable but the expected dividends from equity share are not stable. The rate of dividend on equity shares may fluctuate depending upon the earnings of the company.

## RISK

Investors invest for anticipated future returns, but these returns can be rarely predicted. The difference between the expected return and the realized return and latter may deviate from the former. This deviation is defined as risk.

All investors generally prefer investment with higher returns, he has to pay the price in terms of accepting higher risk too. Investors usually prefer less risky investments than riskier investments. The government bonds are known as risk-free investments, while other investments are risky investments.


## SYSTEMATIC RISK

It affects the entire market. It indicates that the entire market is moving in particular direction. It affects the economic, political, sociological changes. This risk is further subdivided into:

1. Market risk
2. Interest rate risk
3. Purchasing power risk

## 1. Market risk:

Jack Clark Francis defined market risk as "portion of total variability in return caused by the alternating forces of bull and bear markets. When the security index moves upward for a significant period of time, it is bull market and if the index declines from the peak to market low point is called troughs i.e. bearish for significant period of time.

The forces that affect the stock market are tangible and intangible events. The tangible events such as earthquake, war, political uncertainty and fall in the value of currency. Intangible events are related to market psychology.

For example - In 1996, the political turmoil and recession in the economy resulted in the fall of share prices and the small investors lost faith in market. There was a rush to sell the shares and stocks that were floated in primary market were not received well.

## 2. Interest rate risk:

It is the variation in single period rates of return caused by the fluctuations in the market interest rate. Mostly it affects the price of the bonds, debentures and stocks. The fluctuations in the interest rates are caused by the changes in the government monetary policy and changes in treasury bills and the government bonds.

Interest rates not only affect the security traders but also the corporate bodies who carry
their business with borrowed funds. The cost of borrowing would increase and a heavy outflow of profit would take place in the form of interest to the capital borrowed. This would lead to reduction in earnings per share and consequent fall in price of shares.

EXAMPLE -In April 1996, most of the initial public offerings of many companies remained under subscribed, but IDBI \& IFC bonds were over subscribed. The assured rate of return attracted the investors from the stock market to the bond market.

## 3. Purchasing power risk:

Variations in returns are due to loss of purchasing power of currency. Inflation is the reason behind the loss of purchasing power. The inflation may be, "demand-pull or cost-push ".

- Demand pull inflation, the demand for goods and services are in excess of their supply. The supply cannot be increased unless there is an expansion of labour force or machinery for production. The equilibrium between demand and supply is attained at a higher price level.
- Cost-push inflation, the rise in price is caused by the increase in the cost. The increase in cost of raw material, labour, etc makes the cost of production high and ends in high price level. The working force tries to make the corporate to share the increase in the cost of living by demanding higher wages. Hence, Cost-push inflation has a spiraling effect on price level.


## UNSYSTEMATIC RISK

Unsystematic risk stems from managerial inefficiency, technological change in production process, availability of raw materials, change in consumer preference and labour problems. They have to be analysed by each and every firm separately. All these factors form Unsystematic risk. They are

1. Business risk
2. Financial risk

## 1. BUISNESS RISK:

It is caused by the operating environment of the business. It arises from the inability of a firm to maintain its competitive edge and the growth or stability of the earnings. The variation in the expected operating income indicates the business risk. It is concerned with difference between revenue and earnings before interest and tax. It can be further divided into:

- Internal business risk
- External business risk

Internal business risk - it is associated with the operational efficiency of the firm. The efficiency of operation is reflected on the company's achievement of its goals and their promises to its investors. The internal business risks are:

- Fluctuation in sales
- Research and development
- Personal management
- Fixed cost
- Single product

External business risk -It is the result of operating conditions imposed on the firm by circumstances beyond its control. The external business risk are,

- Social and regulatory factors
- Political risk
- Business cycle.


## 2. FINANCIAL RISK:

It is the variability of the income to the equity capital due to the debt capital. Financial risk is associated with the capital structure of the firm. Capital structure of firm consists of equity bonds and borrowed funds. The interest payment affects the payments that are due to the equity investors. The use of debt with the owned funds to increase the return to the shareholders is known as financial leverage.

The financial risk considers the difference between EBIT and EBT. The business risk causes the variation between revenue and EBIT. The financial risk is an avoidable risk because it is the management which has to decide how much has to be funded with equity capital and borrowed capital.

## INVESTMENT \& SPECULATION:

In speculation, there is an investment of funds with an expectation of some return in the form of capital profit resulting from the price change and sale of investment. Speculation is relatively a short term investment. The degree of uncertainty of future return is definitely higher in case of speculation than in investment.

In case of investment, the investor has an intention of keeping the investment for some period whereas in speculation, the investor looks for an opportunity of making a profit and "exit- out" by selling the investment.

## DIFFERENCES IN INVESTMENT \& SPECULATION:

| FACTOR | INVESTEMENT | SPECULATION |
| :--- | :--- | :--- |
| 1. Degree of risk | Relatively lesser | Relatively higher |
| 2.Basis of return | Income and capital gain | Change in market price |
| 3. Basis for decision | Analysis of fundamentals | Rumors, tips, etc |
| 4.Position of investor | Ownership | Party of an agreement |
| 5.Investment period | Long term | Short term |

## INVESTMENT ALTERNATIVES

Physical assets like real estate, gold/jewelry, commodities etc. and/or
Financial assets /Non-Marketable financial assets such as fixed deposits with banks, small saving instruments with post offices, insurance/provident/pension fund etc. Marketable financial assets - securities market related instruments like shares, bonds, debentures, derivatives, mutual fund etc.

## REAL ASSETS

FINANCIAL ASSETS

1. Real Estate

- Residential Apartments
- Office Buildings
- Land

2. Gems and Metals

- Diamonds
- Gold
- Silver

3. Antiques

- Art Pieces
- Stamps
- Coins etc

1. Equity Claims

- Equity Shares
- Mutual Funds
- Convertible Debentures
- Convertible Preference Shares

2. Redeemable Preference Shares
3. Creditors Claims

- Debt Securities
- Commercial Paper
- Loans and Deposits
- Savings Account


## Intangible Alternative Investments :

Hedge funds
Private equity
Venture capital
Derivatives
Cryptocurrency

## Return

Return can be defined as the actual income from a project as well as appreciation in the value of capital. Thus there are two components in return - the basic component or the periodic cash flows from the investment, either in the form of interest or dividends; and the change in the price of the asset, com-monly called as the capital gain or loss.

The term yield is often used in connection to return, which refers to the income component in relation to some price for the asset. The total return of an asset for the holding period relates to all the cash flows received by an investor during any designated time period to the amount of money invested in the asset.

## Computation of Return

$$
\begin{aligned}
R & =\frac{C+\left(P_{E}-P_{B}\right)}{P_{B}} \\
R & =\text { total return over the period } \\
C & =\text { cash payment received during the period } \\
P_{E} & =\text { ending price of the investment } \\
P_{B} & =\text { beginning price }
\end{aligned}
$$

1.Grow More Ltd. Is evaluating the rate of return on two of its Assets, I and II. The Asset I was purchased a year ago for Rs.4,00,000 and since then it has generated cash inflows of Rs. 16,000 . Presently, it can be sold for a price of Rs.4,30, 000.Asset II was purchased a few years ago and its market price in the beginning and at the end of the current year was Rs.2,40,000 and Rs.2,36,000 respectively. The Asset II has generated cash inflows of Rs. 34,000 during the year. Find out the rate of return on these assets.

Solution: The rate of return on these assets can be ascertained with the help of the above equation:

$$
R=\frac{C+\left(P_{E}-P_{B}\right)}{P_{B}}
$$

For Asset I

$$
\mathrm{R}=16000+(430000-400000) \quad=11.5 \%
$$

For Asset II $\quad \mathrm{R}=34000+(236000-240000) \quad=12.5 \%$
2. A had purchased a bond at a price of Rs. 800 with a coupon payment of Rs. 150 and sold it Rs.1000.i)What is his holding period return and ii)If the bond is sold is sold for Rs. 750 after receiving Rs. 150 as coupon payment then what is his holding period return?

$$
R=\frac{C+\left(P_{E}-P_{B}\right)}{P_{B}}
$$

i) | $\mathrm{R}=150+(1000-800) \times 100$ |
| :---: |
| 800 |

ii)
$\mathrm{R}=150+(750-800) \times 100$

## Expected rate of Return

The expected return is the profit or loss that an investor anticipates on an investment that has known historical rates of return (RoR). It is calculated by multiplying potential outcomes by the chances of them occurring and then totaling these results. Expected returns cannot be guaranteed. The expected return for a portfolio containing multiple investments is the weighted average of the expected return of each of the investments.
Expected return calculations are a key piece of both business operations and financial theory, including in the well-known models of the modern portfolio theory (MPT)

For example, if an investment has a $50 \%$ chance of gaining $20 \%$ and a $50 \%$ chance of losing $10 \%$, the expected return would be $5 \%=(50 \% \times 20 \%+50 \% \times-10 \%=5 \%)$.

## What is Expected Return?

The expected return on an investment is the expected value of the probability distribution of possible returns it can provide to investors. The return on the investment is an unknown variable that has different values associated with different probabilities. Expected return is calculated by multiplying potential outcomes (returns) by the chances of each outcome occurring, and then calculating the sum of those results (as shown below).

## Computation of Expected Return.

```
                                    r= \sum
    wherer = Expected return
    p = Probability of ith return
    \mp@subsup{r}{,}{}=\mathrm{ Possible return, and}
    n = Number of years
```

1.Compute expected return on security X from the particulars given:

| Return | Probability |
| :--- | :--- |
| $20 \%$ | .15 |
| $21 \%$ | .20 |
| $22 \%$ | .50 |
| $23 \%$ | .10 |
| $24 \%$ | .05 |



| Return(X) | Probability(P) | PX |
| :--- | :--- | :--- |
| $20 \%$ | .15 | 3.00 |
| $21 \%$ | .20 | 2.10 |
| $22 \%$ | .50 | 13.20 |
| $23 \%$ | .10 | 2.30 |
| $24 \%$ | .05 | 1.20 |
|  | 21.8 |  |

Expected return $\mathrm{R}=21.8 \%$

## RISK

Risk is defined in financial terms as the chance that an outcome or investment's actual gains will differ from an expected outcome or return. Risk includes the possibility of losing some or all of an original investment.

Investing money into the markets has a high degree of risk and you should be compensated if you're going to take that risk. If somebody you marginally trust asks for a Rs. 500 loan and offers to pay you Rs. 600 in two weeks, it might not be worth the risk, but what if they offered to pay you Rs.1000? The risk of losing Rs. 500 for the chance to make Rs. 1000 might be appealing.

## Calculation of Risk

## Calculation of Risk (G)

$$
\begin{aligned}
& \sigma=\text { measure of Risk } \\
& \sigma=\sqrt{\sum_{i=1}^{n} P_{i}\left(R_{i}-\overline{R_{1}}\right)^{2}} \\
& \text { where } \sigma=\text { measure i Risk } \\
& P_{i}=\text { probability of th return } \\
& R_{i}=\text { Possible return } \\
& \bar{R}_{1}=\text { Expected return } \\
& \text { Expected return }(\bar{R})=\sum_{i=1}^{n} P_{i} \times R_{i}
\end{aligned}
$$

$$
\text { Where }\left(\overline{R_{1}}\right)=\text { Expect al rate } \delta \text { return }
$$

$$
P_{i}=\text { Probability of its return }
$$

$$
R_{i}=\text { Possible return. }
$$

The market price of an equity share is Rs.100.Following information is available respect of dividends.market price and expected market condition after one year

| Market Condition | Probability | Market Price | Dividend |
| :--- | :--- | :--- | :--- |


| Good | 25 | Rs.115 | 9 |
| :--- | :--- | :--- | :--- |
| Normal | 50 | 107 | 5 |
| Bad | 25 | 97 | 3 |

Find out the expected return and variability of return of the equity share.

## PART - A

1. Define Investment with its objectives?
2. What are the features of Investment.
3. Differentiate Investment, Speculation and Gambling.
4. Distinguish between Investment and Speculation.
5. Distinguish between Investment and Gambling.
6. Write short note on Market Risk and Interest Rate Risk.
7. What do you mean by Yield to Maturity?
8. How to calculate the Cost of Redeemable Debt?
9. How to measure the Cost of Irredeemable Preference Share?
10. What do you understand Holding Period Return?

## PART - B

1. Explain the process of Investment in detail.
2. Define Risk and explain the various classifications of risk.
3. What are the various types of investment alternatives available to an investor?
4. Calculate the expected return, variance and standard deviation from the following:

| Economic Conditions | Return (\%) | Probability |
| :--- | :--- | :--- |
| Good | 20 | .1 |
| Average | 16 | .4 |
| Bad | 10 | .3 |
| Poor | 3 | .2 |

5. BHEL Co. pays a dividend of Rs. 5 per share and these dividends are expected to grow at the rate of $15 \%$ for the first 3 years, $11 \%$ for the next 2 years and thereafter $9 \%$ forever. The equity capitalization rate is $10 \%$. Find the present value of the equity share.
6. Premium Co. pays a dividend of Rs. 4 per share and this dividend is expected to grow at the rate of $13 \%$ for the first 3 years, thereafter $11 \%$ for the next 3 years and later $6 \%$ forever. The equity capitalization rate is $10 \%$. Find the present value of the equity share.
7. ABC Ltd. Issues $10 \%$ Bond with 3 years maturity. Interest is paid semi-annually and the bond is redeemable at Rs.1000. The investors required rate of return is $5 \%$. Find the value of the Bond.
8. TISCO Ltd. issues 3 years debenture which pays Rs. 190 as annual interest and at the time of maturity it will pay Rs.1000. Find the present value of the debenture if the required rate of return is $16 \%$.
9. XYZ Co. pays a dividend of Rs. 3 per share and these dividends are expected to grow at the rate of $40 \%$ for the first 5 years and thereafter, the growth rate will stabilize at $12 \%$ forever. Find out the Intrinsic value of the share given that the minimum required rate of return of the equity investors is $15 \%$.
10. If the Face value of the Bond is Rs. 10,000 with $8 \%$ coupon rate, Maturity period is 4 years, Market price of the bond is Rs. 8,790 and the investors required rate of return is $10 \%$, find YTM?

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SCHOOL OF MANAGEMENT STUDIES

## SECURITY ANALYSIS

## FUNDAMENTAL ANALYSIS:

Fundamental analysis is the study of economic factors, industrial environment and the factors related to the company. The earnings of the company, the growth rate and the risk exposure of the company have a direct bearing on the price of the share. These factors in turn rely on the host of other factors like economic development in which they function, the industry belongs to, and finally companies' own performance. The fundamental school of thought appraised the intrinsic value of shares through

- Economic Analysis
- Industry Analysis
- Company Analysis


## ECONOMIC ANALYSIS:

The state of the economy determines the growth of gross domestic product and investment opportunities. An economy with favorable savings, investments, stable prices, balance of payments, and infrastructure facilities provides a best environment for common stock investment. If the company grows rapidly, the industry can also be expected to show rapidly growth and vice versa. When the level of economic activity is low, stock prices are low, and when the level of economic activity is high, stock prices are high reflecting the prosperous outlook for sales and profits of the firms. The analysis of macro economic environment is essential to understand the behaviour of the stock prices.
The commonly analyzed macro economic factors are as follows:

## * Gross domestic product (GDP):

GDP represents the aggregate value of goods and services produced in the economy. It consists of personal consumption expenditure, gross private domestic investment and government expenditure on goods \& services and net export of goods \& services. It indicates rate of growth of economy. The estimate on GDP available on annual basis.

## * Business Cycle:

Business cycles refer to cyclical movement in the economic activity in a country as a whole. An economy marching towards prosperity passes through different phases, each known as a component of a business cycle. These phases are:
a. Depression: Demand level in the economy is very low. Interest rates and Inflation rates are high. These affect profitability and dividend pay out and reinvestment activities.
b. Recovery: Demand level starts picking up. Fresh investment by corporate firms shows increasing trend.
c. Boom: After a consistent recovery for a number of years, the economy starts showing signs of boom which is characterized by high level of economic activities such as demand, production and profits.
d. Recession: The boom period is generally not able to sustain for a long period. It slows down and results in the recession.

## * $\quad$ Savings \& investment:

The growth requires investment which in turn requires substantial amount of domestic savings. Stock market is a channel through which the savings of investors are made available to the corporate bodies. Savings are distributed over various assets like equity shares, deposits, mutual fund unit, real estate and bullion. The saving and investment pattern of the public effect the stock to great extent.

## * Inflation:

The inflation is raise in price, where its rate increases, than the real rate of growth would be very little. The demand is the consumer product industry is significantly affected. The industry which comes under the government price control policy may lose the market. If the mild level of inflation, it is good to the stock market but high rate of inflation is harmful to the stock market.

## * Interest rates:

The interest rate affects the cost of financing to the firms. Higher interest rates increase the cost of funds and lower interest rates reduce the cost of funds resulting in higher profit. There are several reasons for change in interest rates such as monetary policy, fiscal policy, inflation rate, etc,

## * Monetary Policy, Money supply and Liquidity:

The liquidity in the economy depends upon the money supply which is regulated by the monetary policy of the government. RBI regulate the money supply and liquidity in the economy. Business firms require funds for expansion projects. The capacity to raise funds from the market is affected by the liquidity position in the economy. The monetary policy is designed with an objective to maintain a balance in liquidity position. Neither the excess liquidity nor the shortage are desirable. The shortage of liquidity will tend to increase the interest rates while the excess will result in inflation.

## * Budget:

The budget draft provides an elaborate account of the government revenues and expenditures. A deficit budget may lead to high rate of inflation and adversely affect the cost of production. Surplus budget may result in deflation. Hence, balanced budget is highly favourable to the stock market.

## * Tax structure:

Every year in March, the business community eagerly awaits the government's announcement regarding the tax policy. Concessions and incentives given to the certain industry encourage investment in particular industry. Tax relief given to savings encourages savings. The minimum alternative tax (MAT) levied by finance minister in 1996 adversely affected the stock market. Ten years of tax holiday for all industries to be set up in the northeast is provided in the 1999 budget. The type of tax exemption has impact on the profitability of the industries.

## * Monsoon and agriculture:

Agriculture is directly and indirectly linked with the industries. For example, sugar, cotton, textile and food processing industries depend upon agriculture for raw material. Fertilizer and insectide industries are supplying inputs to agriculture. A good monsoon leads to higher demand for input and results in bumper crop. This would lead to buoyancy in the stock market. When the monsoon is bad, agricultural and hydro power production would suffer. They cast a shadow on a share market.

## * Infrastructure facilities:

Infrastructure facilities are essential for the growth of industrial and agricultural sector. A wide network of communication system is a must for the growth of the economy. Good infrastructure facilities affect the stock market favourably. The government are liberalized its policy regarding the communication, transport and power sector.

## * Demographic factors:

The Demographic data provides details about the population by age, occupation, literacy and geographic location. This is needed to forecast the demand of customer goods. The population by age indicates the availability of able work force.

## * Economic forecasting:

To estimate the stock price changes, an analyst the macro economic environment and the factor peculiar to industry concerned to it. The economic activities affect the corporate profits, Investors, attitude and share prices.

## * Economic indicators:

The economic indicators are factors that indicate the present status, progress or slow down of the economy. They are capital investment, business profits, money supply, GNP, interest rate, unemployment rate, etc. The economic indicators are grouped into leading, coincidental and lagging indicators. The indicators are selected on the following criteria

Economic significance,
Statistical adequacy,
Timing, conformity.

## * Diffusion index:

Diffusion index is a composite index or consensus index. The diffusion index consist of leading, coincidental and lagging indicators. This type of index has been constructed by the National Bureau of Economic Research in USA. But it is complex in nature to calculate and the irregular movements that occur in individual indicators cannot be completely eliminated.

## * Econometric model building:

For model building several economic variables are taken into consideration. The assumptions underlying the analysis are specified. The relationship between the independent and dependent variables is given mathematically. While using the model, the analyst has to think clearly all inter-relationship between the variables. This model use simultaneous equations.

## Other factors:

a. Industrial growth rate
b. Fiscal policy of the Government
c. Foreign exchange reserves
d. Growth of infrastructural facilities
e. Global economic scenario and confidence
f. Economic and political stability.

## INDUSTRY ANALYSIS

An industry is a group of firms that have similar technological structure of production and produce similar products. E.g.: food products, textiles, beverages and tobacco products, etc. These industries can be classified on the business cycle i.e. classified according to their relations to the different phases of the business cycle. They are classified into

- Growth industry
- Cyclical industry
- Defensive industry
- Cyclical Growth industry


## > Growth industry:

The growth industry has special features of high rate of earnings and growth in expansion, independent of the business cycle. The expansion of the expansion of the industry mainly depends upon the technological change.

## > Cyclical industry:

The growth and the profitability of industry move along with the business cycle. During the boom period they enjoy the growth and during depression they suffer set back.

## > Defensive industry:

Defensive industry defies the movement of business cycle. The stock of defensive industries can be held by the investor for income earning purpose. They expand and earn income in the depression period too, under the government's of production and are counter-cyclical in nature.

## > Cyclical Growth industry

This is a new type of industry that is cyclical and at the same time growing. The changes in technology and introduction of new models help the automobile industry to resume their growth path.

## INDUSTRY LIFE CYCLE

The life cycle of the industry is separated into four well defined stages such as

- Pioneering stage
- Rapid growth stage
- Maturity and stabilization stage
- Declining stage


Fig. 5

## Industry Life Cycle

| Stage | Features |
| :--- | :--- |
| Pioneering | - high sales <br> - high competitive pressure <br> - huge entry to the market <br> - high risk and return |
| Expansion | - less number of companies; <br> - moderate growth; <br> - considerable investment; <br> - moderate dividend payments |
| Stabilisation | - standardised products <br> - slower growth of sales <br> - high dividend payments |
| Declining | - declining sales <br> - lower growth prospects <br> - negative return |

## Pioneering stage:

The prospective demand for the product is promising in this stage and the technology of the product is low. The demand for the product attracts many producers to produce the particular product. There would be severe competition and only fittest companies this stage. The producers try to develop brand name, differentiate the product and create a product image. This would lead to nonprice competition too. The severe competition often leads to the change of position of the firms in terms of market shares and profit. In this situation, it is difficult to select companies for investment because the survival rate is unknown.

## Rapid growth stage:

This stage starts with the appearance of surviving firms from the pioneering stage. The companies that have withstood the competition grow strongly in market share and financial performance. The technology of the production would have improved resulting in low cost of productions and good quality products. The companies have stable growth rate in this stage and they declare dividend to the share-holders. It is advisable to invest in the shares of these companies.

## Maturity and stabilization stage:

In the stabilization stage, the growth rate tends to moderate and the rate of growth would be
more or less equal to the industrial growth rate or the gross domestic product growth rate.
Symptoms of obsolescence may appear in the technology. To keep going, technological innovations in the production process and products should be introduced. The investors have to closely monitor the events that take place in the maturity stage of the industry.

## Declining stage:

In this stage, Demand for the particular product and the earnings of the companies in the industry decline. The specific feature of the declining stage is that even in the boom period; the growth of the industry would be low and decline at a higher rate during the recession. It is better to avoid investing in the shares of the low growth industry even in the boom period. Investment in the shares of these types of companies leads to erosion of capital.

## KEY FACTORS IN INDUSTRY ANALYSIS:

1. The past performance of the industry.
2. The performance of the product and technology of the industry.
3. Role of government in the industry.
4. Labour conditions relating to the industry.
5. Competitive conditions in the market
6. Inter-linkages with other industries

## DETERMINING THE SENSITIVITY OF THE INDUSTRY:

1. Sensitivity to sales.
2. Operating leverage
3. Financial leverage.

## SWOT ANALYSIS FOR THE INDUSTRY

Strength: Strength of the industry refers to its capacity and comparative advantage in the economy. For example, the existing research and development facilities and greater dependence on allopathic drugs are two elements of strength to the pharmaceutical industry in India.
Weakness: Weakness refers to the restrictions and inherent limitations in the industry, which keep the industry away from meeting its target. For example, Lack of infrastructure facility, rail-road links, etc., are weakness of the tourism industry in India.
Opportunities: Opportunities refers to the expectation of favourable situation for an industry. For example, with increase in purchasing power with the people, demand for pharmaceutical industry will increase and likewise, changing preference from gold to diamond jewellary has brought a lot of opportunities for the diamond industry.
Threats: Threat refers to an unfavourable situation that has a potential to endanger the existence of an industry. For example, after liberalization of import policy in India, import of Chinese goods has threatened many industries in India, such as toys, novelties, etc.

## III. COMPANY ANALYSIS

Effect of a business cycle on an individual company may be different from one industry to another. Here, the main point is the relationship between revenues and expenses of the firm and the economic and industry changes. The basic objective of company analysis is to identify better performing companies in an industry .These companies would be identified for investment.

The processes that may be taken up to attain the objective are as follows:
a. Analysis of management of the company to evaluate its trust-worthiness, capacity and efficiency.
b. Analyse the financial performance of the company to forecast its future expected earnings.
c. Evaluation of long-term vision and strategies of company in terms of organizational strength and resources of company.
d. Analysis of key success factor for particular industry.

## SOURCES OF INFORMATION:

Information and data required for analysis of earnings of a firm are primarily available in the annual financial statements of the firm. It include,
$>$ Balance sheet or Position statement
> Income statement or Profit \& Loss account.
$>$ Financial statement analysis (Ratio analysis)
> Cash flow statement, the statement of sources and uses of cash and also
$>$ Top level management people in the company.

## I.BALANCE SHEET (BS):

It is the most significant and basic financial statement of any firm. It is prepared by a firm to present a summary of financial position at a given point of time, usually at the end of financial year. It shows the state of affairs of the firm at a point of time. In fact, the total assets must be equal to the total claim against the firm and this can be stated as,

Total assets $=$ Total claim (Debt + Share holders) $=$ Liabilities + Share holders equity
The different items contained in BS can be grouped into,

1. Assets
2. Liabilities
3. Shareholder's funds.
a. ASSETS: An asset of the firm represents the investments made by the firm in order to generate earnings. It can be classified into (a).Fixed Asset (b).Current assets.
i. FIXED ASSET - Those which are intended to be for a longer period.These are permanent in nature, relatively less liquid and are not easily converted into cash in short run. Fixed asset include, plant \& machinery, furniture \& fixtures, buildings, etc. The value of fixed asset is known as book value, which may be different from market value or replacement cost of the assets. The amount of depreciation is anon-cash expense and does not involve cash out flow. It is taken as an expense item and is included in the cost of goods sold or indirect expense.
ii. CURENT ASSET - It is the liquid asset of the firm and is convertible into cash within a period of one year. It includes cash and bank balance, receivables, inventory (raw material, finished goods, etc), prepaid expenses, loan, etc.
b. LIABILITIES: It is also called as debts. It is claimed by the outsiders against the assets of the firm. The liabilities refer to the amount payable by the firm to the claim holders. The liabilities are classified into long term and short term liabilities.
i. LONG TERM LIABILITIES: It is the debt incurred by the firm, which is not payable during the period of next one year. It represents the long term borrowings of the firm.
ii. CURRENT LIABILITITES: It is the debt which the firm expects to pay within a period of one year. It is related to the current assets of the firm in the sense that current liabilities are paid out of the realization of current assets.
4. SHAREHOLDERS EQUITY (SE): It represents the ownership interest in the firm and reflects the obligations of the firm towards its owners. It the direct contribution of the shareholders to the
firm. The retained earnings on the other hand reflects the accumulated effect of the firms earnings. SE is also called as net worth. The liabilities and the SE must be equal to the total assets of the firm.

## II.INCOME STATEMENT OR PROFIT \& LOSS ACCOUNT (IS):

It shows the result of the operations of the firm during a period. It gives detail sources of income and expenses; Income statement is a flow report against the balance sheet which is a stock report or status report. It helps in understanding the performance of the firm during the period under consideration. It can be grouped into three classes. (i) Revenues (ii) Expenses \& (iii) Net profit or loss

REVENUES- It is the inflow of resources $\backslash c a s h$ that arise because of operation of the firm. The revenue arises from the sale of goods and services to the customer and other non-operating incomes. The firm may also get revenue from the use of its economic resources elsewhere. E.g. some of the funds might have been invested in some other firm. The income by way of interest or dividend is also a revenue.
EXPENSES- The cost incurred in the earning the revenues is called the expenses. Expenses like, salaries, general expenses, repairs, etc. It occurs when there is a decrease in assets or increase in liabilities

## III.CASH FLOW STATEMENT AND FUND FLOW STATEMENT:

The balance sheet and the income statement are the two common financial statements and are also known as traditional financial statements. It is essential to know the movement of cash during the period. It is a historical record of where the cash came from and how was it used.
IV. FINANCIAL STATEMENT ANALYSIS:

Financial statement analyses are ratio like:
a. Profitability ratios
b. Liquidity ratios
c. Solvency ratios

## TECHNICAL ANALYSIS

It is a process of identifying trend reversal at earlier stages to formulate the buying and selling strategy. With the help of various indicators they analyse the relationship between price \& volume, supply \& demand, etc. An investor who does this analysis is called technician.

## ASSUMPTIONS:

1. The market value is determined by the interaction of supply and demand.
2. The market discounts everything. The information regarding the issuing of bonus shares and right issues may support the prices. These are some of the factors which cause shift in demand \& supply and change in direction of trends.
3. The market always moves in trend, except for certain minor deviations. The trend may either be increasing or decreasing. It may continue in same manner or reverse.
4. In the rising market, many purchase shares in greater volume. When the market moves down, people are interested in selling it. The market technicians assume that past prices predict the future.

## THEORIES USED IN THIS ANALYSIS:

1. Dow theory
2. Elliot wave theory

DOW THEORY:
This theory was developed by Charles H Dow. He did research and published in journal in 1984 mainly for trend analysis. According to his theory, the price patterns do not move just like that and it follows some trend. There are 3 types of trend.

- Primary trend - It is broad upward or downward movement which last for a year or two.
- Secondary trend or Correction trend - It last for 3 weeks to some months.
- Minor trend. -It refers to the day to day price. Its also knows as fluctuations

These 3 trends are compared to tide, waves and ripples of the sea. Diagrammatic representations of these trends are depicted below:


Fig. 6

## PRIMARY TREND:

The security price may be either increasing or decresing. When market exhibits increasing trend, its called bull market.The graph below show three clear cut peaks.


Fig. 7
Each peak is higher than the previous peak.The revival period encourages more and more investors to buy scripts,their expectation about the future is high.In the next phase, increased profits or corporate would result in further price rise.In the final phase,the price advance due to inflation and speculation.


Fig. 8
the above graph depicts bear market.The contrary of bull market happens here .In the first phase ,the prices are coming down,this would result in lowering of profit in second phase.The final phase is characrterised by distress sale of share.

SECONDARY TREND


Fig. 9
In the bull market the secondary trend results in fall of about $33-66 \%$ of earlier rise. In bear market, it carries the price upward and corrects the main trend. It provides breathing space to market.

## MINOR TREND :

Its also called as random wiggles. They are the daily price fluctuations. It tries to carry the secondary trend movement. It's better for the investors to carry primary or secondary than this trend.

## ELLIOT WAVE THEORY-



Fig. 10
The above graph depicts bullish wave, 1,3,5 - impulsive waves
2,4 - correction waves
In starting wave, only few people invest and the waves keep moving high. It indicates the prices of shares are moving high and hence they sell it. As they get more profit they will again invest in the same company and there will be few more investors. This makes the wave to move higher. Same process keeps going everyday. In the $5^{\text {th }}$ wave investors will be more interested in investing and to gain profit. Since people buy lot of shares here, it is called as buying wave. After these five waves get over A,B,C waves or correction waves will occur. It these 8 waves get over and if the same trend occur, again we may face bully's wave or else we have beary's wave.

## TYPES OF PRICES

1. The open price
2. The close price.
3. The high price.
4. The low price.

## TOOLS AND TECHNIQUES USED IN TECHNICAL ANLYSIS

## CHARTS <br> What are stock charts

It is a graphical representation of how a stock's price or trading volumes have changed over time. This relationship can be presented in a number of ways, through the use of different types of charts. It is your job, as a technical analyst, to identify the type that will bring out a hidden trend most effectively.

Stock charts, like all other charts, have two axis-the vertical axis and the horizontal axis. The horizontal axis represents the historical time periods for which a technical chart has been constructed. The vertical axis displays the stock price or the trading volume corresponding to each period.

There are many types of charts that are used for technical analysis. However, the four types that are most common are-line chart, bar chart, point and figure chart and candlestick chart. We will discuss these technical charts extensively later. However, we have illustrated three types of stock charts below. The bar chart looks a lot like the candlestick chart. All the charts displayed below are stock price charts. The nature of the input may, however, have to be altered when you move from one chart type to another.

Line charts: A line chart is the figure that, perhaps, automatically comes to mind when you think of a chart. The line chart has the stock price or trading volume information on the vertical or y -axis and the corresponding time period on the horizontal or x -axis). Trading volumes refer to the number of stocks of a company that were bought and sold in the market on a particular day. The closing stock price is commonly used for the construction of a line chart.

Once the two axes have been labelled, preparation of a line chart is a two-step process. In the first step, you take a particular date and plot the closing stock price as on that date on the graph. For this, you'll put a dot on the chart in such a way that it is above the concerned date and alongside the corresponding stock price.

Let's suppose that the closing stock price on December 31, 2014 was Rs 120. For plotting it, you'll put a dot in such a way that it is simultaneously above the marking for that date on the x -axis, and alongside the mark that says Rs 120 on the $y$-axis. You will do this for all dates. In the second step, you will connect all the dots plotted with a line. That's it! You have your line chart below:


Fig. Line Chart
Fig. 11

## Point and figure charts:

A point and figure chart essentially displays the volatility in a stock's price over a chosen period of time. On the vertical axis, it displays the number of times stock prices rose or fell to a particular extent. On the horizontal axis, it marks time intervals. Markings on the chart are exclusively in the form of X's and O's. X's represent the number of times the stock rose by the specified limit, while O's represent the number of times it fell by it. The specified amount used is called box size. It is directly related to the difference between markings on the $y$-axis.


Fig. Point and Figure Chart

## Fig. 12

- Bar charts: A bar chart is similar to a line chart. However, it is much more informative. Instead of a dot, each marking on a bar chart is in the shape of a vertical line with two horizontal lines protruding out of it, on either side. The top end of each vertical line signifies the highest price the stock traded at during a day while the bottom point signifies the lowest price at which it traded at during a day. The horizontal line to the left signifies the price at which the stock opened the trading day. The one on the right signifies the price at which it closed the trading day. As such, each mark on a bar chart tells you four things. An illustration of the marks used on a bar chart is given below:


A bar chart is more advantageous than a line chart because in addition to prices, it also reflects price volatility. Charts that show what kind of trading happened that day are called Intraday charts. The longer a line is, the higher is the difference between opening and closing prices. This means higher volatility. You should be interested in knowing about volatility because high volatility means high risk. After all, how comfortable would you be about investing in a stock whose price changes frequently and sharply?


Fig. Bar Chart
Fig. 13

- Candlestick charts: Candlestick charts give the same information as bar charts. They only offer it in a better way. Like a bar chart is made up of different vertical lines, a candlestick chart is made up of rectangular blocks with lines coming out of it on both sides. The line at the upper end signifies the day's highest trading price. The line at the lower end signifies the day's lowest trading price. The day's trading can be shown in Intraday charts. As for the block itself (called the body), the upper and the lower ends signify the day's opening and closing price. The one that is higher of the two, is at the top, while the other one is at the bottom of the body.

What makes candlestick charts an improvement over bar charts is that they give information about volatility throughout the period under consideration. Bar charts only display volatility that occurs within each trading day. Candles on a candlestick chart are of two shades-light and dark. On days when the opening price was greater than the closing price, they are of a lighter shade (normally white). On days when the closing price was higher than the opening price, they are of a darker shade (normally black).A single day's trading is represented by Intraday charts. Higher the variation in colour, more volatile was the price during the period. The appearance of candles on a candlestick chart is as follows:



Fig. Candle stick chart
Fig. 14

## PRICE PATTERNS

Price Patterns are formations which appear on stock with the help of charts which have shown to have a certain degree of predictive value. Some of the most common patterns include: Head \& Shoulders (bearish), Inverse Head \& Shoulders (bullish), Double Top (bearish), Double Bottom (bullish), Triangles, Flags.

## CONTINUATION PATTERNS

A price pattern that denotes a temporary interruption of an existing trend is known as a continuation pattern. A continuation pattern can be thought of as a pause during a prevailing trend - a time during which the bulls catch their breath during an uptrend, or when the bears relax for a moment during a downtrend. While a price pattern is forming, there is no way to tell if the trend will continue or reverse. As such, careful attention must be placed on the trendlines used to draw the price pattern and whether price breaks above or below the continuation zone. Technical analysts typically recommend assuming a trend will continue until it is confirmed that it has reversed. In general, the longer the price pattern takes to develop, and the larger the price movement within the pattern, the more significant the move once price breaks above or below the area of continuation.
If price continues on its trend, the price pattern is known as a continuation pattern. Common continuation patterns include:

- Pennants, constructed using two converging trendlines
- Flags, drawn with two parallel trendlines
- Wedges, constructed with two converging trendlines, where both are angled either up or down


## FLAGS \& PENNANTS

Flags and Pennants are short-term continuation patterns that represent a consolidation following a sharp price movement before a continuation of the prevailing trend. Flag patterns are characterized by a small rectangular pattern that slopes against the prevailing trend, while pennants are small symmetrical triangles that look very similar.


Figure - Pennant Example - Source: StockCharts.com
Fig. 15
The short-term price target for a flag or pennant pattern is simply the length of the 'flagpole' or the left vertical side of the pattern applied to the point of the breakout, as with the triangle patterns. These patterns typically last no longer than a few weeks, since they would then be classified as rectangle patterns or symmetrical triangle patterns.

## Reversal Patterns




Rising Wedge


## Bilateral Patterns

Ascending Triangle


Descending Triangle


Symmetrical Triangle


Fig. 16

## TRIANGLES

Triangles are among the most popular chart patterns used in technical analysis since they occur frequently compared to other patterns. The three most common types of triangles are symmetrical triangles, ascending triangles, and descending triangles. These chart patterns can last anywhere from a couple weeks to several months.


Figure Symmetrical Triangle Example - Source: StockCharts.com
Fig. 17
Symmetrical triangles occur when two trend lines converge toward each other and signal only that a breakout is likely to occur - not the direction. Ascending triangles are characterized by a flat upper trend line and a rising lower trend line and suggest a breakout higher is likely, while descending triangles have a flat lower trend line and a descending upper trend line that suggests a breakdown is likely to occur. The magnitude of the breakouts or breakdowns is typically the same as the height of the left vertical side of the triangle.

## REVERSAL PATTERNS

A price pattern that signals a change in the prevailing trend is known as a reversal pattern. These patterns signify periods where either the bulls or the bears have run out of steam. The established trend will pause and then head in a new direction as new energy emerges from the other side (bull or bear). For example, an uptrend supported by enthusiasm from the bulls can pause, signifying even pressure from both the bulls and bears, then eventually giving way to the bears. This results in a change in trend to the downside. Reversals that occur at market tops are known as distribution patterns, where the trading instrument becomes more enthusiastically sold than bought. Conversely, reversals that occur at market bottoms are known as accumulation patterns, where the trading instrument becomes more actively bought than sold. As with continuation patterns, the longer the pattern takes to develop and the larger the price movement within the pattern, the larger the expected move once price breaks out.
When price reverses after a pause, the price pattern is known as a reversal pattern. Examples of common reversal patterns include:

- Head and Shoulders, signaling two smaller price movements surrounding one larger movement
- Double Tops, representing a short-term swing high, followed by a subsequent failed attempt to break above the same resistance level
- Double Bottoms, showing a short-term swing low, followed by another failed attempt to break below the same support level


## HEAD AND SHOULDERS

The Head and Shoulders is a reversal chart pattern that indicates a likely reversal of the trend once it's completed. A Head and Shoulder Top is characterized by three peaks with the middle peak being the highest peak (head) and the two others being lower and roughly equal
(shoulders). The lows between these peaks are connected with a trend line (neckline) that represents the key support level to watch for a breakdown and trend reversal. A Head and Shoulder Bottom - or Inverse Head and Shoulders - is simply the inverse of the Head and Shoulders Top with the neckline being a resistance level to watch for a breakout higher.


Figure Head and Shoulders - Source: StockCharts.com
Fig. 18

## DOUBLE TOPS AND BOTTOMS

The Double Top or Double Bottom pattern are both easy to recognize and one of the most reliable chart patterns, making them a favorite for many technically-orientated traders. The pattern is formed after a sustained trend when a price tests the same support or resistance level twice without a breakthrough. The pattern signals the start of a trend reversal over the intermediate- or long-term.


Figure - Double Top Example - Source: StockCharts.com
Fig. 19

## MARKET INDICATORS

Market indicators are a subset of technical indicators used to predict the direction of major financial indexes or groups of securities. Most market indicators are created by analyzing the number of companies that have reached new highs relative to the number that created new lows, known as market breadth, since it shows where the overall trend is headed.

- Market Breadth indicators compare the number of stocks moving in the same direction as a larger trend. For example, the Advance-Decline Line looks at the number of advancing stocks versus the number of declining stocks.
- Market Sentiment indicators compare price and volume to determine whether investors are bullish or bearish on the overall market. For example, the Put Call Ratio looks at the number of put options versus call options during a given period.


## MOVING AVERAGES

Moving averages "smooth" price data by creating a single flowing line. The line represents the average price over a period of time. Which moving average the trader decides to use is determined by the time frame in which he or she trades. For investors and long-term trend followers, the 200-day, 100-day and 50-day simple moving average are popular choices.
There are several ways to utilize the moving average. The first is to look at the angle of the moving average. If it is mostly moving horizontally for an extended amount of time, then the price isn't trending, it is ranging. If the moving average line is angled up, an uptrend is underway. Moving averages don't predict though; they simply show what the price is doing, on average, over a period of time.
Crossovers are another way to utilize moving averages. By plotting a 200-day and 50-day moving average on your chart, a buy signal occurs when the 50 -day crosses above the 200-day. A sell signal occurs when the 50 -day drops below the 200-day. The time frames can be altered to suit your individual trading time frame.


Fig. 20
When the price crosses above a moving average, it can also be used as a buy signal, and when the price crosses below a moving average, it can be used as a sell signal. Since price is more volatile than the moving average, this method is prone to more false signals, as the chart above shows.
Moving averages can also provide support or resistance to the price. The chart below shows a 100 -day moving average acting as support (i.e., price bounces off of it).


Fig. 21
PART - A

1. What do you mean by Security Analysis?
2. Difference between Fundamental Analysis and Technical Analysis.
3. What do you mean by Industry Analysis? What are the factors would you look for in analysis of a particular industry?
4. How is minor trend explained?
5. Explain any two types of Charts used in Technical Analysis.
6. List out and explain various Price Pattern Analysis.
7. Write short note on Simple Moving Average and Breadth of the Market.
8. What is a weak form under Efficient Market Theory.
9. Draw and explain Point and Figure chart.
10. Write short note on GDP, Inflation, Business cycle and Interest rate.

## PART - B

1. Explain the various tools and techniques used in Technical Analysis.
2. Explain in detail the EIC approach in Fundamental Analysis.
3. Draw and explain various Charting Techniques in Technical Analysis.
4. What do you mean by Company Analysis? What are the factors would you look in for analysis of a particular Company?
5. Describe Efficient Market Hypothesis.
6. Explain in detail the Dow Theory and how is it used to determine the direction of stock market?
7. Write short note on Elliot Wave Theory.
8. Write short note on Dow Theory
9. How is Technical Analysis different from Fundamental Analysis? Evaluate the usefulness of Technical Analysis.
10. What is "SWOT" Analysis? Carry out SWOT Analysis for anyone industry of your choice.

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## SCHOOL OF MANAGEMENT STUDIES

## PORTFOLIO MANAGEMENT

## INTRODUCTION

Portfolio Management is defined as the art and science of making decisions about the investment mix and policy, matching investments to objectives, asset allocation for individuals and institutions, and balancing risk against performance. It is mainly concerned with allocating assets while downsizing risk.
"Never put all your eggs in one basket" is what is meant by diversification. Instead of investing all funds in one asset, the funds be invested in a group of assets.

Diversification helps in reducing the risk of investing. Total risk of one investment is the sum of the impact of all the factors that might affect the return from that investment. However, investors need not suffer risk inherent with individual investments as it could be reduced by holding a diversity of investments.

For example, return from a single investment in a cold drink company is subject to weather conditions. This investment is a risky investment. However, if a second investment can be made in an umbrella company, which is also subject to weather changes, but in an opposite way, the return from the portfolio of two investments will have a reduced risk-level. This process is known as diversification.

Portfolio is the combination of securities or diversified investment in securities.

## PORTFOLIO MANAGEMENT:

Portfolio management may be defined as the process of construction, maintenance, revision and evaluation of a portfolio.

The objective of portfolio management is to build a portfolio which gives a return commensurate with the risk preference of the investor.

Portfolio management specifically deals with security analysis, analysis and selection of portfolio, revision of portfolio and evaluation of portfolio.

## Objectives of Portfolio Management

a) Capital appreciation
b) Maximising returns on investment
c) To improve the overall proficiency of the portfolio
d) Risk optimisation
e) Allocating resources optimally
f) Ensuring flexibility of portfolio
g) Protecting earnings against market risks

## Who is a Portfolio Manager?

An individual who understands the client's financial needs and designs a suitable investment plan as per his income and risk taking abilities is called a portfolio manager. A portfolio manager is one who invests on behalf of the client.

A portfolio manager counsels the clients and advises him the best possible investment plan which would guarantee maximum returns to the individual.

A portfolio manager must understand the client's financial goals and objectives and offer a tailor made investment solution to him. No two clients can have the same financial needs.

## Types of Portfolio Management

## Active portfolio management

In this type of management, the portfolio manager is mostly concerned with generating maximum returns. Resultantly, they put a significant share of resources in the trading of securities. Typically, they purchase stocks when they are undervalued and sell them off when their value increases.

## Passive portfolio management

This particular type of portfolio management is concerned with a fixed profile that aligns perfectly with the current market trends. The managers are more likely to invest in index funds with low but steady returns which may seem profitable in the long run.

## Discretionary portfolio management

In this particular management type, the portfolio managers are entrusted with the authority to invest as per their discretion on investors' behalf. Based on investors' goals and risk appetite, the manager may choose whichever investment strategy they deem suitable.

## Non-discretionary management

Under this management, the managers provide advice on investment choices. It is up to investors whether to accept the advice or reject it. Financial experts often recommended investors to weigh in the merit of professional portfolio managers' advice before disregarding them entirely.

## Who Should Opt for Portfolio Management?

The following should consider portfolio management -
a) Investors who intend to invest across different investment avenues like bonds, stocks, funds, commodities, etc. but do not possess enough knowledge about the entire process.
b) Those who have limited knowledge about the investment market.
c) Investors who do not know how market forces influence returns on investment.
d) Investors who do not have enough time to track their investments or rebalance their investment portfolio.

## Portfolio Management Process

Typically, professionals use these following ways to manage investment portfolio -

## Asset allocation

Essentially, it is the process wherein investors put money in both volatile and non-volatile assets in such a way that helps generate substantial returns at minimum risk. Financial experts suggest that asset allocation must be aligned as per investor's financial goals and risk appetite.

## Diversification

The said method ensures that an investors' portfolio is well-balanced and diversified across different investment avenues. On doing so, investors can revamp their collection significantly by achieving a perfect blend of risk and reward. This, in turn, helps to cushion risks and generates risk-adjusted returns over time.

## Rebalancing

Rebalancing is considered essential for improving the profit-generating aspect of an investment portfolio. It helps investors to rebalance the ratio of portfolio components to yield higher returns at minimal loss. Financial experts suggest rebalancing an investment portfolio regularly to align it with the prevailing market and requirements.

Once investors have selected a suitable strategy, they must follow a thorough process to implement the same so that they can improve the portfolio's profitability to a great extent.

## Portfolio Risk and Return

## i. Portfolio Return:

The expected return of a portfolio represents weighted average of the expected returns on the securities comprising that portfolio with weights being the proportion of total funds invested in each security (the total of weights must be 100).

The following formula can be used to determine expected return of a portfolio:

```
Port folio Return: }(\mp@subsup{R}{AB}{
```

$$
\begin{aligned}
R_{A B}= & R_{A} W_{A}
\end{aligned}+R_{B} W_{B} \quad \text { Where } \quad \begin{aligned}
R_{A B} & =\text { Porfolio retum } \\
R_{A} & =\text { Expected retarn of securi5 } A \\
R_{B} & =\text { Expectel retarn of securit } B \\
W & =\text { weisut proption }
\end{aligned}
$$

## Calculation of Portfolio Return

1. Mr.Anbu has the following stocks with the following expected market return. determine Anbu's Portfolio return.

| Stock | Amount of Investment | Expected Return |
| :--- | :--- | :--- |
| A | 40000 | $80 \%$ |
| B | 50000 | $20 \%$ |
| C | 20000 | $15 \%$ |

## Computation of Portfolio Return:

| Stock | Investrul | (Expet | $\begin{aligned} & \text { Proporion }{ }^{\text {Inverrnut }} \text { ( } \end{aligned}$ | portrolion |
| :---: | :---: | :---: | :---: | :---: |
| A | 40,000 | 80\% | 40,000 | $\begin{aligned} & \operatorname{PR}(R \times W) \\ & 0.8 \times 0.36= \\ & =.288 \end{aligned}$ |
| B | 50,000 | $20 \%$$15 \%$ | 50,000 $=0.45$ | $\begin{aligned} & 0.2 \times 0.45= \\ &=.00\end{aligned}$ |
| C | 20,00 |  | $20,000=0.18$ | $0.15 \times 0$. |
|  | 1,10,000 |  |  |  |

## ii. Portfolio Risk:

Unlike the expected return on a portfolio which is simply the weighted average of the expected returns on the individual assets in the portfolio, the portfolio risk, $\sigma p$ is not the simple, weighted average of the standard deviations of the individual assets in the portfolios. \}

It is for this fact that consideration of a weighted average of individual security deviations amounts to ignoring the relationship, or covariance that exists between the returns on securities. In fact, the overall risk of the portfolio includes the interactive risk of asset in relation to the others, measured by the covariance of returns. Covariance is a statistical measure of the degree to which two variables (securities' returns) move together. Thus, covariance depends on the correlation between returns on the securities in the portfolio.

Computation of Portfolio Risk

Portfolio Risk (*)

$$
\begin{aligned}
& \text { Covariance }=\sigma_{p}^{2} \\
& \text { portfolio Risk } \sigma_{p}=\sqrt{\sigma_{p}^{2}} \\
& \sigma_{p}=\sqrt{w_{x}^{2} \sigma_{x}^{2}+w_{y}^{2} \sigma_{y}^{2}+2 w_{x} w_{y} \sigma_{x} \sigma_{y} \gamma_{x y}}
\end{aligned}
$$

$$
\text { where } \sigma_{p}=\text { Porfoliw risk }
$$

$\sigma=$ Risk of secusits $1 \sigma$ of the se wii $5 \times / y$
$w=$ weisut proportion of $15=$ sewn $5 x / y$
$\gamma_{x y}={ }^{8}$ correlation co-etfilient between $x$
correlation coefficient varies from -1 to +1 . If it is -1 , it reteres to perfect negative correlatimand it it is +1 , at reters to perfect Positive correlation bet wen the retard of the securities.

Following information is available in respect of two securities $X$ and $Y$. Find out the expected return and variance of the portfolio consisting of $40 \%$ of $X$ and $60 \%$ of $Y$.

Exp. Return , $\bar{r}$

$\sigma$
$50 \%$
$30 \%$
$-.45$

Solution :
The expected return of the portfolio is

$$
\begin{aligned}
\bar{r}_{p} & =\sum_{i=1}^{n} w_{i} \times \bar{r}_{i} \\
& =(.4 \times .15)+(.60 \times .20) \\
& =18 \%
\end{aligned}
$$

The variance of the portfolio is

$$
\begin{aligned}
\sigma_{p}^{2} & =w_{x}^{2} \sigma_{x}^{2}+w_{y}^{2} \sigma_{y}^{2}+2 w_{x} w_{y} \sigma_{x} \sigma_{y} r_{x y} \\
& =(.4)^{2}(50)^{2}+(\cdot 6)^{2}(30)^{2}+2 \times .4 \times \cdot 6 \times 50 \times 30 \times(-.45) \\
& =400+324-324 \\
& =400 \\
\text { and } \quad \sigma_{p} & =20
\end{aligned}
$$

## PART - A

1. What do you mean by portfolio management? What are the elements of portfolio management?
2. Explain how portfolio return is calculated.
3. What is an efficient portfolio?
4. Explain the concepts of risk and return in the context of portfolio management.
5. Write short note on: Random Diversification and Efficient Diversification.
6. Explain the steps in construction of portfolio.
7. Write short notes on: Systematic Risk and Diversification.
8. What is Covariance?
9. What are the various measures of risk used in portfolio selection?
10. "Correlation Coefficient is relative measure for Portfolio selection" - Discuss.

## PART - B

1. Discuss briefly the key steps involved in the portfolio management process.
2. In understanding the portfolio risk, why is the concept of correlation relevant and important? Explain.
3. Explain with suitable example, the calculation of return and risk of a two security portfolio.
4. Explain with suitable example, the calculation of return and risk of a three security portfolio.
5. Calculate the Variance, Co-variance S.D and co-coefficient for the two securities. The portfolio Proportion of two securities are $1 / 3$ and $2 / 3$ respectively and also calculate the portfolio risk and return.

| Probability | Return of Security X | Return of security Y |
| :---: | :---: | :---: |
| 0.5 | 4 | 0 |
| 0.4 | 2 | 3 |
| 0.1 | 0 | 3 |

6. Calculate Portfolio Return and Portfolio Risk consisting of Three Securities X,Y,Z

| Particulars | Return | S.D |
| :---: | :---: | :---: |
| X | 10 | 10 |
| Y | 12 | 15 |
| Z | 8 | 5 |

The COV of $\mathrm{X} \& \mathrm{Y}$ is 0.3 , and $\mathrm{X} \& \mathrm{Z}$ is 0.5 and $\mathrm{Y} \& \mathrm{Z}$ is 0.4 , The Investment ox $\mathrm{X}, \mathrm{Y}, \mathrm{Z}$ is $20 \%, 20 \%$ and $60 \%$ Respectively.
7. The following are the expected return and risk of two securities A and B:

| Stock | Return | SD |
| :--- | :--- | :--- |
| A | $10 \%$ | $20 \%$ |
| B | $12 \%$ | $25 \%$ |

The correlation coefficient between the return of A and B is 0.5 . An investor is to decide about the portfolio of A and B as $75 \%+25 \%$ or $25 \%+75 \%$. Which one should he accept?
8. An investor has constructed a portfolio consisting of equal amounts of Securities $\mathrm{A}, \mathrm{B}$ and C. The expected returns and the standard deviations of these securities are:

| Security | Expected Return | Standard <br> Deviation |
| :--- | :--- | :--- |
| X | $25 \%$ | $30 \%$ |
| Y | $22 \%$ | $26 \%$ |
| Z | $20 \%$ | $24 \%$ |

Correlation coefficients between $\mathrm{XY}, \mathrm{YZ}$ and XZ are $-0.5,0.4$ and 0.6 respectively. Find out the risk and return of the portfolio.
9. Find out Portfolio Return and Risk from the following information:

| PARTICULARS | SECURITY A | SECURITY B | SECURITY C |
| :--- | :--- | :--- | :--- |
| Expected Return | 8 | 12 | 10 |
| Standard Deviation | 5 | 15 | 10 |
| Proportion | $25 \%$ | $50 \%$ | $25 \%$ |

Coefficient of Correlation: $\mathrm{rAB}=.4, \mathrm{rBC}=.3$, and $\mathrm{rAC}=.5$
10. The risk and return characteristics of the two stocks are shown below:

| Stock | X | Y |
| :--- | :--- | :--- |
| Expected return | $12 \%$ | $20 \%$ |
| Risk | $3 \%$ | $7 \%$ |

An investor plans to invest $80 \%$ of its available funds in stock X and $20 \%$ in Y . The correlation coefficient between the returns of the stocks is +1 .

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## SCHOOL OF MANAGEMENT STUDIES

## PORTFOLIO SELECTION AND REVISION

## INTRODUCTION

Risk and return are two basic factors for construction of a portfolio. While constructing a portfolio, an investor wants to maximize the return and to minimize the risk. The risk can be reduced by diversification. A portfolio which has highest return and lowest risk is termed as an optimal portfolio. The process of finding an optimal portfolio is known as the portfolio selection.

If the investments can be made with certainty of returns, then the returns from different investments would be the only consideration for making portfolio. However, in case of uncertainty, decision regarding investments cannot be made only on the basis of returns. Risk (uncertainty) should also be considered. The following are the theoretical relationship between the risk and return and can be used to construct a portfolio.

- MARKOWITZ MODEL or PORTFOLIO THEORY
- CAPITAL ASSET PRICING MODEL


## Markovitz Portfolio theory

Modern Portfolio Theory is Markowitz's theory regarding maximizing the return investors could get in their investment portfolio considering the risk involved in the investments. MPT asks the investor to consider how much the risk of one investment can impact their entire portfolio.

Modern Portfolio Theory (MPT) was first espoused by American economist HarryMarkowitz. For his work, Markowitz was awarded the Nobel Prize in Economics in 1990. In his1952 paper published by The Journal of Finance, he first proposed the theory as a means to create and construct a portfolio of assets to maximize returns within a given level of risk, or to devise one with a desired, specified, and expected level of return with the least amount of risk. Markowitz theorized that investors could design a portfolio to maximize returns by accepting a quantifiable amount of risk.In other words, investors could reduce risk by diversifying their assets and asset allocation of their investments using a quantitative method. MPT is a mathematical justification for asset allocation within a portfolio, as it amounts to a weighted average of the expected returns on individual assets.

To begin with, Markowitz assumed that most investors are risk-averse. That means they are more personally comfortable with less risk, and nervous and anxious with increased risk. This also translates into the belief that it is better to not lose money than to find or gain it. So, given a choice between a higher return possibility with greater risk, and a lower return
possibility with less risk, most people will naturally prefer the portfolio with the least risk, even if it means a lower return.

This gets to the heart of Markowitz's theory. Given two portfolios, an investor will naturally prefer one that indicates the highest return possibility with the least risk.

## Efficient Frontier

The Efficient Frontier is the set of optimal portfolios that offer the highest expected return for a defined level of risk or the lowest risk for a given level of expected return.

Portfolios that lie below the efficient frontier are sub-optimal because they do not provide enough return for the level of risk. The Efficient Frontier arising from a feasible set of portfolios of risky assets is concave in shape.

The efficient frontier is curved because there is a diminishing marginal return to risk. Each unit of risk added to a portfolio gains a smaller and smaller amount of return.When an investor is assumed to use riskless lending and borrowing in his investment activity the shape of the efficient frontier transforms into a straight line.


Fig. 22

## Sharpe Single Index Model

The Single-Index Model (SIM) is a simple asset pricing model to measure both the risk and the return of a stock. The model has been developed by William Sharpe in 1963.

Markowitz Model had serious practical limitations due to the rigors involved in compiling the expected returns, standard deviation, variance, covariance of each security to every other security in the portfolio.

Sharpe Model has simplified this process by relating the return in a security to a single Market Index. Firstly, this theoretically reflects all well-traded securities in the market. Secondly, it reduces and simplifies the work involved in compiling elaborate matrices of variances as between individual securities.

Thus, if the Market Index is used as a surrogate for other individual securities in the portfolio, the relation of any individual security with the Market Index can be represented in a Regression line or characteristic line.

This optimal portfolio of Sharpe is called the Single Index Model. The method involves selecting a cut-off rate for inclusion of securities in a portfolio. For this purpose, excess return to Beta ratio given above has to be calculated for each stock and rank them from highest to lowest.

The Simple Index Model is based on the following assumptions:

- Most stocks have a positive covariance because they all respond similarly to macroeconomic factors.
- However, some firms are more sensitive to these factors than others, and this firmspecific variance is typically denoted by its beta ( $\beta$ ), which measures its variance compared to the market for one or more economic factors.
- Co-variances among securities result from differing responses to macroeconomic factors.

Hence, the covariance of each stock can be found by multiplying their betas and the market variance

## Capital Assets Pricing Model

The Capital Asset Pricing Model (CAPM) was developed in mid-1960s by three researchers William Sharpe, John Lintner and Jan Mossin independently. Consequently, the model is often referred to as Sharpe-Lintner-Mossin Capital Asset Pricing Model.

The Capital Asset Pricing Model (CAPM) is a relationship explaining how assets should be priced in the capital markets. It gives the nature of the relationship between the expected return and the systematic risk of a security.

The relationship between risk and return established by the Security Market Line (SML) is known as the Capital Asset Pricing Model. It is basically a simple linear relationship. The higher the value of beta, higher would be the risk of the security and therefore, larger would be the return expected by the investors.

In other words, all securities are expected to yield returns commensurate with their riskiness. This relationship is valid not only for individual securities, but is also valid for all portfolioswhether efficient or inefficient. The expected return on any security or
portfolio can be determined from the CAPM formula if we know the beta of that security or portfolio.

The specific assumptions underlying Capital Asset Pricing Model are:

1) Investors make decisions based solely upon risk-and-return assessments. These judgments take the form of expected values and standard deviation measures.
2) The purchase or sale of a security can be undertaken in infinitely divisible units. Investors can short sell any amount of shares without limit.
3) Purchases and sales by a single investor cannot affect prices i.e. there is perfect
competition where investors in total determine prices by their actions. Otherwise, monopoly power could influence prices (returns).
4) There are no transaction costs. Where there are transaction costs, returns would be sensitive to whether the investor owned a security before the decision period.
5) The purchase or sale of securities is done in the absence of personal income taxes i.e. investors are indifferent to the form in which the return is received (dividends or capital gains).
6) The investor can borrow or lend any amount of funds desired at an identical riskless rate
(example: the Treasury bill
rate).
7) Investors share identical expectations with regard to the relevant decision period, the necessary decision inputs, their form and size. Thus investors are presumed to have identical planning horizons and to have identical expectations regarding expected returns, variances of expected returns, and covariances of all pairs of securities. Otherwise, there would be a family of efficient frontiers because of differences in expectations.

CAPM describes the expected return for all assets and portfolios of assets in the economy. The difference in the expected returns of any two assets can be related to the difference in their betas. The model postulates that systematic risk is the only important ingredient in determining expected return. As investors can eliminate all unsystematic risk through diversification, they can be expected to be rewarded only for bearing systematic risk. Thus, the relevant risk of an asset is its systematic risk and not the total risk.

The CAPM lets investors quantify the expected return on investment given the risk, risk- free rate of return, expected market return, and the beta of an asset or portfolio. The Arbitrage Pricing Theory is an alternative to the CAPM that uses fewer assumptions and can be harder to implement than the CAPM.

The CAPM has serious limitations in real world, as most of the assumptions, are unrealistic. Many investors do not diversify in a planned manner. Besides, Betacoefficient is unstable, varying from period to period depending upon the method of compilation. They may not be reflective of the true risk involved.

## Characteristic Lines

1) Capital Market Line (CML): It is the graph of the required return and risk (as measured by standard deviation) of a portfolio of a risk-free asset and a basket of risky assets that offers the best risk-return trade-off.

Capital Market Line


Fig. 23

All investors are assumed to have identical (homogeneous) expectations. Hence, all of them will face the same efficient frontier. Every investor will seek to combine the same risky portfolio with different levels of lending or borrowing according to his desired level of risk. Because all investors hold the same risky portfolio, then it will include all risky securities in the market. This portfolio of all risky securities is referred to as the market portfolio M. Each security will be held in the proportion which the market value of the security bears to the total market value of all risky securities in the market. All investors will hold combinations of only two assets, the market portfolio and a riskless security. All these combinations will lie along the straight line representing the efficient frontier.

This line formed by the action of all investors mixing the market portfolio with the risk free asset is known as the capital market line (CML). All efficient portfolios of all investors will lie along this capital market line.

The CML provides a risk return relationship and a measure of risk for efficient portfolios. The appropriate measure of risk for an efficient portfolio is the standard deviation of return of the portfolio. There is a linear relationship between the risk as measured by the standard deviation and the expected return for these efficient portfolios.

CML shows the risk-return relationship for all efficient portfolios. They would all lie along the capital market line. All portfolios other than the efficient ones will lie below
the capital market line. The CML does not describe the risk-return relationship of inefficient portfolios or of individual securities.
2) Security Market Line (SML): It is a line drawn on a chart that serves as a graphical representation of the Capital Asset Pricing Model (CAPM), which shows different levels of systematic, or market, risk of various marketable securities plotted against the expected return of the entire market at a given point in time.

## Security Market Line



Fig. 24
The Capital Asset Pricing Model specifies the relationship between expected return and risk for all securities and all portfolios, whether efficient or inefficient. The total risk of a security as measured by standard deviation is composed of two components: systematic risk and unsystematic risk or diversifiable risk. As an investment is diversified and more and more securities are added to a portfolio, the unsystematic risk is reduced. For a very well diversified portfolio, unsystematic risk tends to become zero and the only relevant risk is systematic risk measured by beta. Hence, it is argued that the correct measure of a security's risk is beta.It follows that the expected return of a security or of a portfolio should be related to the risk of that security or portfolio as measured by Beta which is a measure of the security's sensitivity to changes in market return.

Beta value greater than one indicates higher sensitivity to market changes, whereas beta value less than one indicates lower sensitivity to market changes. A value of one indicates that the security moves at the same rate and in the same direction as the market.

It is necessary to contrast SML and CML. Both postulate a linear (straight line) relationship between risk and return.

1) In CML the risk is defined as total risk and is measured by standard deviation, while in

SML the risk is defined as systematic risk and is measured by beta.
2) Capital market line is valid only for efficient portfolios while security market line is valid for all portfolios and all individual securities as well.
3) CML is the basis of the Capital Market Theory while SML is the basis of the Capital Asset

Pricing Model.

## Optimum Portfolio

An Optimal Portfolio is one that minimizes your risk for a given level of return or maximizes your return for a given level of risk. The optimal portfolio concept falls under the portfolio theory. The theory assumes that investors fanatically try to minimize risk while striving for the highest return.

Optimal portfolio is a term used in portfolio theory to refer to the one portfolio on the Efficient Frontier with the highest return-to-risk combination given the specific investor's tolerance for risk. It's the point where the Efficient Frontier (supply) and the Indifference Curve (demand) meet.

## Limitations of CAPM:

1. Beta calculation difficult (tedious).
2. Assumptions are hypothetical and are impractical.
3. Required rate of return is only a rough approximation.

## PORTFOLIO EVALUATION

Portfolio evaluation is the process of measuring and comparing the returns (actually) earned on a portfolio with returns (estimates) for a benchmarks.

## Evaluation factors:

## 1. Risk-return Trade-off:

The performance evaluation should be based on risk and return not on either of them. Risk without return and return without risk level are impossible to be interpreted. Investors are risk-averse. But it does not mean that they are not ready to assume risk. They are ready to take risk provided the return is commensurate. So, in the portfolio performance evaluation, risk-return trade-off be taken care of.
2. Appropriate Market Index:The performance of one portfolio is benchmarked either against some other portfolio (for comparative position) or against some market index.

## 3. Common Investment Time Horizon:

Investment period horizon of the portfolio being evaluated and the time horizon of the benchmark must be same. Suppose, a mutual fund scheme announces that it has earned the highest return, it must be verified before accepting whether the highest return has been earned during current year or during last 3 years or 5 years, etc.

## 4. Objectives or Constraints of Portfolio:

The objectives for which the portfolio has been created has to be evaluated.
Measures of Portfolio
Performance:
There are several measures for evaluation of portfolio performance. They are
I. Return per unit of risk:

The return earned over and above the risk-free return is the risk-premium and is earned for bearing risk. The risk-premium may be divided by risk factor to find out the reward per unit of risk undertaken. This is also known as reward to risk ratio. There are two methods of measuring reward to risk ratio:

## a) Sharpe Ratio (Reward to Variability Ratio) :

The Sharpe Index measures the risk premium of the portfolio relative to the total amount of risk in the portfolio. The larger the index value, the better the portfolio has performed.

b) Treynor Ratio(Reward to Volatility Ratio):

The Treynor Index measures the risk premium of the portfolio related to the amount of systematic risk present in the portfolio.

$$
\mathbf{R P} \text { - IRF }
$$

## Treynor Ratio =

$\qquad$

## II. Differential Return:

c) Jensen Ratio:

Michel Jensen has developed another method for evaluation of performance of a portfolio. This measure is based on differential returns. The Jensen's Ratio is based on the difference between the actual return of a portfolio and required return of a portfolio in view of the risk of the portfolio.

## $\boldsymbol{\alpha}$

```
Jensen's Index = -----
    \(\boldsymbol{\beta}\)
\(\alpha \mathbf{P}=\mathbf{R P}-\mathbf{R S}\)
\(\mathbf{R P}=\) Acutal Return on portfolio
RS = Expected Return on portfolio
\(\mathbf{R S}=\mathbf{I R F}+(\mathbf{R M}-\mathbf{I R F}) \beta\)
```


## PART - A

1. What do you mean by Portfolio selection? Write the assumptions of Harry Markowitz Model.
2. What is Efficient Frontier or Dominating Portfolio?
3. Explain the usefulness of Utility curves in portfolio selection.
4. What are the limitations of Harry Markowitz Model.
5. Briefly explain the assumptions of CAPM Model.
6. Write short notes on: SML and CML.
7. List out the different measures for evaluation of performance of a portfolio.
8. Differentiate between the Sharpe's ratio and Treynor's ratio.
9. How to calculate Jensen's Performance Index.
10. What is Portfolio Revision? Give out the various plans in portfolio revision.

## PART - B

1. Explain the risk-return relationship formulated by HM Model. How the efficient portfolio is built as per HM Model?
2. What is capital market line? How it is derived? What is the relevance of CML?
3. What do you mean by introduction of risk-free lending and borrowing in arriving of CML?
4. What is Security Market Line? How is it different from Capital Market Line?
5. "Portfolio risk may be reduced without sacrificing returns if securities are combined correctly. "examine in the light of Markowitz diversification
6. Explain the CAPM Model of Portfolio selection.
7. Following information is available in respect of two securities:

| Portfolio | A | B |
| :--- | :--- | :--- |
| Expected Return | $22 \%$ | $17 \%$ |
| Beta Factor | 1.5 | 0.7 |

Assume Risk Free Interest rate $\mathrm{I}_{\mathrm{RF}} 10 \%$ and $\mathrm{R}_{\mathrm{M}} 18 \%$. Find out whether the securities A and B are correctly priced?
8. Following information is available regarding four Mutual Funds:

| Mutual Fund | Return (R) | Risk (SD) | Beta |
| :--- | :--- | :--- | :--- |
| A | $13 \%$ | $16 \%$ | .90 |
| B | $17 \%$ | $23 \%$ | .86 |
| C | $23 \%$ | $39 \%$ | 1.20 |
| D | $15 \%$ | $25 \%$ | 1.38 |

Evaluate the performance of these Mutual Funds using Sharpe Ratio and Treynor's Ratio. Comment on the evaluation after ranking the funds, given that the risk-free rate is $9 \%$.
9. Following information is available in respect of certain securities:

| Fund | Beta | Expected Return |
| :--- | :--- | :--- |
| I | 1.4 | $22 \%$ |
| II | 1.2 | $16 \%$ |
| III | 1.1 | $14 \%$ |

The market return is $16 \%$ and the risk-free rate is $6 \%$. Calculate Jensen's Index.
10. Following information is available in respect of 3 securities $\mathrm{X}, \mathrm{Y}$, and Z :

| Fund | Expected Return | Beta |
| :--- | :--- | :--- |
| X | $15 \%$ | 1.1 |
| Y | $19 \%$ | 1.2 |
|  | $23 \%$ | 1.4 |

The market return and the risk-free rate are $16 \%$ and $6 \%$ respectively. Calculate Jensen's Index.

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