[DEEMED TO BE UNIVERSITY)

SCHOOL OF MANAGEMENT STUDIES DEPARTMENT OF BUSINESS ADMINISTRATION

## UNIT - I - INVESTMENT ANALYSIS AND PORTFOLIO

## MANAGEMENT- SBAA7002

# INVESTMENT ANALYSIS AND PORTFOLIO MANAGEMENT 

## INTRODUCTION

## PRIMARY MARKET OR NEW ISSUE MARKET:

Companies issue securities from time to time to raise funds in order to meet their financial requirements for promotion, modernization, expansion, diversification or for regular working capital programmes. These securities are issued directly to the investors (both individual as well as institutional) through the mechanism called primary market or new issue market. The primary market refers to the set-up which helps the industry to raise funds by issuing different types of securities.

## Primary versus Secondary Markets:

Primary markets are securities markets in which newly issued securities are offered for sale to buyers.

Secondary markets are securities markets in which existing securities that have previously been issued are resold. The initial issuer raises funds only through the primary market.

The primary market is that part of the capital markets that deals with the issue of new securities. Companies, governments or public sector institutions can obtain funding through the sale of a new stock or bond issue. This is typically done through a syndicate of securities dealers. The process of selling new issues to investors is called underwriting. In the case of a new stock issue, this sale is an initial public offering (IPO). Dealers earn a commission that is built into the price of the security offering, though it can be found in the prospectus. Primary markets create long term instruments through which corporate entities borrow from capital market.

Features of primary markets are:

- This is the market for new long term equity capital. The primary market is the market where the securities are sold for the first time. Therefore it is also called the new issue market (NIM).
- In a primary issue, the securities are issued by the company directly to investors.
- The company receives the money and issues new security certificates to the investors.
- Primary issues are used by companies for the purpose of setting up new business or for expanding or modernizing the existing business.
- The primary market performs the crucial function of facilitating capital formation in the economy.
- The new issue market does not include certain other sources of new long term external finance, such as loans from financial institutions. Borrowers in the new issue market may be raising capital for converting private capital into public capital; this is known as "going public."
- The financial assets sold can only be redeemed by the original holder.


## Methods of issuing securities in the primary market are:

## - Initial public offering;

An initial public offering (IPO) referred to simply as an "offering" or "flotation," is when a company (called the issuer) issues common stock or shares to the public for the first time.
An Initial Public Offer (IPO) is the selling of securities to the public in the primary market. It is when an unlisted company makes either a fresh issue of securities or an offer for sale of its existing securities or both for the first time to the public. This paves way for listing and trading of the issuer's securities. The sale of securities can be either through book building or through normal public issue.

- Rights issue (for existing companies);

A rights issue is an option that a company can opt for to raise capital under a secondary market offering or seasoned equity offering of shares to raise money. The rights issue is a special form of shelf offering or shelf registration. With the issued rights, existing shareholders have the privilege to buy a specified number of new shares from the firm at a specified price within a specified time. ${ }^{[1]}$ A rights issue is in contrast to an initial public offering (primary market offering), where shares are issued to the general public through market exchanges. Companies
usually opt for a rights issue either when having problems raising capital through traditional means or to avoid interest charges on loans.

## - Preferential issue.

An issue of shares set aside for designated buyers, for example, the employees of the issuing company.

## SOME OF THE IMPORTANT TERMINOLOGY:

## Stock

The stock or capital stock of a business entity represents the original capital paid into or invested in the business by its founders.

## Shares

The stock of a business is divided into shares, the total of which must be stated at the time of business formation. Given the total amount of money invested in the business, a share has a certain declared face value, commonly known as the par value of a share.

## Stock certificate

Ownership of shares is documented by issuance of a stock certificate. A stock certificate is a legal document that specifies the amount of shares owned by the shareholder, and other specifics of the shares, such as the par value, if any, or the class of the shares.

## Dematerialization

Dematerialization is the process by which physical certificates of an investor are converted to an equivalent number of securities in electronic form and credited to the investor account with his Depository Participant (DP).

## Listing of Securities:

Listing means admission of securities of an issuer to trading privileges (dealings) on a stock exchange through a formal agreement. The prime objective of admission to dealings on the
exchange is to provide liquidity and marketability to securities, as also to provide a mechanism for effective control and supervision of trading.

## Stock Exchange

Stocks (Shares, equity) are traded in stock exchange. India has two big stock Exchanges (Bombay Stock Exchange - BSE and National Stock Exchange - NSE) and few small exchanges like Jaipur Stock Exchange etc. Click here to see the list of Stock Exchanges in India Investor can trade stocks in any of the stock exchange in India.

## Stock Broker

Investor requires a Stock Broker to buy and sell shares in stock exchanges (BSE, NSE etc.). Stock Broker are registered member of stock exchange. A stock broker can register to one or more stock exchanges.

Only stock brokers can directly buy and sell shares in Stock Market. An investor must contact a stock broker to trade stocks. Broker charge commissions (brokerages) for their service. Brokerage is usually a percent of total amount of trade and varies from broker to broker.

## Stock Trading

Traditionally stock trading is done through stock brokers, personally or through telephones. As number of people trading in stock market increase enormously in last few years, some issues like location constrains, busy phone lines, miss communication etc start growing in stock broker offices. Information technology (Stock Market Software) helps stock brokers in solving these problems with Online Stock Trading.

## INVESTMENT AND CAPITAL MARKET:

Investment and Capital Market are corollary to each other. For efficient investment process, existence of healthy capital market is a pre-requisite. Capital Market in India has witnessed growth and structural changes, during the last two decades. The capital market of a country is the barometer of that country's economy and provides a mechanism for capital formation. The Indian economy is growing at a fast pace due to the liberalisation of the Indian economy and the
policies being adopted by the Government of India. This raised the interest in the Indian capital market not only from investors in India but also from the Foreign Institutional Investors. This also has resulted in the growth of the stock exchange system in India.
The capital market works as a mechanism to facilitate the transfer of funds from the savers (investors) to the borrowers (issuers of securities). The transfer of funds will be optimum if the capital market is efficient.
The history of Indian capital markets spans back 200 years, around the end of the 18th century. It was at this time that India was under the rule of the East India Company. The capital market of India initially developed around Mumbai; with around 200 to 250 securities brokers participating in active trade during the second half of the 19th century.

## SCOPE OF THE INDIAN FINANCIAL MARKET

The financial market in India at present is more advanced than many other sectors as it became organized as early as the 19th century with the securities exchanges in Mumbai, Ahmedabad and Kolkata. In the early 1960s, the number of securities exchanges in India became eight - including Mumbai, Ahmedabad and Kolkata. Apart from these three exchanges, there was the Madras, Kanpur, Delhi, Bangalore and Pune exchanges as well. Today there are 23 regional securities exchanges in India.

The Indian stock markets till date have remained stagnant due to the rigid economic controls. It was only in 1991, after the liberalization process that the India securities market witnessed a flurry of IPOs serially. The market saw many new companies spanning across different industry segments and business began to flourish.

The launch of the NSE (National Stock Exchange) and the OTCEI (Over the Counter Exchange of India) in the mid 1990s helped in regulating a smooth and transparent form of securities trading.

The regulatory body for the Indian capital markets was the SEBI (Securities and Exchange Board of India). The capital markets in India experienced turbulence after which the SEBI came into prominence. The market loopholes had to be bridged by taking drastic measures.

## FEATURES OF FINANCIAL MARKET IN INDIA:

- India Financial Indices - BSE 30 Index, various sector indexes, stock quotes, Sensex charts, bond prices, foreign exchange, Rupee \& Dollar Chart
- Indian Financial market news
- Stock News - Bombay Stock Exchange, BSE Sensex 30 index, S\&P CNX-Nifty, company information, issues on market capitalization, corporate earning statements
- Fixed Income - Corporate Bond Prices, Corporate Debt details, Debt trading activities, Interest Rates, Money Market, Government Securities, Public Sector Debt, External Debt Service
- Foreign Investment - Foreign Debt Database composed by BIS, IMF, OECD,\& World Bank, Investments in India \& Abroad
- Global Equity Indexes - Dow Jones Global indexes, Morgan Stanley Equity Indexes
- Currency Indexes - FX \& Gold Chart Plotter, J. P. Morgan Currency Indexes
- National and Global Market Relations
- Mutual Funds
- Insurance
- Loans
- Forex and Bullion

The capital market has two interdependent segments: the Primary Market and the Secondary Market.

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## SECONDARY MARKET:

With primary issuances of securities or financial instruments, or the primary market, investors purchase these securities directly from issuers such as corporations issuing shares in an IPO or
private placement, or directly from the federal government in the case of treasuries. After the initial issuance, investors can purchase from other investors in the secondary market

## Meaning of Stock Exchange:

Stock Exchanges are the organized securities markets regulating the trading in shares, debentures and other securities in the interest of the investors.

## Definition of Stock Exchanges:

The Securities Contracts (Regulation) Act, 1956 defines a stock exchange as "an association, organization or body of individuals, whether incorporate or not, established for the purpose of assisting, regulating and controlling the business in buying, selling and dealing in securities".

## Functions of Stock Exchanges:

The role of a stock exchange in a capital market is as follows:-
(1) Ready and Continuous Market: The stock exchange provides a ready and continuous market for the sale and purchase of securities.
(2) Bank Borrowing Facility: Securities listed on a stock exchange serve as a collateral security when an investor needs funds from a bank.
(3) Promotes Capital Formation: Stock Exchanges promote capital formation as they encourage investors to invest need funds from a bank.
(4) Safety and Fair Dealing: The Stock Exchange operates under rules and regulations framed by the Central Government. The rules and regulations framed by the Central Government are in the interest to ensure safety to the investors and whatever be their dealings, it should a fair one.
(5) Government Funding: Stock Exchanges helps the government to raise funds by selling shares and debentures.
(6) Creation of Employment Opportunities: Stock Exchange creates a number of employment opportunities to a number of brokers, sub brokers as they are the intermediaries through which shares are being sold.
(7) Evaluation of Securities: Stock Exchanges helps to evaluate the worth of securities, as securities are traded at a certain price on the stock market. Investors are able to determine the
real worth of their holdings in the form of shares and debentures which are listed on the stock exchange.
(8) Industrial Development: The capital collected through shares and debentures can be put to industrial use. With the capital, new industries can be started, existing ones can be expanded and modernized and thereby enhancing the industrial development of a country. (9) Clearing House of Securities: The Stock Exchanges acts as a clearing house of securities. It facilitates easy and quick clearance of transactions of securities between the buyers and the sellers.
(10) Facilitates Flow of Capital: Stock Exchange facilitate the flow of capital to companies who have a high potential to raise substantial funds.

## Role of SEBI in monitoring the Stock Exchange

SEBI stands for Securities and Exchange Board of India. It was set up in April, 1988, as a strong need was felt to protect the interest of the investors and to have a systematic and organized working of the securities market.

It started actually functioning when the SEBI Act was passed in 1992. The Act empowered SEBI with necessary powers to regulate the activities connected with marketing of securities and investment of Stock Exchanges, Portfolio Management, Stock Brokers, and Merchant Banking etc.

## Objectives of Securities \& Exchange Board of India

There are three basic objectives of SEBI. They are as follows:-
(1) Towards Investors: To protect the interest of the investors.
(2) Towards Capital Issuers: It aims at creating a good market environment where capital issuers can raise necessary funds.
(3) Towards Intermediaries: It wants to bring about professionalism among the brokers, stokers and sub - brokers.

## Powers and Functions of SEBI

(1) To protect investors Interest: SEBI is formed to protect the interest of the investors. It monitors whether issuing companies, brokers, mutual funds are following the rules and regulations. It also gives a hearing to the investor's complaints and grievances, if any, against the issuing companies brokers etc.
(2) Regulating Working of Mutual Funds: SEBI regulates the working of mutual funds. It has laid down certain rules and regulations that are needed to be followed. Failure to follow the regulations may lead to cancellation of the registration of a mutual fund.
(3) Regulates Merchant Banking: SEBI has laid down certain regulations in respect of registration, submission of half yearly results, code of conduct in respect of merchant banking, etc.
(4) Take over and Mergers: SEBI has issued guidelines to protect the interest of the investors in case of take over and mergers.
(5) Restriction on Insider Trading: SEBI restricts insider trading activity. Its regulation states that, no insider shall either on his own behalf or on behalf of any other person may deal in securities of a company listed on any stock exchange on the basis of any unpublished price sensitive information.
(6) Regulates Stock Brokers Activities: SEBI has laid down the regulations in respect of brokers and sub-brokers. Without being a registered member of SEBI, no broker or sub-broker can buy, sell or deal in securities.
(7) Research and Publicity SEBI conducts survey and research in respect of investments and opportunities. It also undertakes to publish two monthly bulletins called SEBI market review and SEBI news letter.
(8) Guidelines on Capital Issues: SEBI has framed certain guidelines on capital issues which are applicable to first public issue of new companies, first public issue by existing private held companies, public issue by existing listed companies.
(9) Portfolio Management: SEBI has laid down certain regulations regarding portfolio management. Without proper registration with SEBI, no person or institution can work as a portfolio manager.
(10) Other functions: There are some other functions also which are as follows:(i) It prevents unfair trade practices relating to the securities market. (ii) It gives training to intermediaries in the securities market. (iii) It promotes investor's education. (iv) It conducts audits of the stock exchanges.
(v) It also conducts inquiries, and inspections.

Online Stock Market Trading is an internet based stock trading facility. Investor can trade shares through a website without any manual intervention from Stock Broker.

In this case these Online Stock Trading companies are stock broker for the investor . They are registered with one or more Stock Exchanges. Mostly Online Trading Websites in India trades in BSE and NSE.

There are two different type of trading environments available for online equity trading.
Installable software based Stock Trading Terminals: These trading environment requires software to be installed on investors computer. These software are provided by the stock broker. These softwares require high speed internet connection. This kind of trading terminals are used by high volume intra day equity traders.

## Advantages:

- Orders directly send to stock exchanges rather then stock broker. This makes order execution very fast.
- It provides almost each and every information which is required to a trader on a single screen including stock market charts, live data, alerts, stock market news etc.


## Disadvantages:

- Location constrain - You cannot trade if you are not on the computer where you have installed trading terminal software.
- It requires high speed internet connection.
- These trading terminals are not easily available for low volumn share traders.

Web (Internet) based trading application: These kind of trading environment doesn't require any additional software installation. They are like other internet websites which investor can access from around the world through normal internet connection.

Below are few advantages and disadvantages of Online Stock Market Trading :-

## Advantages of Online Stock Trading (Website based):

Real time stock trading without calling or visiting broker's office.
Display real time market watch, historical datas, graphs etc.
Investment in IPOs, Mutual Funds and Bonds.

- Check the trading history; demat account balance and bank account balance at any time.
- Provide online tools like market watch, graphs and recommendations to do analysis of stocks.
- Place offline orders for buying or selling stocks.
- Set alert to inform you certain activity on the stock through email or sms.
- Customer service through Email or Chat.
- Secure transactions.


## Disadvantages of Online Stock Trading (Website based):

- Website performance - sometime the website is too slow or not enough user friendly.
- Little long learning curve especially for people who don't know much about computer and internet.
- Brokerages are little high.


## SOME OF THE ONLINE STOCK MARKET TRADING WEBSITES:

1. ICICIDirect
2. Sharekhan
3. India bulls
4. 5Paisa
5. Motilal Oswal Securities
6. HDFC Securities
7. Reliance Money
8. IDBI Paisa Builder
9. Religare
10. Egoist
11. Networth Stock Broking
12. Kotak Securities
13. Standard Chartered-STCI Capital Markets Ltd
14. Angel Trade
15. HSBC Invest Direct

Things to do before opening Online Share Trading Account

1. Ask for Demo: Contact the broker who provide online trading service and ask him to give you a demo of product.
2. Check if the broker trades in multiple stock exchanges. Usually most of the Online Trading Websites trade in NSE and BSE in India.
3. Check the integration of Brokerage account, Demat account and Bank account.
4. Compare brokerages with other peer companies.

Standard document require to open an Online Trading Account

1. Proof of residence (Address proof)

- Driving license
- Voter's ID
- Passport
- Photo credit card
- Photo ration card
- Utility Bill (Telephone, Electricity etc)
- Bank Statement

2. Proof of identity

- Driving license
- Voter's ID
- Passport
- Photo ration card

3. PAN Card
4. Two Photographs
(DEEMED TO BE UNIVERSITY)

SCHOOL OF MANAGEMENT STUDIES DEPARTMENT OF BUSINESS ADMINISTRATION

## UNIT - II - INVESTMIENT ANALYSIS AND PORTFOLIO

## MANAGEMENT- SBAA7002

## 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. There are two types of risk i.e. Systematic Risk and Unsystematic Risk which is discussed in detail later in this chapter.

## 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.

## CHARACTERISTICS OF INVESTMENT:

1. RETURN
2. RISK
3. SAFETY
4. LIQUIDITY
5. TIME HORIZON
(Refer objectives of investment topic notes)

## 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 "exitout" 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

One may invest in:

Physical assets like real estate, gold/jewellery, commodities etc. and/or Financial assets such as fixed deposits with banks, small saving instruments with post offices, insurance/provident/pension fund etc. or

Marketable assets - securities market related instruments like shares, bonds, debentures, derivatives, mutual fund etc.

## CLASSIFICATIONS OF INVESTMENT ACTIVITIES:

## 1. DIRECT INVESTING:

Direct investing involves the buying and selling of securities by investors themselves. The securities may be capital market securities such as shares, debentures or derivative products, or money market instruments such as Treasury Bills, Commercial Bills, Commercial Papers, Certificates of Deposits, or real assets such as land and building, house, etc or non-financial assets such as gold, silver, art, antiques, etc.

## 2. INDIRECT INVESTING:

Investors may not directly invest and manage the portfolio, rather they buy the units of funds that hold various types of securities on behalf of the investors example, Mutual funds, Public Provident fund (PPF), National Savings Scheme (NSS), National Savings Certificate (NSC), and investment in Insurance Company schemes.

## INVESTMENT PROCESS

## Investment Process Model



Investment process of securities as follows:


## 1. Investment Policy:

The government or the investor before proceeding into investment, formulates the policy for the systematic functioning. The essential ingredients of the policy are the investible funds, objectives and the knowledge about the investment alternatives and market.
a) Investible funds: The entire investment procedure revolves around the availability of investible funds. The fund may be generated through savings or borrowings. If the funds are borrowed, the investor has to be extra careful in the selection of investment alternatives. The return should be higher than the interest he pays. Mutual funds invest their owner's money in securities.
b) Objectives: The objectives are framed on the premises of the required rate of return, need for regularity of income, risk perception and the need for liquidity. The risk taker's objective is to earn high rate of return in the form of capital appreciation, whereas the primary objective of the risk averse (person not interested in taking risk) is the safety of the principal.
c) Knowledge: The knowledge about the investment alternatives and markets plays a key role in the policy formulation. The investment alternatives range from security to real estate. The risk and return associated with investment alternative differ from each other. Investment in equity is high yielding but has more risk than in fixed income securities.

## 2. Security Analysis:

After formulating the investment policy, the securities to be bought have to be scrutinized through the market, industry and company analysis.

Market Analysis: The general economic scenario is reflected in the stock market. The growth in gross domestic product and inflation are reflected in the stock prices. The recession in the economy results in a bear market. The stock prices may be fluctuating in the short run but in the long run they move in trends i.e. either upwards or downwards.

Industry Analysis: The industries that contribute to the output of the major segments of the economy vary in their growth rates and their overall contribution to economic activity. Some industries grow faster than the GDP and are expected to continue in their growth. For example, IT industry has higher growth rate than the GDP in 1998. The economic significance and the growth potential of the industry have to be analysed.

Company Analysis: The Company's earnings, profitability, operating efficiency, capital structure and management have to be analysed. These factors have direct bearing on the stock prices and the return of the investors. Appreciation of the stock value is a function of the performance of the company. Company with high product market share is able to create wealth to the investors in the form of the capital appreciation.

## 3. Valuation:

The valuation helps the investor to determine the return and risk expected from an investment in the common stock.

Intrinsic Value: Intrinsic value is the present value of securities of all future cash inflows by using simple discounting models.
Future Value: Future value of the securities could be estimated by using a simple statistical technique like trend analysis. The analysis of the historical behaviour of the price enables the investor to predict the future value.

## Construction of Portfolio:

A portfolio is a combination of securities. The portfolio is constructed in such a manner to meet the investor's goals and objectives.

Diversification: The main objective of diversification is the reduction of risk in the loss of capital and income. A diversified portfolio is comparatively less risky than holding a single portfolio. Various types of diversification are:

1) Debt - equity diversification
2) Industry diversification

## 3) Company diversification

Selection: Based on the diversification level, industry and company analyses the securities have to be selected. Funds are allocated for the selected securities.

## Evaluation:

The portfolio has to be managed efficiently. The efficient management calls for evaluation of the portfolio.

Appraisal: The return and risk performance of the security vary from time to time. The variability in returns of the securities is measured and compared. The developments in the economy, industry and relevant companies from which the stocks are bought have to be appraised. The appraisal warns the loss and steps can be taken to avoid such losses.

Revision: Revision depends on the results of the appraisal. The low yielding securities with high risk are replaced with high yielding securities with low risk factor. To keep the return at a particular level necessitates the investor to revise the components of the portfolio periodically.

## 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.

## RISK



## 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.

## BUY-SELL DECISION RULES FOR INVESTORS

The intrinsic value working with the demand and supply forces determine the price of security in market. The actual investment decision be made on the basic of comparison of intrinsic value with the price. The rules are as follows,

BUY RULE: If the market price of a security is less than its value, it is an undervalued security and it should be bought and held. Then, when price increases then it may be sold to make profit.

SELL RULE: If the market price of a security is more than its value, it is an over priced and it should be sold .Then, when price falls at later stage, it may be sold to make profit.

NO BUY-SELL: If the price is equal to its value then equilibrium exists. The security is correctly priced and an investor may not make any profit from buying or selling.

## VALUATION OF SECURITIES

## I. BOND YIELD

Yield is a commonly used parameter in investment process. It is a common bench mark for evaluating different investment instruments. It refers to the percentage rate of return on the amount invested in buying one bond. Bond yield may or may not be same as the coupon rate. There are various factors which it depends on,

1. Par value
2. Coupon rate
3. Maturity
4. Market price

PAR VALUE: It is also called as face value or normal value. The par value of the bond is the principal amount of a bond and is stated on the face of the bond security. The issue price may
be less than or more than or equal to par value.
COUPON RATE: It is the rate at which interest on par value of bond is payable as per payment schedule. It represents a fixed annual monetary amount payable by borrower to lender. It may be paid annually, semi-annually or even monthly. It is also called as Nominal Yield.

MATURITY: The maturity of bond refers to the period from date of issue, after the expiry of which the redemption repayment will be made to the investor by the borrower firm. In India few firms have issued unsecured bonds of maturity period 179 days. In International bank markets, the maturity period will be 50 years or 100 years.

MARKET PRICE: An investor bys a bond from market, then the return depends upon the price paid for the debt.

## TYPES OF YIELD

Yield on investment may be calculated in different ways for different purpose.

| BOND YIELD | PURPOSE |
| :--- | :--- |
| Nominal yield | Measures only coupon rate |
| Current yield | Measures the current year rate of return |
| Yield to maturity | Measures annual rate of return, if bond is held till maturity |
| Yield to call | Measures annual rate of return, if bond is held till call |
| Realised yield |  |

## DURATION OF THE BOND

Duration can be defined as, weighted average of lengths of time until the remaining cash flows are received. Duration is the measure of the length of the time at the end of which investor would get his investment returned. It is different from maturity of the bond. Maturity refers to the time when the redemption value will be paid.

Duration is a measure of interest rate risk of bond. It is a relative change in prices with respect to changes in interest rates. There are two basic measures of duration,

## 1. Macaulay Duration

2. ModifiedDuration

## a. MACAULAY DURATION:

Duration may be defined as the weighted average of the lengths of time until the remaining cash flows are received.

Duration is a measure of the length of time at the end of which the investor would get his investment returned. It may be noted that duration is different from the maturity of the bond. The maturity refers to the time when the redemption value will be paid. Duration depends not only on the maturity or the term over which cash flows are received, but also on the timepattern of interim cash flows. The coupon payments made prior to maturity make the effective maturity to be less than actual time to maturity. Duration considers the interest and part payments through the holding period.

Each time period is weighted by the present value of cash flow at that time. The present values are calculated by discounting the cash flows at the discount rate equal to YTM of the bond.

Duration $\mathrm{D}=$| n | $(\mathrm{PV} \times$ Time $)$ |
| :---: | :--- |
| $\mathrm{i}=1$ | $\mathrm{~B}_{0}$ |

## b. MODIFIED DURATIOIN:

Modified duration is defined as Macaulay Duration divided by (1+YTM)
Modified duration MD $=\mathrm{D} /(1+\mathrm{YTM})$

## II. PREFERENCE SHARES

Preference shares which entitles the shareholder to receive in preference over equity shareholders:
i. A dividend at a fixed rate for a given period
ii. A redemption amount at the time of redemption of preference shares

Bond being type of loan always matures, but preference shares may or may not mature. They are different from equity shares because,
a. The dividend on preference shares is payable in priority over the dividend to equity share holders.
b. In case of winding up of company, the preference shareholders will be repaid their capital amount in priority over equity share holders.
Hence preference shares may be considered as a security containing features of both bonds and the share ownership.

## ASSUMPTIONS:

1. The dividend on preference shares is received once a year and that the first dividend is received at the end of one year from the date of acquisition or purchase.
2. The company always intends to pay the preference dividend so that the stream of preference dividend is considered to be known with certainty.

## III. VALUATION OF EQUITY SHARES

Investors, individual as well as institutional, do invest in equity shares. The motive for investment in equity shares is twofold: To get a dividend income and to earn a capital profit at the time of sale.

Assumptions:

1. Equity shares do not have any redemption date.
2. Equity shares do not have any given redemption or liquidating value. In case of liquidation of the company, their claim is residual in nature and arises in the last.
3. Dividends on equity shares are neither guaranteed nor compulsory. Further, neither the rate nor the timing of dividend is specified. So, the dividend can vary in any direction.

## Valuation:

1. Zero Growth Model
2. Constant Growth Model
3. Two Growth Model
4. Three Growth Model

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

SCHOOL OF MANAGEMENT STUDIES DEPARTMENT OF BUSINESS ADMINISTRATION

## UNIT - II - INVESTMIENT ANALYSIS AND PORTFOLIO

## MANAGEMINT- SBAA7002

## 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.

## * 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



## 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 non-price 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.

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.

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.

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.

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.

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.

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 resourceslcash 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:


## 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.


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.

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



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-



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

## 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

## 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

- 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

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

## 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. (See also: Continuation Patterns - An Introduction.) 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.


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.


## 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
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.


## 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.


## 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.


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).


INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

SCHOOL OF MANAGEMENT STUDIES DEPARTMENT OF BUSINESS ADMINISTRATION

UNIT - IV - INVESTMENT ANALYSIS AND PORTFOLIO MANAGEMENT- SBAA7002

## PORTFOLIO MANAGEMENT

## INTRODUCTION

"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.
Diversification may be Random or Efficient diversification.
In Random diversification, an investor may randomly select the portfolio without analyzing the risk and return of the securities.

In Efficient diversification, an investor may construct a portfolio by carefully studying and analyzing the risk and return of individual securities and also of its portfolio.

## APPROACHES IN PORTFOLIO CONSTRUCTION:

* Traditional Approach
* Modern Approach


## 1. STEPS IN TRADITIONAL APPROACH:

> Analysis of constraints: Analysing the constraints like, income needs, liquidity, time horizon, safety, tax consideration and risk temperament of an investor.
$>$ Determination of objectives: The objective of the portfolio range from income to capital appreciation. Investor has to decide upon the return which he gets from the portfolio like, current income, growth in income, capital appreciation and so on.
$>$ Selection of Portfolio: a) Selecting the type of securities for investment i.e. Shares and Bonds or Bonds or Shares, b) Calculating the risk and return of the securities and c) Diversifying the investment by selecting the securities combination and its proportion of investment in that securities.

## 2. MODERN APPROACH:

The traditional approach is a comprehensive job for the individual. In modern approach, gives more attention on selecting the portfolio i.e. Markowitz Model as well as CAPM. (These are discussed in Unit IV).

## 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.

## POINTS TO BE CONSIDERED:

- Deciding the number and type of security in the portfolio.
- Deciding on the proportionate amount of investment in each security.
- Develop the various combinations of portfolio based on risk and return of portfolio.
- Select one combination using Markowitz Model or Capital Asset Pricing Model (CAPM).
- Evaluate the performance of the portfolio using Treynor's, Sharpe's or Jensen's Model.
- Periodical revision of the portfolio in order to maximize the portfolio returns.
(Note: For calculation of portfolio return and risk refer class notes)


## PORTFOLIO SELECTION

## 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


## MARKOWITZ MODEL or PORTFOLIO THEORY

In order to select the best portfolio, an investor can use the Markowitz Portfolio Model.

The development of Portfolio theory is given by Harry Markowitz (HM) in1952 in Journal of Finance. He has provided a conceptual framework and analytical tool for selection of an optimal portfolio. As the HM Model is based on the expected returns (mean) and standard deviation (variance) of different portfolios, this model is also called as Mean-Variance Model.

## ASSUMPTIONS:

1. The investor should invest only in risky securities; this means no investment should be made in risk-free securities.
2. The investor should use his own funds. Borrowed funds are not allowed for investments.
3. The decision of the investor regarding selection of the portfolio is made on the basis of expected returns and risk of the portfolio:

## Return:

$$
\mathrm{R}_{\mathrm{p}}=\sum_{\mathrm{i}=1}^{\sum^{\mathrm{n}}-\mathrm{RiWi}}
$$

## Risk:

$S D_{p}=\sqrt{ }(\operatorname{Prop} x)^{2}(S D)^{2}+(\operatorname{Prop} y)^{2}(S D)^{2}+2(\operatorname{Prop} x)($ Prop $y)\left(\right.$ Covariance $\left.{ }_{x y}\right)$
4. For a given level of risk, an investor prefers maximum return than lower return and likewise, for a given level of return, the investor prefers lower risk than higher risk.

Harry Markowitz Model is presented in 3 steps:

## I. Setting the Risk-Return opportunity set:

The process of selection of optimum portfolio starts with the identification or construction of the opportunity set of various portfolios in terms of risk and return of each portfolio. For example, ' $x$ ' number of securities are available in which an investor can invest his funds and infinite number of combinations of all or a few of these securities are possible. Each such combination has an expected average rate of return and risk. All these portfolios with a relative set of risk and return, when plotted on graph, may look like as below:

## RISK-RETURN OF NUMBER OF POSSIBLE PORTFOLIOS



The Shaded area AEHA includes all possible combinations of risk and return of portfolios and a particular combination can be identified with a set of risk and return e.g., combination R represents a risk level of r 1 , and the return level of r 2 .

Now the investor has to identify the best portfolio for which he has to identify the efficient set.

## II. Determining the Efficient Set:

Efficient Portfolio is one which provides the maximum expected return for any particular degree of risk. Thus, setting the Efficient Set will be subject to two prepositions:
a) Out of the portfolios with the equal expected return, an investor would prefer that which has lowest risk; and
b) Out of the portfolios that have same degree of risk, and investor would prefer that which has highest expected return.

As the investors are rational and risk averse, they would prefer more return and lesser risk. In the above diagram, the portfolios which lie along the boundary AGEH are efficient portfolios and it is also called as Efficient Frontier.

For e.g., given level of risk r 3 , there are three portfolios $\mathrm{L}, \mathrm{M}$ and N . But the portfolio L is an efficient portfolio because for a given level of risk r3, it has the highest return and it lies on the boundary AGEH.

Out of these three portfolios, $\mathrm{L}, \mathrm{M}$ and N , the portfolio L is called the dominating portfolio because it is having maximum expected return. Dominance is a situation in which investors prefers a portfolio for investment that dominates all others. Portfolios lying on the efficient frontier are all dominating portfolios.

## III. Selecting the Optimal portfolio:

In order to select the best portfolio or the optimal portfolio, the risk-return preferences of the investor are to be analysed.

A highly risk averse investor will hold a portfolio on the lower left-hand segment of the efficient frontier. However, risk taker investor will hold a portfolio on the upper position on the righthand side.


Risk averse
HM Model does not specify one optimum portfolio. To select the expected risk-return combination that will satisfy investor's preferences, indifference curves or utility curves are used. All the investors' satisfaction level is not same. An investor is indifferent to various combinations of risk and return and hence, the name indifference curve. The following figure shows the risk-return indifference curves or for the investors.


Risk- Return Indifference Curves

All points lying on a particular indifference curve represent different combinations of risk and return which provide same level of utility or satisfaction to the investors. The indifference curves show the investor's risk-return trade-off. The steeper the slope, the more risk averse the investor is.

An investor may have, at present, a satisfaction level represented by the indifference curve C 1 , but if the satisfaction level increases, then the investor will move to indifference curve C 2 or C 3 . Thus, an investor at any particular point of time, will be indifferent between combinations S1 and S2 or S3 and S4 or S5 and S6.

The indifference curves never intersect each other and the shape of the curves may vary depending on the risk preferences of the investors.

Once the shape of investor's indifference curve is determined, an investor should match his riskreturn preference (indifference curve) with the best portfolios available (efficient frontier). Given the efficient frontier and risk-return indifference curves, the investor's optimal portfolio is found at the tangency point of efficient frontier with the indifference curve. This tangency point marks the highest level of satisfaction, the investor can attain is shown below:

## EFFICIENT FRONTIER AND OPTIMAL PORTFOLIO



N
0
RISK

R is the tangency point and also the efficient portfolio. At this portfolio, the investor will be able to get best possible level of satisfaction and also the best combination of risk and return. Combinations ' X ' and ' Y ' are not optimal because they lie outside and inside the region.

## Limitations of Harry Markowitz Model:

1. Risky securities alone taken for investment.
2. It requires large amount of input data. An investor must obtain estimates of return, variance of return and covariance of returns for each pair of securities included in the portfolio. For ex. If there are ' $N$ ' number of securities in the portfolio, then ' $N$ ' estimates of return, variances and $\left(\mathrm{N}^{2}-\mathrm{N}\right) / 2$ estimates of covariances are required. For ex. For 4 securities $4^{2}-4 / 2$ i.e. 6 covariances are estimated and for 10 securities $10^{2}-10 / 2$ i.e. 45 covariances are estimated.
3. HM Model complex and ' N ' number of computations are required.

## CAPITAL ASSET PRICING MODEL (CAPM)

CAPM is an extended version of Markowitz Model. In the HM Model we assume that the investor invests in risk-free securities and investors not use borrowed funds. The CAPM overlook these 2 assumptions. That means CAPM studies the nature of risk and return of a portfolio when an investor uses borrowed funds and also invests in risk-free securities.

The total CAPM Model explained under two broad segments:
I. Capital Market Line (CML)
II. Security Market Line (SML)

## Assumptions:

1. The investors are basically risk averse and diversification is needed to reduce the risk.
2. All investors want to maximize the return and choose a portfolio solely on the basis of risk and return assessment.
3. All investors can borrow or lend an unlimited amount of funds at risk-free rate of interest (risk-free lending and risk-free borrowing).
4. All investors have same estimates of risk and return of all securities.
5. All securities are perfectly divisible and liquid and there is no transaction cost or tax.
6. There is a perfect competition in the market.
7. All investor are efficiently diversified and have eliminated the unsystematic risk. Thus, only the systematic risk is relevant in determining the estimated return.

## I. Capital Market Line (CML):

The introduction of risk-free investment and borrowing creates a new set of expected risk-return possibilities which did not exist earlier. This new trade-off is represented by the straight line $\mathrm{I}_{\mathrm{RF}} \mathrm{N}$ in the following diagram. This line $\mathrm{I}_{\mathrm{RF}} \mathrm{N}$ is called the CML.


For example, the investor has Rs. 100 for investment, which he invests in on risk-free securities ( $10 \%$ rate of return) and risky securities (), the Risk-free lending and risk-free borrowing rates are:

| Portfolio | \% of investment in <br> risk-free securities | \% of investment in <br> Risky securities | Total Money | Portfolio <br> Return |
| :--- | :--- | :--- | :--- | :--- |
| A | 100 | 0 | 100 | 10 |
| B | 90 | 10 | 100 | 11 |
| C | 75 | 25 | 100 | 12.5 |
| D | 60 | 40 | 100 | 14 |
| E | 25 | 75 | 100 | 17.5 |
| F | 10 | 90 | 100 | 19 |
| G | 0 | 100 | 100 | 20 |
| H | -10 | 110 | 100 | 21 |
| I | -20 | 120 | 100 | 22 |
| J | -50 | 150 | 100 | 25 |

- When an investor invests the total money in risk-free securities, the portfolio return is equal to the risk-free rate of return.
- On the other hand, if the total investment is made in risky securities, the portfolio return is equal to the risky rate of return.
- This line is tangent to the efficient frontier at portfolio $M$ and has a vertical intercept $\mathrm{I}_{\mathrm{RF}}$. If the investor has risky portfolio, then the investor will hold portfolio M as optimal risky portfolio.
- The part of CML from $\mathrm{I}_{\mathrm{RF}}$ to M is Lending portfolio (Defensive) i.e. the investor invests own fund for investment and beyond M is known as borrowing portfolio (Aggressive) i.e. the investor uses borrowed fund also for investment.
- For a given risk of $\boldsymbol{\sigma}_{1}$, when an investor sticks to efficient frontier, then his return would be $\mathrm{R}_{1}$, whereas he introduces risk-free lending, then his return is $\mathrm{R}_{2}$ more than the return he gets from efficient frontier portfolio.
- Hence, The CML shows that by borrowing or lending at risk-free rate $\mathrm{I}_{\mathrm{RF}}$, an investor can create different portfolios along the CML in such a way that for a given level of risk, the particular combination offers a return higher than the return available on the efficient frontier.


## II. Security Market Line (SML):

SML is an extension of CML. In CML Standard Deviation $\boldsymbol{\sigma}$ includes the Systematic and Unsystematic Risk. But Unsystematic Risks are diversifiable and can be eliminated by efficient diversification. Systematic risks are non-diversifiable and can be measured by $\beta$, the beta factor.

## Interpretation of $\boldsymbol{\beta}$ value:



## 1. $\beta$ value less than $\mathbf{0}$ (Negative $\beta$ ):

It indicates a negative (inverse) relationship between stock return and market return. Negative $\beta$ means that if market goes up, the prices of that security are likely to go down. It is possible but quite unlikely.

## 2. $\beta$ value zero:

It means that there is no systematic risk and the share prices have no relationship with the market. It is very unlikely. Total investment is made in risk-free securities.

## 3. $\beta$ value between 0 and 1 :

The investment is made out of own funds (i.e. defensive portfolio). Particular stock has less volatility than the market. In case of rise or fall, share price will show lesser fluctuations than market.

## 4. $\beta$ value 1:

It means that volatility in share price and market is equal. Total investment is made in risky securities.

## 5. $\beta$ value more than 1 :

It means that the stock has a higher volatility than the market. Fluctuation in share price will be more than the fluctuation in the market index. Investment is made out of borrowed funds (i.e. aggressive portfolio) also.

The line which shows the values of risk and return combinations of the defensive and aggressive portfolio is called Security Market Line which is depicted below:

$$
\mathbf{R}_{\mathbf{S}}=\mathbf{I}_{\mathbf{R F}}+\left(\mathbf{R}_{\mathbf{M}}-\mathbf{I}_{\mathbf{R F}}\right) \boldsymbol{\beta}
$$



0
$\beta \quad$ RISK ( $\beta$ )

The portfolio that contains all the securities in the economy is called the market portfolio. The CAPM model depicts that the expected rate of return of a security consists of two parts i.e. 1) the risk-free interest rate $\mathrm{I}_{\mathrm{RF}}$ and 2) the risk premium ( $\mathbf{R}_{\mathrm{M}}$ - $\left.\mathbf{I}_{\mathbf{R F}}\right) \boldsymbol{\beta}$. The risk premium is equal to the difference between the expected market return and the risk-free interest rate multiplied by the beta factor, $\beta$. The higher the beta factor, the greater is the expected rate of return $\mathrm{R}_{\mathrm{S}}$ and vice-versa.

## (Calculations refer class notes)

## 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.

$$
\mathbf{R}_{\mathbf{P}}-\mathbf{I}_{\mathbf{R F}}
$$

Sharpe Ratio =

## $\sigma \mathbf{P}$

## 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.


## 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.

$$
\begin{aligned}
& \boldsymbol{\alpha} \\
& \text { Jensen's Index = ----- } \\
& \beta \\
& \boldsymbol{\alpha}_{\mathbf{P}}=\mathbf{R}_{\mathbf{P}}-\mathbf{R}_{\mathrm{S}} \\
& \mathbf{R}_{\mathbf{P}}=\text { Acutal Return on portfolio } \\
& \mathrm{R}_{\mathrm{S}}=\text { Expected Return on portfolio } \\
& \mathbf{R S}_{\mathrm{S}}=\mathbf{I}_{\mathbf{R F}}+\left(\mathbf{R}_{\mathrm{M}}-\mathbf{I}_{\mathbf{R F}}\right) \boldsymbol{\beta}
\end{aligned}
$$

(Note: Caln. refer class work)

## PORTFOLIO REVISION

The care taken in the construction of portfolio should be extended to review and revision of the portfolio. Volatility (fluctuation) that occur in the equity prices cause substantial gain/loss to the investors. The investor should have competence and skill in the revision of portfolio. There are 3 important plans for revising the portfolio. They are:

## - Constant rupee plan

- Constant ratio plan
- Variable ratio plan

1. Constant rupee plan:

The constant rupee plan enables the shift of investment ftrom bonds to stock and vice versa, by maintaining a constant amount invested in stock portion of portfolio. The constant rupee plan starts from fixed amount of money invested in selected stocks and bonds. When price of stocks increases, the investor sells sufficient amount of stock to return to the original amount of investment in stock. By keeping the value of aggressive portfolio constant, remainder (balance) is invested in the conservative portfolios. The plan force the investor to sell when the price rise and purchase as price falls.

Qn.1) Revise the portfolio using constant rupee method from a tolerance level of $20 \%$. The total money available from the investor is Rs. 20,000 planning to invest in bonds and shares equally. The market value of share is Rs. 25, 23, 20, 22, 24, 28, 24, 26, 27 and 29.

| Port <br> folio | Investmen <br> t in bonds | Investment <br> in shares | Mkt <br> value of <br> shares | No of <br> shares | Total <br> money <br> invested | remarks |
| :--- | :---: | :--- | :--- | ---: | :--- | :--- |
| 1 | 10000 | 10000 | 25 | 400 | 20000 | - |
| 2 | 10000 | 9200 | 23 | 400 | 19200 | - |
| 3 | 10000 | 8000 | 20 | 400 | 18000 | - |
| $\longrightarrow$ | 8000 | 10000 | 20 | 500 | 18000 | Purchase of share <br> $100 @$ Rs.20 |
| 4 | 8000 | 11000 | 22 | 500 | 19000 | - |
| 5 | 8000 | 12000 | 24 | 500 | 20000 | - |
| $\longrightarrow$ | 10000 | 10000 | 24 | 417 | 20000 | Sell 83 shares @ <br> Rs.24/each |
| 6 | 10000 | 11676 | 28 | 417 | 21676 | - |
| 7 | 10000 | 10008 | 24 | 417 | 20008 | - |
| 8 | 10000 | 10842 | 26 | 417 | 20842 | - |
| 10 | 10000 | 12093 | 29 | 417 | 22093 | - |
| $\longrightarrow$ | 12093 | 10000 | 29 | 345 | 22093 | Sell 72 shares @ <br> Rs.29/each |
|  |  |  |  |  |  |  |

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Under this method, a predetermined ratio is fixed under aggressive and defensive investment. Wherever the ratio is exceeding the tolerance limit the remedial action should be taken by restoring the predetermine ratio.

Qn) An investor is planning to have 1:1 investment ratio in aggressive and defensive investment. The tolerance level is $10 \%$ or 0.1 . To start with the total money invested by the investor is Rs 20,000. The market values of the shares are Rs.25, 23, 19, 21, 24, 26, 28 , and 25 .

| Port folio | Investments in Bonds | Investments <br> in shares | Mkt <br> price | Ratio | No of shares | Total investment | remarks |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 10000 | 10000 | 25 | 1:1 | 400 | 20000 | - |
| 2 | 10000 | 9200 | 23 | 0.92:1 | 400 | 19200 | - |
| 3 | 10000 | 7600 | 19 | 0.76:1 | 400 | 17600 | - |
| $\longrightarrow$ | 8800 | 8800 | 19 | 1:1 | 463 | 17600 | Pur 63 share @ $\text { Rs. } 19$ |
| 4 | 8800 | 9723 | 21 | 1.10:1 | 463 | 18523 | - |
|  | 9261.5 | 9261.5 | 21 | 1:1 | 441 | 18523 | Sold 22 shares $\text { @ Rs. } 21$ |
| 5 | 9261.5 | 10584 | 24 | 1.14:1 | 441 | 19845.5 | - |
| $\rightarrow$ | 9923 | 9923 | 24 | 1:1 | 413 | 19846 | Sold 28 shares <br> @ Rs. 24 |
| 6 | 9923 | 10738 | 26 | 1.08:1 | 413 | 20661 | - |
| 7 | 9923 | 11564 | 28 | 1.16:1 | 413 | 21487 | - |
| $\longrightarrow$ | 10743.5 | 10743.5 | 28 | 1:1 | 384 | 21487 | Sold 29 shares <br> @ Rs. 28 |
| 8 | 10743.5 | 9600 | 25 | 0.89:1 | 384 | 20334 | - |
| $\rightarrow$ | 10172 | 10172 | 25 | 1:1 | 407 | 20334 | Pur 23 shares <br> @ Rs. 25 |

## 3. Variable Ratio Plan:

Instead of maintaining a constant rupee amount in stock or constant ratio of stock is to bonds, the variable ratio plan steadily lowers (by selling) the aggressive portion of the total portfolio as stock price increases and steadily increases (by purchasing) the aggressive portion when stock price falls and new ratio is adopted.

Qn. An investor is planning to have an equal investment of Rs. 5000 in both bonds and shares. The tolerance level is $20 \%$ and market value of the shares are Rs.50, 45, 40, 45, 50 and 60.

| Port <br> folio | Investments <br> in Bonds | Investments <br> in shares | Mkt <br> price | Ratio | No of <br> shares | Total <br> investment | remarks |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :---: |
| 1 | 5000 | 5000 | 50 | $0.5: 1$ | 100 | 10000 | - |
| 2 | 5000 | 4500 | 45 | $0.47: 1$ | 100 | 9500 | - |
| 3 | 5000 | 4000 | 40 | $0.44: 1$ | 100 | 9000 | - |
| $\longrightarrow$ | 2700 | 6300 | 40 | $0.7: 1$ | 158 | 9000 | Pur 58 share <br> @ Rs. 40 |
| 4 | 2700 | 7110 | 45 | $0.72: 1$ | 158 | 9810 | - |
| 5 | 2700 | 7900 | 50 | $0.74: 1$ | 158 | 10600 | - |
| $\longrightarrow$ | 5300 | 5300 | 50 | $0.5: 1$ | 106 | 10600 | Sold 52 shares <br> $@$ Rs. 50 |
| 6 | 5300 | 6360 | 60 | $0.54: 1$ | 106 | 11660 | - |
| $\longrightarrow$ | 8162 | 3498 | 60 | $0.3: 1$ | 58 | 11660 | Sold 48 shares <br> $@$ Rs. 60 |

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

SCHOOL OF MANAGEMENT STUDIES DEPARTMENT OF BUSINESS ADMINISTRATION

## UNIT - IV - INVESTMENT ANALYSIS AND PORTFOLIO

 MANAGEMENT- SBAA7002
## DERIVATIVES

Derivative instruments are defined by the securities contracts (Regulation) Act to include (1) a security derived from a debt instruments, share secured/unsecured loan, risk instrument or contract for differences or any other form of security and (2) a contract that derives its value from the prices/index of prices of underlying securities.

The most common variants are forwards, futures and options.

A forward contract is an agreement to buy or sell an asset on a specified date for a specified price.

A futures contract is a agreement between two parties to buy or sell an asset at a certain time in the future, at a certain price.

Options are fundamentally different from forward \& futures contracts. An option gives its owner the right to buy or sell an underlying asset on or before a given date at a fixed price. An option is the right but not the obligation to buy or sell something in a specified date at a specified price. There are 3 parties involved in option trading viz:

1) Option Seller
2) Option Buyer
3) Broker

The option seller/writer is a person who grants someone else the option to buy or sell. He receives a premium on its price.
The option buyer pays a price. The option writer induces him to write the option.
The securities broker acts as an agent to find the option buyer and the seller and receives a commission or fee for it.

There are 2 types of options name call option and put option:

## 1) Call option

The call option gives the option holder the right to buy an asset at a fixed price during a certain period. While there is no restriction on the kind of asset the most popular type of call option is the option on stocks. This gives the particulars of:
Name of the company whose shares are to be bought.
a) No of share to be purchased
b) Exercise price/strike price of the shares to be brought
c) The expiration date, the date on which the contract/option expires.

## 2) Put option

The opposite of a call option is a put option, while the call option gives the holder the right to buy a stock at a fixed price. The put option gives the holder the right to sell the stock at fixed price. The put option contract contains:
a) The name of the companies shares to be sold.
b) The number of shares to be sold
c) The selling price/strike price
d) The expiration date

## How options work?

An option is a special contract under which the option holder enjoys the right to buy or sell something without the obligation to do so. Options have a special terminology associated with them.

* The option to buy is a call option(or just call) and the option to sell is a put option(or just put)
* The option holder is the buyer of the option and option writer is the seller of the option.
* Fixed price at which option holder can buy or sell the underlying asset is called the Exercise price/ the Striking price.
* The date when the option expires/ matures is referred to as the expiration date or maturity date. After the expiration date, the option is worthless.
* The act of buying /selling the underlying asset as per the option terms is called exercising the option.
* A European option can be exercised only on the maturity date and the American option can be exercised on or before the expiration date.
* Options traded on an exchange are called exchange traded options and options not traded on an exchange are called over the counter options.

The exchange trade options are standardized in terms of quantity, expiration date, striking price \& mode of settlement. Options are said to be at the money (ATM), in the money (ITM) or out of the money (OTM) as shown below:

| TYPE | CALL OPTION | PUT OPTION |
| :--- | :--- | :--- |
| ATM | Exercise Price= Mkt Price | Exercise Price=Mkt Price |
| ITM | Exercise Price< Mkt Price | Exercise Price>Mkt Price |
| OTM | Exercise Price>Mkt Price | Exercise Price<Mkt Price |

## Factors affecting option price/option value:

## 1) Volatility:

The precise value or the price depends on certain buy factors. These factors include volatility (fluctuations). Optional premium deflects the personal belief of both option buyer and seller.

The buyer of the option thrive on changes in stock prices and gladly pay premium for options on volatile stocks the more stock prices fluctuates in future. The better changes for making money and the buyer loose are limited to the amount of the premium. As a result, the seller and the buyer come into a negotiation and the seller usually demands high prices for the writing options on volatile stocks.

## 2) Expiration Date:

The expiration date/ the maturity date also effects the premium the stock making a profitable move increases making a profitable move increases with time, The longer the run, the better the chances of making a good jump.

## 3) Dividends:

Firm paying high dividends seldom increases very much in price. So prospective call buyer avoid options in these stocks. The option writers collect these dividends in addition to the premium income so they naturally prefer to write options on high dividend stocks. The buyers and sellers compromise and aggress to lower premium for high dividend paying stocks.

## 4) Interest rates:

They have the opposite impact on premiums. At higher interest rates, the option writers demand and get higher premiums for writing options during time of high interest rates.

## 5) Striking prices:

The striking price remains the same during the entire life of the option contract. The nearer this striking price is to the market price of the underlying stock, the greater the buyer's chances of making money on the option. In effect the striking price serves as a hurdle placed in front of an investor printing after profits. Higher hurdles or striking prices make it more difficult for option buyers to finish the race on time.

## The Black Scholes model

The Black Scholes model, also known as the Black-Scholes-Merton (BSM) model, is a mathematical model for pricing an options contract. In particular, the model estimates the variation over time of financial instruments. It assumes these instruments (such as stocks or futures) will have a lognormal distribution of prices. Using this assumption and factoring in other important variables, the equation derives the price of a call option.

## KEY TAKEAWAYS

- The Black-Scholes Merton (BSM) model is a differential equation used to solve for options prices.
- The model won the Nobel prize in economics.
- The standard BSM model is only used to price European options and does not take into account that U.S. options could be exercised before the expiration date.


## The Basics of the Black Scholes Model

The model assumes the price of heavily traded assets follows a geometric Brownian motion with constant drift and volatility. When applied to a stock option, the model incorporates the constant price variation of the stock, the time value of money, the option's strike price, and the time to the option's expiry.
Also called Black-Scholes-Merton, it was the first widely used model for option pricing. It's used to calculate the theoretical value of options using current stock prices, expected dividends, the option's strike price, expected interest rates, time to expiration and expected volatility.

The formula, developed by three economists-Fischer Black, Myron Scholes and Robert Merton-is perhaps the world's most well-known options pricing model. The initial equation was introduced in Black and Scholes' 1973 paper, "The Pricing of Options and Corporate Liabilities," published in the Journal of Political Economy. ${ }^{1}$ Black passed away two years before Scholes and Merton were awarded the 1997 Nobel Prize in economics for their work in finding a new method to determine the value of derivatives (the Nobel Prize is not given posthumously; however, the Nobel committee acknowledged Black's role in the Black-Scholes model). ${ }^{2}$

The Black-Scholes model makes certain assumptions:

- The option is European and can only be exercised at expiration.
- No dividends are paid out during the life of the option.
- Markets are efficient (i.e., market movements cannot be predicted).
- There are no transaction costs in buying the option.
- The risk-free rate and volatility of the underlying are known and constant.
- The returns on the underlying asset are normally distributed.

While the original Black-Scholes model didn't consider the effects of dividends paid during the life of the option, the model is frequently adapted to account for dividends by determining the ex-dividend date value of the underlying stock.

## The Black Scholes Formula

The mathematics involved in the formula are complicated and can be intimidating. Fortunately, you don't need to know or even understand the math to use Black-Scholes modeling in your own
strategies. Options traders have access to a variety of online options calculators, and many of today's trading platforms boast robust options analysis tools, including indicators and spreadsheets that perform the calculations and output the options pricing values.
The Black Scholes call option formula is calculated by multiplying the stock price by the cumulative standard normal probability distribution function. Thereafter, the net present value (NPV) of the strike price multiplied by the cumulative standard normal distribution is subtracted from the resulting value of the previous calculation.

In mathematical notation:

$\mathrm{C}=$ Call option price $\quad \mathrm{S}=$ Current stock (or other underlying) price $\quad \mathrm{K}=$ Strike price
$\mathrm{r}=$ Risk-free interest rate $\quad \mathrm{t}=$ Time to maturity $\quad \mathrm{N}=$ A normal distribution
$\square=$ Standard deviation In = Natural Log
Difference between options and futures:

| Sno | OPTIONS | FUTURES |
| :--- | :--- | :--- |
| 1 | When the option is not performed, it is <br> left to lapse and becomes worthless. | Future contracts have to be concluded <br> at the end of the maturity date or <br> expiration date. |
| 2 | The call buyers’ losses are limited <br> only to the extent of the premium. | The buyers will lose the cost are <br> obliged to buy and pay the price for the <br> asset. |

## Forward contract:

Forward contract is a contract between two parties to buy or sell some underlying asset on some future date at a specified price and quantity. The forward contract involves no money transaction and the time of signing the deed. As there is no third party guarantee or organization involved in the transaction and if one of the two sides chooses to declare bankruptcy the other suffers. The forward contract includes lack of centralized trading, counter party risk and liquidity.

## Future contract:

Future markets are designed to solve the problem of trading, liquidity and counter party risk. The futures resemble the forward contracts but have 3 distinct features:

1. Standardised contracts.
2. Centralised trading.
3. Clearing house to settle the contracts and avoids counter party risk.

A Future contract is a standardised forward contract.
Difference between futures and forward contracts:

| Sno | Forward Contract | Future Contract |
| :--- | :--- | :--- |
| 1 | Customised contract terms and hence <br> less liquid. | Standardised contract terms and hence <br> more liquid. |
| 2 | No secondary market (Over the Counter <br> OTC in nature). | Traded on stock exchanges. |
| 3 | Trading is mostly unregulated. | Trading is regulated. |
| 4 | Settlement occurs on date agreed upon <br> between parties to each transaction. | Settlements are made through exchange <br> clearing house. |
| 5 | They are settled on maturity date. | They are marked to market on a daily <br> basis (profits and losses on future are <br> settled on a daily basis). |
| 6 | Participants are primarily institutions <br> dealing with one other and other <br> interrelated parties dealing through one <br> or more dealers. | Participants include banks, <br> corporations, financial institutions, <br> individual investors and speculators. |
| 7 | The delivery price is the forward price. | The delivery price is the spot price. |

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## SWAPS

A swap is a derivative contract through which two parties exchange the cash flows or liabilities from two different financial instruments. Most swaps involve cash flows based on a notional principal amount such as a loan or bond, although the instrument can be almost anything. The most common kind of swap is an interest rate swap. Swaps do not trade on exchanges, and retail investors do not generally engage in swaps. Rather, swaps are over-the-counter contracts
primarily between businesses or financial institutions that are customized to the needs of both parties.

## Interest Rate Swaps

In an interest rate swap, the parties exchange cash flows based on a notional principal amount (this amount is not actually exchanged) in order to hedge against interest rate risk or to speculate. For example, imagine ABC Co. has just issued $\$ 1$ million in five-year bonds with a variable annual interest rate defined as the London Interbank Offered Rate (LIBOR) plus 1.3\% (or 130 basis points). Also, assume that LIBOR is at $2.5 \%$ and ABC management is anxious about an interest rate rise.

The management team finds another company, XYZ Inc., that is willing to pay ABC an annual rate of LIBOR plus $1.3 \%$ on a notional principal of $\$ 1$ million for five years. In other words, XYZ will fund ABC's interest payments on its latest bond issue. In exchange, ABC pays XYZ a fixed annual rate of $5 \%$ on a notional value of $\$ 1$ million for five years. ABC benefits from the swap if rates rise significantly over the next five years. XYZ benefits if rates fall, stay flat or rise only gradually.

## Other Swaps

The instruments exchanged in a swap do not have to be interest payments. Countless varieties of exotic swap agreements exist, but relatively common arrangements include commodity swaps, currency swaps, debt swaps, and total return swaps.

## Commodity Swaps

Commodity swaps involve the exchange of a floating commodity price, such as the Brent Crude oil spot price, for a set price over an agreed-upon period. As this example suggests, commodity swaps most commonly involve crude oil.

## Currency Swaps

In a currency swap, the parties exchange interest and principal payments on debt denominated in different currencies. Unlike an interest rate swap, the principal is not a notional amount, but it is exchanged along with interest obligations. Currency swaps can take place between countries.

## Debt-Equity Swaps

A debt-equity swap involves the exchange of debt for equity-in the case of a publicly-traded company, this would mean bonds for stocks. It is a way for companies to refinance their debt or reallocate their capital structure.

## Total Return Swaps

In a total return swap, the total return from an asset is exchanged for a fixed interest rate. This gives the party paying the fixed-rate exposure to the underlying asset-a stock or an index. For example, an investor could pay a fixed rate to one party in return for the capital appreciation plus dividend payments of a pool of stocks.

## Credit Default Swap (CDS)

A credit default swap (CDS) consists of an agreement by one party to pay the lost principal and interest of a loan to the CDS buyer if a borrower defaults on a loan. Excessive leverage and poor risk management in the CDS market were a contributing cause of the 2008 financial crisis. ${ }^{3}$

## Swaps Summary

A financial swap is a derivative contract where one party exchanges or "swaps" the cash flows or value of one asset for another. For example, a company paying a variable rate of interest may swap its interest payments with another company that will then pay the first company a fixed rate. Swaps can also be used to exchange other kinds of value or risk like the potential for a credit default in a bond.

Index futures are futures contracts whereby a trader can buy or sell a financial index today to be settled at a future date. Traders use index futures to speculate on the price direction of an index such as the S\&P 500.

Investors and investment managers also use index futures to hedge their equity positions against losses.

- Index futures are contracts to buy or sell a financial index at a set price today, to be settled at a date in the future.
- Portfolio managers use index futures to hedge their equity positions against a loss in stocks.
- Speculators can also use index futures to bet on the market's direction.
- Some of the most popular index futures are based on equities, including the E-mini S\&P 500, E-mini Nasdaq-100 and E-mini Dow. International markets also have index futures.


## Index Futures Explained

Index futures, like all futures contracts, give the trader or investor the power and obligation to deliver the cash value of the contract based on an underlying index at a specified future date. Unless the contract is unwound before expiration through an offsetting trade, the trader is obligated to deliver the cash value on expiry.

An index tracks the price of an asset or group of assets. Index futures are derivatives, meaning they are derived from an underlying asset - the index. Traders use these products to exchange various instruments including equities, commodities and currencies. For example, the S\&P 500 Index tracks the stock prices of 500 of the largest companies traded in the United States. ${ }^{1}$ An investor could buy or sell index futures on the S\&P 500 to speculate on the appreciation or depreciation of the index.

## Types of Index Futures

Some of the most popular index futures are based on equities. However, each product may use a different multiple for determining the price of the futures contract. For example, the S\&P 500 futures contract is priced at $\$ 250$ times the level of the S\&P 500, so if the index trades at 3,400
points, then the market value of the contract would be $3,400 \times \$ 250$ or $\$ 850,000 .{ }^{2}$ The E-mini S\&P 500 futures contract has a value of $\$ 50$ times the value of the index. If the index traded at 3,400 points, the market value of the contract would be $3,400 \times \$ 50$ or $\$ 170,000 .{ }^{3}$

Investors can also trade futures for the Dow Jones Industrial Average (DJIA) and Nasdaq 100 Index. There are the E-mini Dow and E-mini Nasdaq-100 futures contracts, or their smaller variants the Micro E-mini Dow and Micro E-mini Nasdaq-100. ${ }^{4} 567$

Outside of the U.S., there are futures available for the DAX Stock Index of 30 major German companies and the Swiss Market Index (SMI), both of which trade on the Eurex. ${ }^{89}$ In Hong Kong, Hang Seng Index (HSI) futures allow traders to speculate on that market's major index. ${ }^{10}$

## Margin and Index Futures

Futures contracts don't require the buyer to put up the entire value of the contract when entering a trade. Instead, they only require the buyer to maintain a fraction of the contract amount in their account, called the initial margin.

Prices of index futures can fluctuate significantly until the contract expires. Therefore, traders must have enough money in their account to cover a potential loss, which is called maintenance margin. Maintenance margin sets the minimum amount of funds an account must hold to satisfy any future claims.

The Financial Industry Regulatory Authority (FINRA) requires a minimum of $25 \%$ of the total trade value as the minimum account balance. ${ }^{11}$ However, some brokerages will demand greater than $25 \%$. Also, as the value of the trade climbs before expiration, the broker can demand additional funds be deposited into the account, known as a margin call.

It's important to note that index futures contracts are legally binding agreements between the buyer and seller. Futures differ from an option, in that a futures contract is considered an obligation, while an option is considered a right the holder may or may not exercise.

## Profits and Loss from Index Futures

An index futures contract states the holder agrees to purchase an index at a particular price on a specified future date. Index futures are typically settled quarterly, and there are several annual contracts as well.

Equity index futures are cash settled, meaning there's no delivery of the underlying asset at the end of the contract. If on expiry the price of the index is higher than the agreed-upon contract price, the buyer has made a profit, and the seller-the future writer-has suffered a loss. Should the opposite be true, the buyer suffers a loss, and the seller makes a profit.

For example, if the Dow were to close at 16,000 at the end of September, the holder who bought a September futures contact one year earlier at 15,760 would reap a profit.

Profits are determined by the difference between the entry and exit prices of the contract. As with any speculative trade, there are risks the market could move against the position. As
mentioned earlier, the trading account must meet margin requirements and could receive a margin call to cover any risk of further losses. Also, the trader must understand that many factors can drive market index prices, including macroeconomic conditions such as growth in the economy and corporate earnings or disappointments.

## Index Futures for Hedging

Portfolio managers will often buy equity index futures as a hedge against potential losses. If the manager has positions in a large number of stocks, index futures can help hedge the risk of declining stock prices by selling equity index futures. Since many stocks tend to move in the same general direction, the portfolio manager could sell or short an index futures contract in case stocks prices decline. In the event of a market downturn, the stocks within the portfolio would fall in value, but the sold index futures contracts would gain in value, offsetting the losses from the stocks.

The fund manager could hedge all of the downside risks of the portfolio, or only partially offset it. The downside of hedging is that this reduces profits if the hedge isn't required. Take for example the above scenario. If the portfolio manager shorts index futures and the market rises, the index futures would decline in value. The losses from the hedge would offset gains in the portfolio as the stock market rises.

## Speculation on Index Futures

Speculation is an advanced trading strategy that is not suited for many investors. However, experienced traders will use index futures to speculate on the direction of an index. Instead of buying individual stocks or assets, a trader can bet on the direction of a group of assets by purchasing or selling index futures. For example, to replicate the S\&P 500 Index, investors would need to buy all 500 stocks in the index. Instead, index futures can be used to bet on the direction of all 500 stocks, with one contract creating the same effect of owning all 500 stocks in the S\&P 500.

## Pros

- Portfolio managers use index futures to hedge against declines in similar holdings.
- Brokerage accounts require only a fraction of the contract's value held as a margin.
- Index futures allows for speculation on the index price movement.
- Business use commodity futures to lock in commodity prices.


## Cons

- Unnecessary or wrong direction hedges will damage any portfolio gains.
- Brokers can demand additional funds to maintain the account's margin amount.
- Index futures speculation is a high-risk undertaking.
- Unforeseen factors may cause the index to move opposite from the desired direction.


## Index Futures Vs. Commodities Futures Contracts

By their nature, stock index futures operate differently than futures contracts for tangible goods such as cotton, soybeans or crude oil. Long position holders of commodities futures contracts will need to take physical delivery if the position has not been closed out ahead of expiry.

Businesses will frequently use commodity futures to lock in prices for the raw materials they need for production.

## Examples of Index Futures Speculating

An investor decides to speculate on the S\&P 500. Index futures for the S\&P 500 are priced at $\$ 250$ multiplied by the index value. The investor buys the futures contract when the index trades at 2,000 points, resulting in a contract value of $\$ 500,000(\$ 250 \times 2,000)$. Because index futures contracts don't require the investor to put up the full $100 \%$, they need only to maintain a small percentage in a brokerage account.

## Index Option

An index option is a financial derivative that gives the holder the right (but not the obligation) to buy or sell the value of an underlying index, such as the S\&P 500 Index, at the stated exercise price. No actual stocks are bought or sold. Index options are always cash-settled, and are typically European-style options, meaning they settle only on the date of maturity.

## Basics of an Index Option

Index call and put options are popular tools used to trade the general direction of an underlying index while putting very little capital at risk. The profit potential for index call options is unlimited, while the risk is limited to the premium paid for the option. For index put options, the risk is also limited to the premium paid, while the potential profit is capped at the index level, less the premium paid, as the index can never go below zero.
Beyond potentially profiting from general index level movements, index options can be used to diversify a portfolio when an investor is unwilling to invest directly in the index's underlying stocks. Index options can also be used to hedge specific risks in a portfolio. American-style options can be exercised at any time before expiry, while European-style options can be exercised only on the expiration date.

## KEY TAKEAWAYS

- Index options are options to buy or sell the value of an underlying index.
- Index options have downside that is limited to the amount of premium paid and upside that is unlimited.

