

GAUHATI UNIVERSITY
INSTITUTE OF DISTANCE AND OPEN LEARNING



STUDY MATERIALS
PGDFM [16-PAPER-V]
INVESTMENT MANAGEMENT

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UNIT-I

THE INVESTMENT ENVIRONMENT

Learning Objectives: This unit aims to provide the students with an introduction to financial markets and investment environment. After going through Unit I, students will be able to learn the following concepts:

- Financial Assets and its properties
 - Real Assets vs. Financial Assets
 - Financial Markets
 - Investments-characteristics
 - Types of investors
 - Financial Intermediaries
 - Investment vs. Speculation
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1.1 Financial Assets and its Properties

The quality and quantity of assets in a nation at a specific time is an essential criterion for the assessment of economic development. Based on their distinct characteristics, assets in an economy can be broadly classified as: physical, financial and intangible assets. Financial assets, the major component of which is called cash or money, help physical assets to generate activity. Examples of financial assets besides cash are deposits, debt instruments, shares, derivative products, and foreign currency reserves.

The distinctive characteristics of financial assets are: monetary value, convertibility, reversibility, liquidity and cash flow.

- **Currency:** Financial assets are exchange documents with an attached value. Their values are denominated in currency units determined by the government of an economy.
- **Divisibility:** Financial instruments are divisible into smaller units. The total value is represented in terms of divisions that can be handled in a trade. The divisibility characteristic of financial assets enables all players, small or big, to participate in the market.
- **Convertibility:** Financial assets can be converted into any other kind of asset. This convertibility feature allows flexibility of financial assets and also trading of these assets.
- **Reversibility:** A financial instrument can be exchanged for any other asset and logically, the so-formed asset may be transferred back to the original financial instrument. For e.g.: A firm can deposit currency in a bank and accept a deposit certificate that can be used to earn a return. Once the need for currency arises, the bank deposit can be withdrawn in the form of currency again and used as an exchange instrument to buy any other type of asset.
- **Liquidity:** This refers to how easily the financial asset can be converted into cash. The financial instrument can be exchanged for currency with another market participant who does not need cash immediately but expects future benefits.
- **Cash Flow:** Holding of a financial instrument results in a stream of cash flows that are the benefits that accrue to the holder of the instrument. A financial instrument by itself does not create a cash flow. Currency kept idle does not result in a flow of benefits, while currency invested in a physical activity gives the holder cash flow benefits/losses.

1.2 REAL ASSETS vs. FINANCIAL ASSETS

- (a) The material wealth of a society is ultimately determined by the productive capacity of its economy i.e., the goods and services that can be provided to its members. This productive capacity depends

on the real assets of the economy which include land, buildings, knowledge and machines that are used to produce goods and the workers whose skills are necessary to use those resources.

Financial assets on the other hand, do not represent a society's wealth and only indirectly contribute to an economy's productive capacity. They certainly contribute to the wealth of the individuals or firms holding them. This is because financial assets are claims to the income generated by real assets or claims on income from the government.

- (b) When the real assets of a firm ultimately generate income, the income is allocated to investors according to their ownership of the financial assets or securities issued by the firm. For e.g.: Equity holders are entitled to any residual income after bondholders and other creditors are paid. In this way, the values of financial assets derive from and depend on the values of the underlying real assets of the firm.
- (c) Real assets produce goods and services, while financial assets define the allocation of income or wealth among investors. In fact, financial assets may be considered as the means by which investors hold their claims on real assets in well-developed economies. An ordinary investor may not be able to personally own auto plants (a real asset) but he can hold the shares of Tata Motors Ltd (financial assets), which provide us with income derived from the production of automobiles.
- (d) Real assets and financial assets are distinguished operationally by the balance-sheets of individuals firms in the economy. While real assets appear only on the asset side of the balance sheet, financial assets always appear on both sides of the balance sheets. The financial claim on a firm is an asset, but the firm's issuance of that claim is the firm's liability.
- (e) Real assets are destroyed only by accident or by wearing out over time, while financial assets are created and destroyed in the ordinary course of doing business. For e.g.: on repayment of a loan, both the creditor's claim (a financial asset) and the debtor's obligation (a financial liability) cease to exist.

1.3 Financial Markets

A financial market is a place/system for creation and exchange of financial assets.

The functions of financial markets are:

- Financial markets facilitate price discovery. The continual interaction among the numerous buyers and sellers in the financial markets help in establishing the prices of financial assets.
- Investors can easily trade their financial assets through the mechanism of financial markets since these markets provide liquidity to financial assets.
- Financial costs significantly reduce the costs of transacting. The two major transacting costs are search costs and information costs. Search costs comprise explicit costs such as expenses incurred on advertising when one wants to buy or sell an asset and implicit costs such as the effort and time one spends in locating a customer. Information costs refer to costs incurred in assessment of the investment merits of financial assets.

Different bases for classifying financial markets are:

- **Type of financial claim:** The debt market is the financial market for fixed claims (debt instruments) and the equity market is the financial market for residual claims (equity instruments).
- **Maturity of claims:** The market for short-term financial claims is the money market while that for long-term financial claims (long-term debt instruments and equity instruments) is called the capital market. The widely accepted dividing line between both these claims is one year.
Money markets are also referred to as a wholesale financial market while capital markets are referred to as retail markets since the size of the transactions in the money market is quite large when compared to that in the capital markets.
- **Seasoning of claims:** The market where issuers sell new claims is referred to as the primary market and the market where investors trade outstanding securities is called the secondary market.

- **Timing of delivery:** A cash or spot market is one where the delivery occurs immediately and a forward or futures market is one where the delivery occurs at a pre-determined time in future.
- **Organisational structure:** An exchange-traded market is characterized by a centralized organization with standardized procedures while an over-the-counter market is a decentralized market with customized procedures.

Fig: 1.1 shows the subdivisions of the major markets.

1.4 Investments

Investing in various types of assets is an interesting activity that attracts people from all walks of life irrespective of their occupation, economic status, education & family background. When a person has money more than he requires for current consumption, he would be coined as a potential investor. The investor who is having extra cash could invest it in securities or in any other assets like gold or real estate or could simply deposit it in his bank account. The companies that have extra income can invest their money in the extension of the existing firm or in the undertaking of new venture. All of these activities in a broader sense mean investment

Investment is the employment of funds on assets with the aim of earning of capital appreciation. Investment has two attributes namely time and risk. Present consumption is sacrificed to get a return in the future. The return in the future may be uncertain. This attribute of investment indicates the risk factor.



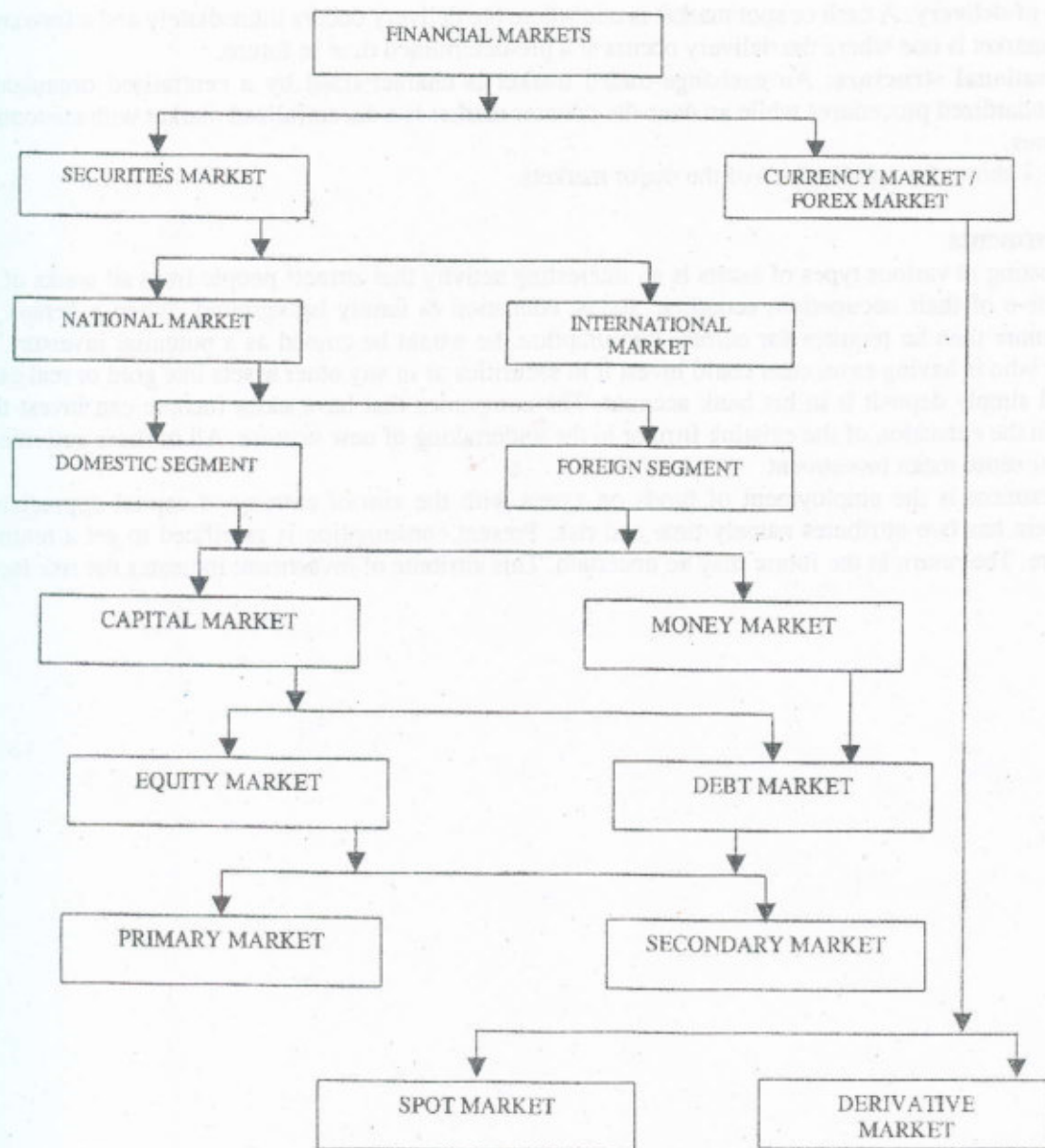


Figure: 1.1 Sub-Divisions of the Major Markets

1.4.1 Investment Characteristics:

An investor tends to prefer maximisation of expected return, minimisation of risk, safety of funds and liquidity of funds.

Return: Investors always expect a good rate of return from their investments. The expectation of return could be from income (yield) as well through capital appreciation. Capital appreciation is the difference between sale price and the purchase price of an investment. The dividend or interest from the investment is the yield.

Risk: Risk is inherent in any investment. Risk may relate to loss of capital, delay in repayment of capital, non-payment of interest, or variability of returns. Risk and the expected return of an investment are related. Theoretically, the higher the risk, higher is the expected return. The higher return is a

compensation expected by investors for their willingness to bear the higher risk. Normally, every investor likes to reduce the risk of his investment by proper combination of different securities.

Liquidity: An investment that is easily saleable or marketable without loss of money or time is said to possess the characteristic of liquidity. A well developed secondary market for securities increases the liquidity of the instruments traded therein.

Stocks are liquid only if they can be sold with adequate return through dividends and capital appreciation.

Safety: The safety of investment is identified with the certainty of return of capital without loss of money or time. Further, the selected investment avenue should be under the legal and regulatory framework. Approval of the law itself adds a flavour of safety. From the safety point of view, investments can be ranked as follows: bank deposits, government bonds, UTI units, non-convertible debentures, convertible debentures, equity share and deposits with the non-banking financial companies.

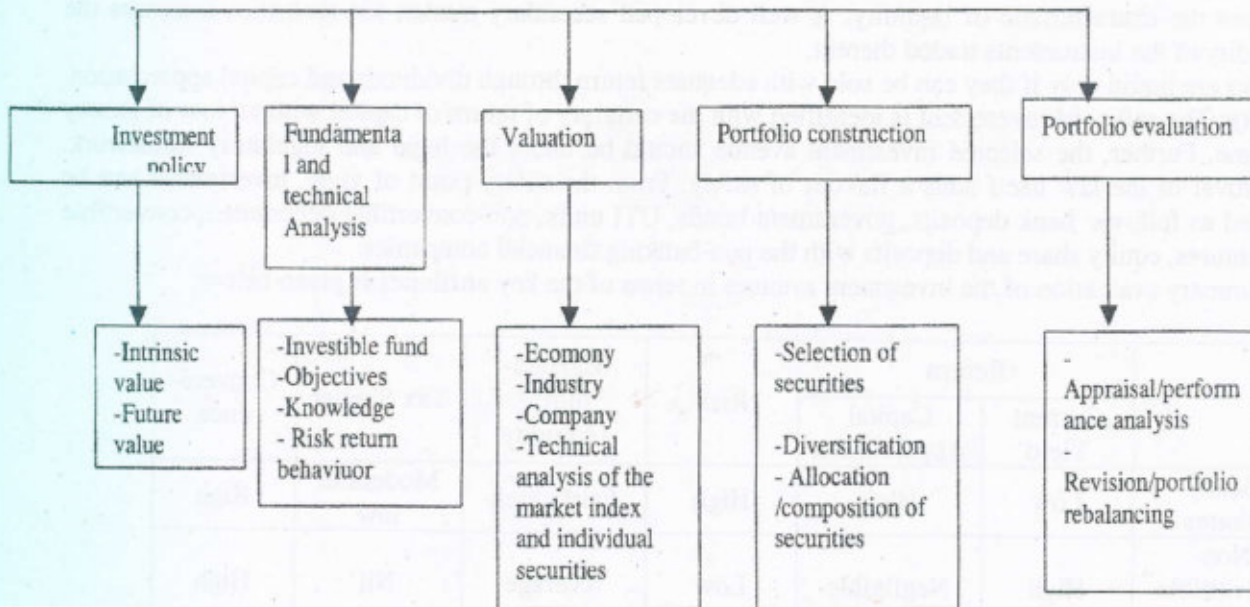
A summary evaluation of the investment avenues in terms of the key attributes is given below:

	Return		Risk	Marketability/ Liquidity	Tax Shelter	Convenience
	Current Yield	Capital Appreciation				
Equity Shares	Low	High	High	Fairly high	Moderate/ low	High
Non-convertible Debentures	High	Negligible	Low	Average	Nil	High
Equity Schemes	Low	High	High	High	High	Very high
Debt Schemes	Moderate	Low	Low	High	No tax on dividends	Very high
Bank Deposits	Moderate	Nil	Negligible	High	Nil	Very high
PPF	Nil	Moderate	Nil	Average	Section 80 C Benefit	Very high
Life Insurance Policies	Nil	Moderate	Nil	Average	Section 80 C Benefit	Very high
Residential House	Moderate	Moderate	Negligible	Low	High	Fair
Gold and Silver	Nil	Moderate	Average	Average	Nil	Average

1.4.2 The Investment Process:

The investment process involves a series of activities leading to be the purchase of securities or other investment alternatives. The investment process can be divided into five stages (i). Framing of investment policy (ii) investment analysis (iii) valuation (iv) portfolio construction (v) portfolio evaluation. The flowchart 1.1 explains the stages connected thereof.

Investment Process



Flow Chart-1.1 – Investment process

1.5 Types Of Investors

- (a) **Investors based on their risk bearing capacity:** Investors in the financial market have different attitudes towards risk and hence, varying levels of risk-bearing capacity. The risk bearing capacity of an investor is a function of personal, economic, environmental and situational factors such as income, family size, expenditure pattern and age. Thus investors can be classified as risk seekers, risk avoiders or risk bearers. A risk seeker is capable of assuming a higher risk while a risk avoider chooses instruments with low variation in returns. Risk bearers lie in between these two categories and assume moderate levels of risk.
- (b) **Investors based on groups as individuals or institutions:** Individual investors in any financial market are large in number, but in terms of value of investment they are relatively smaller. Institutional investors on the other hand, are organisations with surplus funds beyond immediate business needs or organisations whose business objective is investment. Though fewer in number compared to individual investors, the resources of institutional investors are much larger. Mutual funds, investment companies, banking and non-banking financial companies, insurance corporations, and so on are organisations with large surplus funds to be invested in various profitable avenues. Institutional investors and individual investors combine to make a dynamic investment market.

1.6 Financial Intermediaries

The stock market is identified as an exchange market with layers of intermediaries before a transaction can be made. Stock market intermediaries link the various players in the field. Market intermediation helps in smooth functioning of the stock market, especially when the market place is quite large and involves several players in terms of groups as well as numbers. Stock market intermediaries, at present perform the requisite services of order matching, portfolio advice, investment advice, providing market liquidity, market making, stock lending, retail broking, merchant banking, online trading, equity research apart from depository and other related services. The major market intermediaries, according to functions they perform in the market are as follows:

- Brokers
- Investment Advisors
- Fund Managers
- Merchant Bankers
- Credit Rating Agencies
- Investment Banks
- Regulatory Bodies
- Auditing Bodies
- Stock Depositories
- Technology /Internet Providers

- **Brokers:** A broker executes orders in the stock market on behalf of an investor. Unlike a dealer who specifically takes a position in the security, a broker simply executes the buy or sells orders of his clients in the stock market. For rendering this service, the broker charges a commission; this is one of the transaction costs for the investor in getting the investment activity executed.

A broker may appoint a sub-broker to reach a wider client base. The sub-brokers act on behalf of the brokers and pass on the buy-sell orders of the clients to the concerned broker. Thus, a sub-broker is a sub-agent for the investor.

- **Fund Managers:** Mutual funds appoint fund managers/asset management companies to handles all operational matters such as designing the schemes, launching the schemes, managing investments, and interacting with investors. Fund managers sell the units of funds to investors at the net asset value and are also ready to purchase units from the investors at the net asset value.

In return for its services, the fund managers are compensated in the form of investment management and advisory fees. The amount of fees is linked to the size of the scheme. Currently this fees is subject to the following limits: on the first Rs.100crores of the weekly average net assets-1.25 % ; on the balance of the net assets-1 %. The head of the AMC is generally referred to as the chief executive officer. Next to him is the chief investment officer who shapes the fund's investment philosophy and who is supported by fund managers responsible for managing various schemes. The fund managers are assisted by a team of analysts who track markets, sectors and companies.

- **Merchant Bankers:** The management of debt and equity offerings forms the main function of the merchant banker. Main areas of work in this regard include instrument designing, issue pricing, registration of offer document, underwriting support, marketing of the issue etc. For e.g.: when companies raise capital by issuing securities in the market, merchant bankers act as intermediaries between the issuers of capital and the ultimate investors who purchase these securities. Under advisory services, merchant bankers offer customised solutions to their client's financial problems. They help their clients in various stages of any project undertaken by the clients. Amongst financial services, merchant bankers assist in loan syndication wherein they arrange to tie up loans for their clients. Merchant bankers also perform market operations for their clients in the form of dealing in the buyback arrangements of the company from the stock market etc.

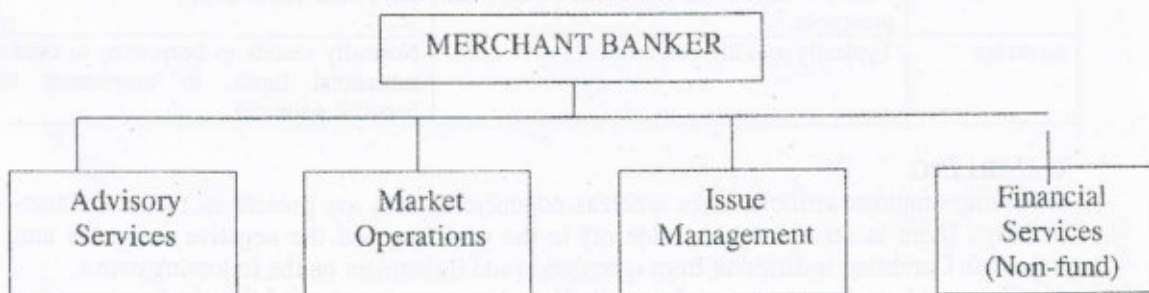


Figure 1.2 Merchant Banking Services

- **Credit Rating Agencies:** It is a fee-based financial advisory service for the evaluation of a specific instrument like debt, shares etc., and is intended to grade different instruments in terms of the credit risk associated with the particular instrument. Rating is not any kind of recommendation to buy, hold, or sell an instrument as it does not consider certain

factors such as market prices, personal risk preferences of an investor and other functions of the investment decision.

- **Investment Banks:** An investment banker offers a wide range of services that include raising capital for clients, making markets and providing brokerage services, advising on and executing mergers and acquisitions, managing third-party assets etc.
- **Regulatory Bodies:** The regulatory bodies monitor and help in the smooth flow of activities in the capital market. The four main regulatory bodies for the Indian capital market are: Securities and Exchange Board of India (SEBI), Reserve Bank of India (RBI), Department of Company Affairs (DCA) and Department of Economic Affairs (DEA).
- **Stock Depositories:** A depository provides for the maintenance/ transfer of ownership records of securities in an electronic book entry form and enables scrip less trading in stock exchanges, thereby reducing settlement risk. The depository has to maintain a continuous electronic means of communication with all its participants, issuers, or issuers' agents, clearing houses, and clearing corporations of the stock exchanges and with other depositories.
- **Technology /Internet Providers:** With net trading in securities and rapid consolidation between multiple stock exchanges, the securities marketplace is fast becoming an international market place, These intermediaries ensure overall satisfactory performance in terms of the trading system, bandwidth, and integration capabilities for efficient performance.

1.7 Investment vs. Speculation

Speculation means taking up the business risk in the hope of getting short-term gain. Speculation essentially involves buying and selling activities with expectation of getting profit from price fluctuations.

The broad distinction between an investor and a speculator are outlined below:

Basis of distinction	Investor	Speculator
Planning Horizon	A relatively longer planning horizon with a holding period of usually at least one year	A very short planning horizon, with the holding period from a few days to a few months
Risk Disposition	Normally not willing to assume more than moderate risk	Ordinarily willing to assume high risk
Return Expectation	Usually seeks a moderate rate of return, in line with the limited risk assumed by him	Seeks a high rate of return in exchange for the high risk borne by him
Basis for decisions	Places greater emphasis on fundamental factors with careful evaluation of the firm prospects	Relies more on hearsay, technical charts and market psychology
Leverage	Typically uses his own funds	Normally resorts to borrowing to even a substantial limits, to supplement his personal resources

GAMBLING

Gambling employs artificial risks whereas commercial risks are present in the investment activity. There is no risk return trade off in the gambling and the negative outcomes are expected. Gambling is different from speculation and investment on the following points:

- Compared to investment and speculation, the outcome of gambling is known more quickly.
- Rational people gamble for fun, not for income.
- Gambling does not involve a bet on an economic activity and is based on risk that is created artificially
- Gambling creates risk without providing any matching economic return.

HEDGING

Risk reduction is known as hedging. Any investment instrument has an inherent element of risk. By using derivative instruments, investors try to minimise/ reduce risk. Thus the risk reduction practices of investors using derivative instruments are known as hedging activities.

Suggested questions:

1. Distinguish between a physical asset and a financial asset.
2. Differentiate investment from speculation and gambling.
3. Distinguish carefully between investing and speculating. Is it possible to incorporate investment and speculation within the same security? explain
4. Discuss the structure and function of financial markets
5. Discuss the attributes that one should consider while evaluating an investment
6. How do the following investment compare in terms of returns, risk, marketability, tax shelter and convenience-equity share, non-convertible debentures, equity schemes, gold, PPF etc.
7. Discuss briefly the key steps involved in the portfolio management process.

UNIT-II

INVESTMENT ALTERNATIVES AND FINANCIAL INSTRUMENTS

Learning Objectives: This unit aims to provide the students with an introduction to various market instruments. After going through Unit II, students will be able to learn the following concepts:

- Money Market Instruments
- Bond Market Instruments
- Equity Securities
- Derivatives
- Non-marketable Financial Assets

2.1 Introduction

For investing, the investor should be familiar with the investment alternatives before them. A large number of investment alternatives are available with varying risk-return-liquidity choices. Investors generally look at three important characteristics of any financial asset viz.:

- **Return-** the potential return possible from an asset
- **Risk-** the variability in returns of an asset from the chances of its value going up/ down
- **Liquidity-**the ease with which an asset can be converted into cash based on these three characteristics, each investor selects the alternative that matches his investment objectives. This chapter describes the various investment alternatives available to an investor both individual as well as to the corporate.

2.2 Money Market Instruments

Debt instruments which have a maturity of less than one year at the time of issue are called money market instruments. These instruments are highly liquid and have negligible risk. The money market is dominated by the government, financial institutions, banks and corporates with little participation from individual investors. Some of the money market instruments are Treasury bills, Certificate of Deposits, Commercial Paper, Euro dollars, Repos and Reverse Repos etc.

- **Treasury Bill:** T-bills are the simplest form of borrowing by the government which raises money by selling bills to the public. It does not carry any interest rate. Investors buy the bills at a discount from the stated maturity value. At the bill's maturity, the bill-holder receives from the government a payment equal to the face value of the bill. The difference between the purchase price and the ultimate maturity value comprise the investor's earnings.
- **Certificate of deposit (CD):** These are short-term deposits which are transferable from one party to another. Banks and Financial Institutions are the major issuers of CDs while the main investors in CDs are banks, financial institutions, corporates and mutual funds. They generally have a maturity period of 3 months to 1 year and they carry a certain interest rate, generally higher than the earnings from T-bills.
- **Commercial paper (CP):** These are short-term unsecured promissory notes that are issued by firms that are generally financially strong. A commercial paper usually has a maturity period of 90 to 180 days. It is sold at a discount and redeemed at par
- **Euro Dollars:** They are dollar-dominated deposits at foreign banks or foreign branches of American Banks. Most Eurodollar deposits are for large sums and are usually time deposits of less than 6-months' maturity. Another variation of this is the

Eurodollar CD which is similar to a domestic bank CD except that it is a liability of a non-US branch of a bank.

- **Repos and Reverse Repos:** The term Repo stands for Repurchase Agreement or Ready Forward. A Repo involves simultaneous "sale and repurchase agreement". In a repo transaction, one transfers government securities and bonds issued by PSUs and the private corporate sector, to an investor on an usually overnight basis, with an agreement to buyback those securities after the repo period at a slightly higher price. The increase in price is the interest for the repo period. A reverse repo is the mirror image of the repo, where securities are purchased with a commitment to sell them back after the repo period.

2.3 Bond Market Instruments

The bond market is composed of long-term borrowing or debt instruments other than those that trade in the money market and include government securities, corporate bonds and bonds issued by PSUs and different financial institutions. The issuer of a bond generally promises to make periodic interest payments over the life of the instrument and principal payment at the time of redemption.

- **Government bonds:** Debt securities issued by the central and state government and quasi-government agencies are referred to as government securities or gilt-edged securities. These securities have maturities ranging from 3-30 years and carry interest rates varying between 8-10%. These are typically held by banks, financial institutions, insurance companies, and provident funds, mainly due to statutory compulsions.
- **Corporate bonds/debentures:** These are the instruments by which private firms borrow money directly from the public. They normally pay semi-annual coupons over their lives and return the face value to the bondholder on maturity.
- **PSU bonds:** These are debentures issued by PSUs. PSU bonds can be taxable or tax-free. While PSUs are free to set the interest rates on taxable bonds, they cannot offer more than a certain interest rate on the tax-free bonds which are stipulated by the Ministry of Finance.
- **Preference shares:** These are hybrid securities that have characteristics of both equity shares and debentures. Preference shares carry a fixed rate of dividend and they are redeemable normally after 7-12 years. The most characteristic feature of a preference share is that the share holder enjoys the right of payment of dividends during the life of the business, and in sharing the residual on its termination over the ordinary share holder. They consist of cumulative or non-cumulative nature. In the case of a cumulative preference share, if the dividend in particular year is skipped, it is cumulated to be paid in the following year or years, thereby providing such preference share holders extra assurance on their dividend earnings. In the case of non-cumulative preference share, on the other hand, there is no such provision.

In terms of risk, there are less risky than equities, but more risky than secured debentures, which precede them in the distribution of the distribution of the company's funds, and in the event of liquidation, which are paid off before preference shares. Sometimes these shares are convertible into equity shares after a stated number of years, thus enjoying assured earnings when the company is getting established, and high earnings when it has established itself. When preference shares are redeemable, the company pays off the share holders on a certain date, or issues equity shares of the value, but when they are irredeemable, the share holder gets the fixed dividend in perpetuity or as long as the company lasts.

2.4 Equity Securities

Equity securities, also known as common stock or equities, represent the ownership capital. They are the owners of the company, sharing its risks, profits and losses. The two most important characteristics of equity shares as an investment alternative are its residual claim

and limited liability features. Residual claim means that these shareholders are the last in line that have claim on the assets and income of the firm. They have a residual claim on the earnings and assets of a company. They are paid their share of the company's profits after all other claims are met, and in the event of the liquidation of the company they share whatever is left of the company after all its creditors have been paid. Limited liability means that the most an equity holder can lose in the event of failure or bankruptcy of the firm is his original investment. Only equity share holders are entitled to vote at the company's meetings, thus controlling the management. If the company prospers, it is the equity share holder who is greater gainer.

The equity shares attract the interest of many investors. In the early nineties, the stock market was the best and safest place for the common individual to invest. Since 1996 the share market price has been low. This made the retail investors to turn away from the stock market. After 2000, the share market has become more volatile making investment risky one.

In stock market parlance, equity shares are normally classified thus:

- **Blue-chip Shares:** Shares of large, well-established, and financially strong companies with an impressive record of earnings and dividends. Examples- Reliance, HDFC, Infosys, etc
- **Growth Shares:** Shares of companies which are fairly well-established in a growing market and which enjoy an above average rate of growth and profitability. Examples, shares of software companies.
- **Income shares:** Shares of companies that have fairly stable operations, relatively limited growth opportunities, and high dividend payout ratios. The bank shares and some of the fast moving consumer goods stocks such as Cadburys, Nestle and Lever may be termed as income shares.
- **Cyclical shares:** Shares of companies that have a pronounced cyclicity in their operations. The upward and downward movements of the business cycle affect the business prospects of certain companies and their stock prices. Such shares provide low to moderate current yield. Capital gain may be highly variable. For example, the automobile sector stocks are affected by the business cycles.
- **Defensive shares:** Shares of companies that are relatively unaffected by the ups and downs in general business conditions. For example, a host pharmaceutical stock posted returns in excess of 50 percent in 1998. The pharmaceutical industry owing to its inherent nature of demand is not affected by the down turn in the economy.
- **Speculative shares:** Shares that tend to fluctuate widely because there is a lot of speculative trading in them. During the bull and bear phases of the market, this type of shares attracts the attention of the traders.
- **Active shares:** Shares in which there are frequent and day-to-day dealings, as distinguished from partly active shares in which dealings are not so frequent are called as Active Shares. Most shares leading companies would be active, particularly those which are sensitive to economic and political events and are, therefore, subject to sudden price movements.

2.5 Derivatives

One of the most significant developments in financial markets in the recent times has been the growth of the derivative markets. A derivative is an instrument whose value depends on the value of some underlying asset. Because the values of these instruments are derived from certain underlying assets such as commodity, stocks and bonds or market index, they are called derivative assets. For investors, futures and options are the two most important financial derivatives. They are used for hedging and speculation.

- **Futures:** A futures contract is an agreement between two parties to exchange an asset for cash at a predetermined future date for a price that is specified today. The party which agrees to purchase the asset is said to have a long position and the party which agrees to sell the asset is said to have a short position. If the price

increases, the party holding the long position benefits, whereas the party holding the short position loses, and vice-versa. For e.g.: there is a futures contract between two parties A and B. A agrees to buy 1000 shares of ABC Ltd. at Rs.100 from B to be delivered 90 days hence. A has a long position and B has a short position. On the 90th day, if the price of ABC Ltd. happens to be Rs.105, A gains Rs.5,000 [$1000 \times (105 - 100)$] whereas B loses Rs.5,000. On the other hand, if the price on the 90th day happens to be Rs.95, A loses Rs.5,000 [$1000 \times (95 - 100)$] whereas B gains Rs.5,000.

- **Options:** An option gives its owner the right to buy or sell an underlying asset on or before a given date at a predetermined price (strike price). The option holder enjoys the right to buy or sell the underlying asset but is under no contractual obligation to do the same.

There are basically two types of options: call options and put options. A call option gives the option holder the right to buy the underlying instrument while a put option gives him the right to sell the same.

Premium is the cost that is paid by the option buyer to the seller for protecting the specific position that is expected in the future. Strike price is the specific price at which the option-holder may opt to buy (in case of a call) or sell (in case of a put), a particular commodity or financial instrument. Expiration date is the date on which the option expires. Exercise date is the date on which the option holder/buyer exercises the option.

An option may be classified on the basis of their contractual time thus:

- (a) An American option is one that can be exercised any time on or before the expiry date.
- (b) A European option is one that can be exercised only on the expiry date.

The first derivative product to be introduced in the Indian securities market is the 'index futures', and then followed by futures, index options and finally the options on stocks.

2.6 Non-Marketable Financial Assets

A significant part of the financial assets of individual investors is held in the form of non-marketable financial assets like bank deposits, post office deposits, company deposits, provident fund deposits. An important feature of these assets is that they represent personal transactions between the investor and the issuer.

- **Savings Bank Account with Commercial Banks:** This investment option is safe and liquid, with an interest of 3.5 % per annum. This investment is both ideal and convenient for setting aside funds for contingency purposes.
- **Bank Fixed Deposits:** This is an ideal alternative to investors looking for preservation of capital and short-term income.
- **Company Fixed Deposits:** Though characterized by high risk, the company deposits which are unsecured, promise higher returns than bank deposits. Fixed deposits in non-banking financial companies (NBFCs) is another option which offer higher returns with higher risk, as compared to bank deposits. NBFCs include leasing companies, hire purchase companies etc..
- **Post Office Deposits and Certificates:** Post Offices offer a variety of investment options such as savings deposits, fixed deposits, recurring deposits besides National Savings Certificates (NSC). These are risk-free, high yielding investment opportunities that cater to specific savings and investment requirements of investors. Interest on these instruments is exempt from income tax upto a certain extent.
- **Life Insurance Policies:** Investment schemes offered by the insurance companies include life policies, endowment assurance policies etc.; they not only offer a risk cover to investors but also help earn a reasonable interest on their investment insurance premiums.

- **Provident Fund Scheme:** Such deposit schemes which are applicable to employees in the public and private sector, include Statutory Provident Fund, Recognized Provident Fund and Unrecognized Provident Fund. Apart from these three, there is a voluntary PF, also known as the Public Provident Fund. One major drawback of this facility is lack of liquidity.
- **Pension Plan:** Several retirement plans are offered by different financial institutions. These pension plans or schemes entitle investors to a tax rebate and also assure reasonable benefits on post retirement.
- **Mutual Fund Schemes:**
The mutual fund concept is based on sharing of risks and rewards. The income and capital appreciation arising out of investments are shared among the investors. These are schemes that invest in equities, debt instruments or in both, in real estates, gold units etc., and assure the investors better returns and lower risk options. Investors have a variety of options such as income funds, balanced funds, liquid funds, gilt funds, index funds, exchange traded funds, sectoral funds to deploy their savings.
- **Real Assets:**
Investing in real assets is an attractive option if the expected returns from holding of such assets are high. Avenues for investment would include real estate, silver, currency, gold etc.
- **Bullion Investment:** Specific categories of metals like gold, silver and other metals are traded in the metals exchange. This bullion market renders rich investment opportunities to investors by offering returns and end value in future. Though risky because of the fluctuation in prices in this market, this risk is compensated by real returns for many investors who have followed a buy and hold strategy in the bullion market.

Suggested Questions

1. Distinguish between primary and secondary markets
2. What are the special features of preference shares?
3. What are the popular stock market classification of equity shares
4. Describe the characteristics and investment features of the following investment alternatives-Government bonds, Treasury bill, futures, options, mutual fund investment.
5. Describe briefly the features of many market instruments in India.

ISSUE AND TRADING OF SECURITIES

Learning Objectives: This unit aims to provide the students with an introduction to issue, trading and settlement mechanism. After going through Unit III, students will be able to learn the following concepts:

- Primary and secondary market
- Issue of securities
- Trading of securities
- Trading on exchanges
- Margin on securities and short sales
- Trading and settlement mechanism in NSE

3.1 Primary and Secondary Market

Primary market comprises of a market for new issues of shares and debentures, where investors apply directly to the issuer/company for allotment and pay application money to the issuer's/company's account. Primary market is where an issuer/company makes its contact directly with the public at large in search of capital as, distinguished from the secondary market, where investors buy/sell listed shares on the stock exchange.

Secondary market comprises of the buyers and sellers of shares and debentures subsequent to the original issue. For example, having subscribed to the share or debenture of the company, if one wishes to sell the same, it will be done in the secondary market. Similarly one can also buy the share or debenture of a company from the secondary market (if the company is listed on the stock exchange) without having to wait for that company to come out with a new public issue.

3.2 Issue of Securities:

There are four ways in which a company may raise equity capital in the primary market: public issue, rights issue, private placement and preferential allotment.

- **Public issue** which involves the sale of securities to the public at large, is one of the most important method of issuing securities. Public issues in India are governed by the Companies Act, 1956, SEBI Guidelines on Investor Protection, and the listing agreement between the issuing company and the stock exchanges.
- **Rights issue:** Section 81 of the Companies Act, 1956, requires that when a company issues additional equity capital, it has to be offered in the first instance to the existing shareholders on a pro rata basis. A rights issue therefore involves selling securities in the primary market by issuing rights to the existing shareholders.
- **Private Placement:** In this case, the firm, using an investment banker, sells shares directly to a small group of institutional or wealthy investors. Private placements are not made available to the general public. Since private placements do not trade in secondary markets like stock exchanges, this significantly reduces their liquidity and may also reduce the prices that investors will pay for the issue. In India, such an issue is made to less than 50 investors.
- **Preferential allotment:** This refers to an issue of equity by a listed company to selected investors at a price which may or may not be related to the prevailing market price. A preferential allotment is not related to a public issue and is given in India mainly to promoters and friendly investors to avoid potential threats of takeover.

3.3 Trading of Securities

Once securities are issued to the public, investors may trade them among themselves. Trading of already issued securities take place in the secondary markets which consist

of national and local stock exchanges, over-the-counter market and direct trading between two parties.

- **Stock Exchanges:** They provide an organized market for transactions in shares and other securities. There are around 23 stock exchanges in the country amongst which 20 are regional exchanges with allocated areas of operation.
- **Over-the-Counter Exchange of India:** The OTCEI was incorporated in 1990 and was set up to aid enterprising promoters in raising finance for new projects in a cost-effective manner.
- **Direct Trading:** The advent of electronic communication network has led to the rapid development of this direct trading among investors in exchange-listed securities without benefit of a broker.

3.4 Trading on Exchanges

Every stock exchange has certain listed securities which are traded on it. Investors who wish to purchase or sell these securities need to place their orders with the members/brokers of the exchange. There are two ways of organizing the trading activity: the open outcry system and the screen based system.

- **Open Outcry System:** This system involves shouting and using of signals by traders on the trading floor of the exchange which has several trading posts for different securities.
- **Screen-based System:** In this system, the trading ring is replaced by the computer screen whereby, a large number of participants, geographically spread can trade simultaneously at high speeds.

With the establishment of the National Stock Exchange in 1994, India too started the screen-based trading system. Within a short time span, due to SEBI's initiatives, this efficient trading system replaced the open outcry system on all the stock exchanges of India.

Though trading in shares takes place on all stock exchange working days, all settlements need not take place automatically. Settlement may be on a cash basis or by a forward contract.

- **Cash settlement** means that the sale and purchase of shares noted down by the brokers will be finalized through the act of receiving cash by the seller and the receipt of share documents by the buyer. Thus, the delivery of assets takes place on the settlement day.
- **In forward contracts of settlement**, the transactions recorded are renewed by a carry forward contract. Payment for sale and delivery of share certificate do not take place. However, on the cash settlement date, the speculator might ask for postponement of the deal to a future settlement date by fixing a charge as a penalty for non-execution of the deal. The original contract price gets updated with this charge. All deliveries for shares and payments due from forward contract adjustments have to be settled with respective deliveries and payments before the next settlement date. The delivery of share market dealings may be by hand delivery, spot delivery, special delivery, or delivery for clearing.
- **Hand Delivery:** The certificate to be delivered and the payment of cash should be completed on the date specified by the parties while drawing up the agreement.
- **Spot Delivery:** Settlement takes place on the very next day or on the day of the contract.
- **Special delivery:** Settlement takes place any time after the specified settlement date but before two months after the expiry of the contract date or as stipulated by the governing board of the stock exchange.
- **Delivery for clearing:** The settlement takes place through a clearing house. The function of the clearing houses is limited to the delivery of the assets.

To reduce the costs and risks associated with physical delivery, security transactions in developed markets are settled mainly through electronic delivery facilitated by

depositories. A depository is an institution which dematerializes physical certificates and effects transfer of ownership by electronic book entries.

3.5 Margin on Securities and Short Sales

SEBI approved **margin trading** in January 2004 and it was introduced in February 2004 in India. The act of taking advantage of broker's loans is called buying on margin. The margin in the account is the portion of the purchase price contributed by the investor, the remainder being borrowed from the broker. The broker in turn, may borrow the money from banks, and charges its clients the rate (it pays to the bank) plus a service charge for the loan.

Short selling is the practice of selling securities that the seller does not own. A short sale allows investors to profit from a decline in a security's price. An investor borrows a share of stock from a broker and sells it. Later, the short-seller must purchase a share of the same stock in the market to replace the share that was borrowed. This is called covering the short position. In June 1998, SEBI banned short sales in India after a series of negative returns witnessed in the stock market.

3.6 Trading and settlement mechanism in NSE

3.6.1 Capital Market Segment

The trading on the NSE's Capital Market Segment (CM Segment) commenced on November 4, 1994 and within a year of its existence NSE became the largest stock exchange in the country. The growth of NSE turnover figures shows a significant rise from Rs. 1,805 crores in the year 1994-95 to Rs. 1,140,072 crores in 2004-05. The CM segment of NSE provides an efficient and transparent platform for trading of equity, preference shares, debentures, warrants, exchange traded funds as well as retail debt in government securities.

Trading Mechanism

The trading system, known as the **National Exchange for Automated Trading (NEAT)** system, is an on-line, anonymous, order-driven, screen-based trading system. In this system, a member can key into the computer quantities of securities and the prices at which he would transact and the transaction is executed as soon as it finds a matching sale or buy order from a counter party. The systems electronically match orders on a price/time priority and hence cut down on time and cost. It allows faster incorporation of price sensitive information into prevailing prices, thus increasing the informational efficiency of markets. It enables market participants to see the full market on a real-time basis, making the markets transparent. It allows a large number of participants, irrespective of their geographical locations, to trade with one another simultaneously, improving the depth and liquidity of the market. The system ensures full anonymity by accepting orders, big or small, from members without revealing their identity, thus providing equal access to everybody and provides a perfect audit trail by logging in the trade execution process in entirety.

The trading platform of the CM segment is accessed not only from the computer terminals from the premises of brokers spread over about 345 cities, but also from the personal computers in the homes of investors through the Internet and through hand held WAP enabled devices.

On-line IPOs (Initial Public Offerings)

The on-line trading system of NSE is used by companies to make IPOs through book building. It is a fully automated screen based bidding system that allows trading members to enter bids on behalf of their clients. All bids received by the system are numbered, time stamped, and stored in the book till the last day of the book building process, and the offer price is determined after the bid closing date. While ensuring efficient price discovery, this system reduces time taken for completion of the issue process. 52 companies have used the on-line IPO system of NSE by the end of March 2005.

Internet Trading

At the end of March 2005, 78 trading members on the CM segment provided internet based trading facility to investors. The members of the exchange in turn had registered 849,696 clients for web based access as on March 31, 2005. In the CM segment about 499lakh trades for Rs.81, 034crores, constituting 7.11% of total trading volume, were routed and executed through internet. The following table gives the growth of internet trading.

Year	Enabled Members	Registered Clients	Trading Volume (Rs. crore)	% of total trading volume
1999-00	3	--	--	--
2000-01	61	123,578	7287.81	0.54
2001-02	82	231,899	8,138.81	1.59
2002-03	80	346,420	15,360.76	2.48
2003-04	70	463,560	37,945.08	3.45
2004-05	78	849,696	81,033.81	7.11

Transaction Charges and Brokerage

The maximum brokerage chargeable by trading member in respect of trades effected in the securities admitted to dealing on the CM segment of the Exchange is fixed at 2.5% of the contract price, exclusive of statutory levies like, securities transaction tax, SEBI turnover fee, service tax and stamp duty. This maximum brokerage is inclusive of the brokerage charged by the sub-broker which shall not exceed 1.5% of contract price.

A member is required to pay the exchange transaction charges at the rate of 0.004% (Rs. 4 per Rs. 1 lakh) of the turnover. Trading members are also required to pay securities transaction tax (STT) on all delivery based transaction at the rate of 0.15% and in case of non-delivery transactions at the rate of 0.015% for equities.

Clearing & Settlement

While NSE provides a platform for trading to its trading members, the National Securities Clearing Corporation Ltd. (NSCCL) determines the funds/securities obligations of the trading members and ensures that trading members meet their obligations. The core processes involved in clearing and settlement are:

- Trade Recording:** The key details about the trades are recorded to provide basis for settlement. These details are automatically recorded in the electronic trading system of the exchanges.
- Trade Confirmation:** The parties to a trade agree upon the terms of trade like security, quantity, price, and settlement date, but not the counterparty which is the NSCCL. The electronic system automatically generates confirmation by direct participants.
- Determination of Obligation:** The next step is determination of what counter-parties owe, and what counter-parties are due to receive on the settlement date. The NSCCL interposes itself as a central counterparty between the counterparties to trades and nets the positions so that a member has security wise net obligation to receive or deliver a security and has to either pay or receive funds.
- Pay-in of Funds and Securities:** The members bring in their funds/securities to the NSCCL. They make available required securities in designated accounts with the depositories by the prescribed pay-in time. The depositories move the securities available in the accounts of members to the account of the NSCCL. Likewise members with funds obligations make available required funds in the designated accounts with clearing banks by the prescribed pay-in time. The NSCCL sends electronic instructions to the clearing banks to debit member's accounts to the extent of payment obligations. The banks process these instructions, debit accounts of members and credit accounts of the NSCCL.
- Pay-out of Funds and Securities:** After processing for shortages of funds/securities and arranging for movement of funds from surplus banks to deficit banks through RBI clearing, the NSCCL sends electronic instructions to the depositories/clearing banks to release pay-out

of securities/funds. The depositories and clearing banks debit accounts of the NSCCL and credit accounts of members. Settlement is complete upon release of pay-out of funds and securities to custodians/members.

(f) **Risk Management:** A sound risk management system is integral to an efficient settlement system. The NSCCL ensures that trading members' obligations are commensurate with their net worth. It has put in place a comprehensive risk management system, which is constantly monitored and upgraded to pre-empt market failures. It monitors the track record and performance of members and their net worth; undertakes on-line monitoring of members' positions and exposure in the market, collects margins from members and automatically disables members if the limits are breached. The risk management methods adopted by NSE have brought the Indian financial market in line with the international markets. The robustness of the risk management system of NSE was amply proved by the timely and default free settlement on highly volatile days like May 14 & 17, 2004, the two days when the market witnessed a fall of nearly 7.87% & 12.24% respectively. However, due to the robustness of the NSE's risk management system, tight controls of member positions, stringent margining etc. the settlements went through smoothly without any disruptions or disorder in the markets.

Settlement Agencies

The NSCCL, with the help of clearing members, custodians, clearing banks and depositories settles the trades executed on exchanges. The roles of each of these entities are explained below:

(a) **NSCCL:** The NSCCL is responsible for post-trade activities of a stock exchange. Clearing and settlement of trades and risk management are its central functions. It clears all trades, determines obligations of members, arranges for pay-in of funds/securities, receives funds/securities, processes for shortages in funds/securities, arranges for pay-out of funds/securities to members, guarantees settlement, and collects and maintains margins/collateral/ base capital/other funds. It is the counterparty to all settlement obligations of the members.

(b) **Clearing Members:** They are responsible for settling their obligations as determined by the NSCCL. They have to make available funds and/or securities in the designated accounts with clearing bank/depositories, as the case may be, to meet their obligations on the settlement day.

(c) **Custodians:** Custodian is a clearing member but not a trading member. He settles trades assigned to him by trading members. He is required to confirm whether he is going to settle a particular trade or not. If it is confirmed, the NSCCL assigns that obligation to that custodian and the custodian is required to settle it on the settlement day.

(d) **Clearing Banks:** Every clearing member is required to open a dedicated clearing account with one of the clearing banks. Based on his obligation as determined through clearing, the clearing member makes funds available in the clearing account for the pay-in and receives funds in case of a pay-out.

(e) **Depositories:** Depositories help in the settlement of the dematerialized securities. Each custodian/clearing member is required to maintain a clearing pool account with the depositories. He is required to make available the required securities in the designated account on settlement day. The depository runs an electronic file to transfer the securities from accounts of the custodians/clearing member to that of NSCCL. As per the schedule of allocation of securities determined by the NSCCL, the depositories transfer the securities on the pay-out day from the account of the NSCCL to those of members/custodians.

(f) **Professional Clearing Member:** NSCCL admits special category of members namely, professional clearing members. Professional Clearing Member (PCM) may clear and settle trades executed for their clients (individuals, institutions etc.). In such an event, the functions and responsibilities of the PCM would be similar to Custodians. PCMs may also undertake clearing and settlement responsibility for trading members. In such a case, the PCM would settle the trades carried out by the trading members connected to them. A PCM has no trading rights but has only clearing rights, i.e. he clears the trades of his associate trading members and institutional clients.

Settlement Cycles

NSCCL clears and settles trades as per well-defined settlement cycles, as presented in Table 4-13. Since the beginning of the financial year 2003, all securities are being traded and settled under T+2 rolling settlement. The NSCCL notifies the consummated trade details to clearing members/ custodians on the trade day. The custodians affirm back the trades to NSCCL by T+1 day. Based on the affirmation, NSCCL nets the positions of counterparties to determine their obligations. A clearing member has to pay-in/pay-out funds and/or securities. A member has a security-wise net obligation to receive/deliver a security. The obligations are netted for a member across all securities to determine his fund obligations and he has to either pay or receive funds. Members' pay-in/pay-out obligations are determined latest by T+1 day and are forwarded to them on the same day so that they can settle their obligations on T+2 day. The securities/funds are paid-in/ paid-out on T+2 day and the settlement is complete in 3 days from the end of the trading day.

Risk Management System

NSCCL being aware of the importance of the risk containment measures has a dedicated Risk Group which looks into aspects relating to the risk management. These measures have been repeatedly reviewed and revised. The risk containment measures in vogue are described below:

1. Capital Adequacy

The capital adequacy requirements stipulated by the NSE are substantially in excess of the minimum statutory requirements as also in comparison to those stipulated by other stock exchanges. A person seeking membership in the CM and F&O segment is required to have a net worth of Rs.1crore, and keep an interest free security deposit of Rs.1.25crore and collateral security deposit of Rs.0.25crore with the Exchange/NSCCL. The deposits kept with the Exchange as part of the membership requirement are taken as base minimum capital of the member to determine the member's intra-day trading limit and/or gross exposure limit. Additional base capital is required to be deposited by the member for taking additional exposure.

2. Trading and Exposure Limits

NSCCL imposes limits on turnover and exposure in relation to the base minimum capital or additional base capital of a member, which is the amount of funds, and securities that a member keeps with the Exchange/NSCCL.

The members are subject to limits on trading volumes in a day as well as exposure at any point of time. Gross intra-day turnover of a member shall not exceed 25 times the net capital (cash deposit plus security deposit). Gross exposure (aggregate of net cumulative outstanding positions in each security) of a member at any point of time shall not exceed 8.5 times the total base capital (not utilised towards margin) up to Rs. 1crore. If a member has free capital in excess of Rs. 1crore, his exposure shall not exceed Rs.8.5crore plus 10 times of the capital in excess of Rs.1crore. Members exceeding these limits are automatically and instantaneously disabled by the automated trading system. A penalty of Rs.5, 000 is levied for each violation of gross exposure limit and intra-day turnover limit. In case of second and subsequent violation during the day the, penalty will be in multiples of Rs.5, 000 for each such instance.

3. Margin Requirements

NSCCL imposes stringent margin requirements as a part of its risk containment measures. The categorisation of stocks for imposition of margins has the structure as given below;

- The stocks which have traded at least 80% of the days for the previous 18 months shall constitute the Group I and Group II.
- Out of the scrips identified above, the scrips having mean impact cost of less than or equal to 1% shall be categorised under Group I and the scrips where the impact cost is more than 1, shall be categorised under Group II.
- The remaining stocks shall be categorised under Group III.

The daily margin comprises of the sum of Mark to Market Margin (MTM margin) and Value at Risk-based Margin (VaR-based margin). VaR margin is applicable for all securities in rolling settlement. All securities are classified into three groups for the purpose of VaR margin.

4. VaR Based Margins

For the securities listed in Group I Scrip wise daily volatility calculated using the exponentially weighted moving average methodology that is used in the index futures market and the scrip wise daily VaR would be 3.5 times the volatility so calculated.

For the securities listed in Group II the VaR margin shall be higher of scrip VaR (3.5 sigma) or three times the index VaR, and it shall be scaled up by root 3.

For the securities listed in Group III, the VaR margin would be equal to five times the index VaR and scaled up by square root of 3.

VaR margin rate for a security constitute the following:

1. Value at Risk (VaR) based margin, which is arrived at, based on the methods stated above. The index VaR, for the purpose, would be the higher of the daily Index VaR based on S&P CNX NIFTY or BSE SENSEX. The index VaR would be subject to a minimum of 5%.
2. Additional VaR Margin: 6% as specified by SEBI.
3. Security specific Margin: NSCCL may stipulate security specific margins for the securities from time to time.

The VaR based margin would be rounded off to the next higher integer (For eg, if the VaR based Margin rate is 10.01, it would be rounded off to 11.00) and capped at 100%.

The VaR margin rate computed as mentioned above will be charged on the net outstanding position (buy value-sell value) of the respective clients on the respective securities across all open settlements. The net position at a client level for a member is arrived at and thereafter, it is grossed across all the clients for a member to compute gross exposure for margin calculation.

5. Mark-to-Market Margin

Mark to market margin is computed on the basis of mark to market loss of a member. Mark to market loss is the notional loss which the member would incur in case the cumulative net outstanding position of the member in all securities, at the end of the relevant day were closed out at the closing price of the securities as announced at the end of the day by the NSE. Mark to market margin is calculated by marking each transaction in scrip to the closing price of the scrip at the end of trading. In case the security has not been traded on a particular day, the latest available closing price at the NSE is considered as the closing price. In the event of the net outstanding position of a member in any security being nil, the difference between the buy and sell values would be considered as notional loss for the purpose of calculating the mark to market margin payable.

MTM profit/loss across different securities within the same settlement is set off to determine the MTM loss for a settlement. Such MTM losses for settlements are computed at client level. Non-payment of the margin attracts penal charge @ 0.07% per day of the amount not paid throughout the period of non-payment. Trades done by trading members on behalf of institutions are, however, exempt from margin and exposure requirements.

3.6.2 Wholesale Debt Market (WDM) segment

The Exchange started its trading operations in June 1994 with the introduction of the Wholesale Debt Market (WDM) segment. This segment provides a trading platform for a wide range of fixed income securities, which includes central government securities, treasury bills (T-bills), state development loans (SDLs), bonds issued by public sector undertakings (PSUs), floating rate bonds (FRBs), zero coupon bonds (ZCBs), index bonds, commercial papers (CPs), certificates of deposit (CDs), corporate debentures, SLR and non-SLR bonds issued by financial institutions (FIs), bonds issued by foreign institutions and units of mutual funds (MFs).

To further encourage wider participation of all classes of investors, including the retail investors, the Retail Debt Market segment (RDM) was launched on January 16, 2003. This segment provides for a nation wide, anonymous, order driven, screen based trading system in government securities. In the first phase, all outstanding and newly issued central government securities were traded in the retail debt market segment. Other securities like state government securities, T-bills etc. will be added in subsequent phases. The settlement cycle is same as in the case of equity market i.e., T+2 rolling settlement cycle.

Trading Mechanism

The WDM trading system, known as NEAT (National Exchange for Automated Trading), is a fully automated screen based trading system that enables members across the country to trade simultaneously with enormous ease and efficiency. It supports an anonymous order driven market which operates on a price/time priority and provides tremendous flexibility to users in terms of orders with various time/price/quantity related conditions that can be placed on the system. It also provides on-line market information like total order depth, best buys and sells available, quantity traded, the high, low and last traded price for securities are available at all points of time.

The WDM Trading system provides two market sub-types: continuous market and negotiated market. In the continuous market, the buyer and seller do not know each other and they put their best buy/sell orders, which are stored in order book with price/time priority. If orders match, it results into a trade. The trades in WDM segment are settled directly between the participants, who take an exposure to the settlement risk attached to any unknown counter-party. In the NEAT-WDM system, all participants can set up their counter-party exposure limits against all probable counter-parties. This enables the trading member/participant to reduce/ minimize the counter-party risk associated with the counter-party to trade. A trade does not take place if both the buy/sell participants do not invoke the counter-party exposure limit in the trading system.

In the negotiated market, the trades are normally decided by the seller and the buyer outside the exchange, and reported to the Exchange through a trading member for approval. Thus, deals negotiated or structured outside the exchange are disclosed to the market through NEAT-WDM system. In negotiated market, as buyers and sellers know each other and have agreed to trade, no counter-party exposure limit needs to be invoked.

The trades on the WDM segment could be either outright trades or repo transactions with settlement cycle of T+0 to T+2 and repo periods (1 to 14 days). W.e.f. May 24 2005, settlement of all outright secondary market transactions in government securities will be standardised to T+1. In case of repo transactions in government securities first leg can be settled either on T+0 basis or T+1 basis. For every trade, it is necessary to specify the number of settlement days and the trade type (repo or non-repo), and in the event of a repo trade, the repo term and repo rate.

Transaction Charges

The Exchange has specified the maximum rates of brokerage that can be levied by trading members for trades on WDM. The rate depends on the type of security and value of transactions. The rate for central government securities ranges from 5 paise to 25 paise for every Rs. 100 of transactions depending on the order value. Similarly it ranges from 5 paise to 50 paise for state government securities and institutional bonds also depending on the order value. In case of PSU, FRBs, CPs and Debentures, the brokerage rate varies between 10 paise and 50 paise for every Rs. 100 of transaction depending on the order value. It is 1% of the order value for debentures, securitised debt and commercial paper.

A trading member is required to pay transaction charges @ 5 paise per Rs. 1 lakh gross trade value up to Rs. 25,000 crore and @2 paise per Rs. 1 lakh gross traded value above Rs. 25,000 crore subject to minimum of Rs. 10,000 per annum.

Settlement

Trades on WDM segment have a unique settlement date specified upfront at the time of order entry and is used as a matching parameter. The Exchange allows settlement periods ranging

from same day (T+0) settlement to a maximum of three days (T+2) in case of outright trades as well as repo trades and repo term of 1 to 14 days for repo trades. However, w.e.f. May 24 2005, the settlement for outright will be standardised to T+1. The members and participants report the settlement details to the Exchange, which only monitors settlement. The actual settlement of funds and securities are effected directly between participants or through Reserve Bank of India (RBI). All trades in government securities are reported to RBI-SGL through the Negotiated Dealing System (NDS) of RBI, and Clearing Corporation of India Limited (CCIL) provides settlement guarantee for transactions in government securities including repos. The trades are settled on a net basis through the DvP-III system. In the DvP-III, the settlement of Securities and Funds are carried out on a net basis.

For securities other than government securities and T-bills, trades are settled on a gross basis directly between participants on delivery versus payment basis.

NSE-VaR System

NSE has developed a VaR system for measuring the market risk inherent in Government of India (GOI) securities. NSE-VaR system builds on the NSE database of daily yield curves (ZCYC) and provides measures of VaR using 5 alternative methods (variance-covariance, historical simulation method, weighted normal, weighted historical simulation and extreme value method). Together, these 5 methods provide a range of options for market participants to choose from.

NSE-VaR system releases daily estimates of security-wise VaR at 1-day and multi-day horizons for securities traded on WDM segment of NSE and all outstanding GoI securities with effect from January 1, 2002. Participants can compute their portfolio risk as weighted average of security-wise VaRs, the weights being proportionate to the market value of a given security in their portfolio.

Suggested Questions

1. Explain the working of National Stock Exchange.
2. Explain the trading system/mechanism in stock exchange
3. How is the margin requirements calculated?
4. What are the key features of the National Stock Exchange?
5. What are the salient features of wholesale debt markets in India.
6. What is the methodology adopted in security trading on stock exchange?
7. Explain the screen based trading system adopted in NSE.

UNIT-IV

PRIMARY AND SECONDARY MARKET REGULATIONS

Learning Objectives: This unit aims to provide the students with an introduction to SEBI and its regulation mechanism. After going through Unit IV, students will be able to learn the following concepts:

- Policy shift in capital market regulation
- Primary and secondary market regulation
- SEBI and its regulation mechanism
- SEBI Guidelines to FII, individual investor
- Modes of raising capital from primary market
- Methods of marketing securities
- Book Building process

4.1 Policy shift in capital market regulation

The establishment of SEBI as a statutory body by the enactment of the Securities and Exchange Board of India (SEBI) Act, 1992, was the first step towards centralized regulation of the capital markets. Until then, the following three principal acts characterized the regulatory framework for the capital and securities markets:

- The Capital Issues (Control) Act, 1947, which until its abolition in 1992 restricted issues' access to capital markets, controlled pricing of IPOs and other issues and generally constricted the capital market in the ironclad grip of Central government control;
- The Companies Act, 1956, which sets out the code of behaviour and conduct for the corporate sector in general with little differentiation between major and minor companies' and
- The Securities Contracts (Regulations) Act, 1956, which gave the Central Government control of secondary markets and stock exchanges.

Most current regulations were introduced by SEBI. Several areas now under SEBI's regulatory control were previously unregulated. In many ways, a paradigm shift is under way.

4.2 Regulatory framework for Securities Market:

SEBI was entrusted with the statutory responsibility to, inter alias:

- Regulate the business of stock exchange and other securities markets.
- Register and regulate the work of stock brokers, sub-brokers, merchant bankers, underwriters, portfolio managers, investment advisers and other intermediaries associated with the securities markets.
- Prohibit fraudulent and unfair trade practices relating to securities.
- Prohibit insider trading in securities.
- Regulate substantial acquisitions of shares and takeovers of companies and
- Regulate collective investment schemes.

4.3 Role of SEBI vis-à-vis Capital Market and Reforms

a) New Issue Market:

Since June, 1992 in the wake of the abolition of the control on capital issues by the Government of India as the second step for reforms in the capital market, the control on pricing of capital and access to the market has also been abolished. SEBI has been entrusted with the responsibilities to look after the interest of investors in this regard by providing them with adequate and full disclosures in the offer documents, and by regulating the various intermediaries connected with the issue of capital viz. Merchant Bankers, Underwriters,

Registrars, etc. Towards this the format of the prospectus has been redesigned to include information relating to specific areas such as terms, objectives, cost of the project, means of financing, history and background of the company, its management and promoters, infrastructure facilities, schedule of implementations, future prospects including capacity utilization, stock market data for existing companies, particulars of the companies within the same management, details of outstanding litigation & defaults, any material developments after the date of the latest balance sheet and its impact on the performance and prospects of the company. More or less similar requirements have also been laid down in respect of letter of offer covering the rights issues.

b) Proportional Allotment:

One of the most sweeping changes in the new issue market introduced by SEBI is the issue related to fixing the basis of allotment of shares on over subscription. The new method introduced, popularly known as the proportional method of share allotment, ensured that the allotment of shares to each category (classified by number of share applied for) were in the same proportion as the aggregate of shares applied for such category, to the aggregate number of share applied in the whole issue. The provision, in effect, paved way for the corporate sector and those making applications in the issues accounting for a lion's share.

c) Raising Minimum Application Size:

Another change that was introduced was that of raising the benchmark of minimum size of applications in a public issue. According to the new SEBI guidelines, the minimum size of the application for any public issue, which was earlier, placed at 100 shares (or for a minimum liability of Rs. 1,000 for each application), was raised to 500 shares (in case of issues at par) or for an application that would subsequently create a minimum liability of Rs. 5,000 per application. The provision sought to check the rising number of investor grievances in case of new issues due to large volumes and practice of multiple applications. The new provision too, in line with the proportional allotment system, led to the small investors getting marginalized from the New Issue market.

d) Introduction to Price Band on Issue:

For the corporate as well as the issue managers, one of the welcome changes introduced during the year 1994 has been the provision to allow a price band of 20 percent on the issue price, at the time of the prospectus/letter of offers which must be sent to SEBI for vetting. The provision, which has simplified the task of merchant bankers on pricing of issues and brought down the risk element of the promoters in issue pricing, has ensured that the issue price is finalised by them, just before the issue opens. The issue price is now required to be in the price band that is specified in the vetted prospectus. This has ensured a higher degree of flexibility to promoters and issue managers to the changing market circumstances, before the date of issue is finalised.

e) Relaxation in Underwriting Stipulations:

The major change introduced by SEBI, having far reaching consequences, was the move to waive the earlier stipulation of compulsory underwriting of all public issues. The underwriting, which was earlier required to be done for all prospective public issues before seeking SEBI-clearance, has since been made a voluntary proposition. That is, it has become the promoters'/issue managers' options on whether or not get the proposed public issue underwritten partly or fully. While the relaxation in the underwriting has made a definite dent into the business of stockers doing underwriting business, it has in a way, simplified the process of new companies seeking entry into the primary market, since the underwriters are no longer required to be convinced by the promoters, before floating their issues.

f) Permission of Firm Allotment in Public Issues to FIs/Mutual funds:

One of the reforms to new issue market was the permission to companies going for public issues, to make firm allotments to the mutual funds and financial institutions.

4.4 Powers and Functions of SEBI

A. Functions of Board

- Subject to the provisions of this Act, it shall be the duty of the Board to protect the interests of investors in securities and to promote the development of, and to regulate the securities market, by such measures as it thinks fit.
- (a) Regulating the business in stock exchanges and any other securities markets;
- (b) Registering and regulating the working of stock brokers, sub-brokers, share transfer agents, bankers to an issue, trustees of trust deeds, registrars to an issue, merchant bankers, underwriters, portfolio managers, investment advisers and such other intermediaries who may be associated with securities markets in any manner;
Registering and regulating the working of the depositories participants, custodians of securities, foreign institutional investors, credit rating agencies and such other intermediaries as the Board may, by notification, specify in this behalf
- (c) Registering and regulating the working of venture capital funds and collective investment schemes including mutual funds;
- (d) Promoting and regulating self-regulatory organizations;
- (e) Prohibiting fraudulent and unfair trade practices relating to securities markets;
- (f) Promoting investors' education and training of intermediaries of securities markets;
- (g) Prohibiting insider trading in securities;
- (h) Regulating substantial acquisition of shares and take-over of companies;
- (i) Calling for information from, undertaking inspection, conducting inquiries and audits of the stock exchanges, mutual funds, other persons associated with the securities market intermediaries and self-regulatory organizations in the securities market;
- (ia) Calling for information-and record from any bank or any other authority or board or corporation established or constituted by or under any Central, State or Provincial Act in respect of any transaction in securities which is under investigation or inquiry by the Board;"
- (j) Performing such functions and exercising such powers under the provisions of the Securities Contracts (Regulation) Act, 1956(42 of 1956), as may be delegated to it by the Central Government;
- (k) Levying fees or other charges for carrying out the purposes of this section;
- (l) Conducting research for the above purposes;
- (la) Calling from or furnishing to any such agencies, as may be specified by the Board, such information as may be considered necessary by it for the efficient discharge of its functions;
- (m) Performing such other functions as may be prescribed.
- (n) the Board may take measures to undertake inspection of any book, or register, or other document or record of any listed public company or a public company (not being intermediaries referred to in section 12) which intends to get its securities listed on any recognised stock exchange where the Board has reasonable grounds to believe that such company has been indulging in insider trading or fraudulent and unfair trade practices relating to securities market.
- (o) the Board shall have the same powers as are vested in a civil court under the Code of Civil Procedure, 1908 (5 of 1908), while trying a suit, in respect of the following matters, namely:
 - i. The discovery and production of books of account and other documents, at such place and such time as may be specified by the Board;
 - ii. Summoning and enforcing the attendance of persons and examining them on oath;
 - iii. Inspection of any books, registers and other documents of any person referred to in section 12, at any place
 - iv. Inspection of any book, or register, or other document or record of the company referred to in sub-section (2A);
 - v. Issuing commissions for the examination of witnesses or documents.

(P) the Board may, by an order, for reasons to be recorded in writing, in the interests of investors or securities market, take any of the following measures, either pending investigation or inquiry or on completion of such investigation or inquiry, namely:-

- (a) Suspend the trading of any security in a recognized stock exchange;
- (b) Restrain persons from accessing the securities market and prohibit any person associated with securities market to buy, sell or deal in securities;
- (c) Suspend any office-bearer of any stock exchange or self-regulatory organization from holding such position;
- (d) Impound and retain the proceeds or securities in respect of any transaction which is under investigation;
- (e) Attach, after passing of an order on an application made for approval by the Judicial Magistrate of the first class having jurisdiction, for a period not exceeding one month, one or more bank account or accounts of any intermediary or any person associated with the securities market in any manner involved in violation of any of the provisions of this Act, or the rules or the regulations made there-under.
Provided that only the bank account or accounts or any transaction entered therein, so far as it relates to the proceeds actually involved in violation of any of the provisions of this Act, or the rules or the regulations made there-under shall be allowed to be attached;
- (f) Direct any intermediary or any person associated with the securities market in any manner not to dispose of or alienate an asset forming part of any transaction which is under investigation:

Provided that the Board may take any of the measures specified in clause (d) or clause (e) or clause (f), in respect of any listed public company or a public company (not being intermediaries referred to in section 12) which intends to get its securities listed on any recognized stock exchange where the Board has reasonable grounds to believe that such company has been indulging in insider trading or fraudulent and unfair trade practices relating to securities market:

Provided further that the Board shall, either before or after passing such orders, give an opportunity of hearing to such intermediaries or persons concerned.

B. Issue of prospectus, offer document, and advertisement soliciting money for issue of securities

Without prejudice to the provisions of the Companies Act, 1956(1 of 1956), the Board may, for the protection of investors, -

- (a) Specify, by regulations -
 - (i) The matters relating to issue of capital, transfer of securities and other matters incidental thereto; and
 - (ii) The manner in which such matters shall be disclosed by the companies;
- (b) By general or special orders -
 - (i) Prohibit any company from issuing prospectus, any offer document, or advertisement soliciting money from the public for the issue of securities.
 - (ii) Specify the conditions subject to which the prospectus, such offer document or advertisement, if not prohibited, may be issued.

Without prejudice to the provisions of section 21 of the Securities Contracts (Regulation) Act, 1956(42 of 1956), the Board may specify the requirements for listing and transfer of securities and other matters incidental thereto

C. Power to issue directions

SEBI has the power to issue directions if the Board is satisfied that it is necessary, in the interest of investors, or orderly development of securities market;

- to prevent the affairs of any intermediary or other persons referred to in section 12 being conducted in a manner detrimental to the interest of investors or securities market;

- To secure the proper management of any such intermediary or person, it may issue such directions,
- To any person or class of persons referred to in section 12, or associated with the securities market; or
- To any company in respect of matters specified in section 11A, as may be appropriate in the interests of investors in securities and the securities market

D. Investigation

(1) Where the Board has reasonable ground to believe that -

- (a) The transactions in securities are being dealt with in a manner detrimental to the investors or the securities market; or
- (b) any intermediary or any person associated with the securities market has violated any of the provisions of this Act or the rules or the regulations made or directions issued by the Board there under,

It may, at any time by order in writing, direct any person (hereafter in this section referred to as the Investigating Authority) specified in the order to investigate the affairs of such intermediary or persons associated with the securities market and to report thereon to the Board.

(2) Without prejudice to the provisions of sections 235 to 241 of the Companies Act, 1956(1 of 1956), it shall be the duty of every manager, managing director, officer and other employee of the company and every intermediary referred to in section 12 or every person associated with the securities market to preserve and to produce to the Investigating Authority or any person authorized by it in this behalf, all the books, registers, other documents and record of, or relating to, the company or, as the case may be, of or relating to, the intermediary or such person, which are in their custody or power.

(3) The Investigating Authority may require any intermediary or any person associated with securities market in any manner to furnish such information to, or produce such books, or registers, or other documents, or record before it or any person authorized by it in this behalf as it may consider necessary if the furnishing of such information or the production of such books, or registers, or other documents, or record is relevant or necessary for the purposes of its investigation.

(4) The Investigating Authority may keep in its custody any books, registers, other documents and record produced under sub-section (2) or sub-section (3) for six months and thereafter shall return the same to any intermediary or any person associated with securities market by whom or on whose behalf the books, registers, other documents and record are produced:

Provided that the Investigating Authority may call for any book, register, other document and record if they are needed again:

Provided further that if the person on whose behalf the books, registers, other documents and record are produced requires certified copies of the books, registers, other documents and record produced before the Investigating Authority, it shall give certified copies of such books, registers, other documents and record to such person or on whose behalf the books, registers, other documents and record were produced.

(5) Any person, directed to make an investigation under sub-section (1), may examine on oath, any manager, managing director, officer and other employee of any intermediary or any person associated with securities market in any manner, in relation to the affairs of his business and may administer an oath accordingly and for that purpose may require any of those persons to appear before it personally.

(6) If any person fails without reasonable cause or refuses -

- (a) to produce to the Investigating Authority or any person authorised by it in this behalf any book, register, other document and record which it is his duty under sub-section (2) or sub-section (3) to produce; or
- (b) to furnish any information which is his duty under sub-section (3) to furnish; or
- (c) to appear before the Investigating Authority personally when required to do so under sub-section (5) or to answer any question which is put to him by the Investigating Authority in pursuance of that sub-section; or

(c) to sign the notes of any examination referred to in sub-section (7), he shall be punishable with imprisonment for a term which may extend to one year, or with fine, which may extend to one crore rupees, or with both, and also with a further fine which may extend to five lakh rupees for every day after the first during which the failure or refusal continues.

(7) Notes of any examination under sub-section (5) shall be taken down in writing and shall be read over to, or by, and signed by, the person examined, and may thereafter be used in evidence against him.

(8) Where in the course of investigation, the Investigating Authority has reasonable ground to believe that the books, registers, other documents and record of, or relating to, any intermediary or any person associated with securities market in any manner, may be destroyed, mutilated, altered, falsified or secreted, the Investigating Authority may make an application to the Judicial Magistrate of the first class having jurisdiction for an order for the seizure of such books, registers, other documents and record.

(9) After considering the application and hearing the Investigating Authority, if necessary, the Magistrate may, by order, authorise the Investigating Authority –

- (a) to enter, with such assistance, as may be required, the place or places where such books, registers, other documents and record are kept;
- (b) to search that place or those places in the manner specified in the order; and
- (c) to seize books, registers, other documents and record, if considers necessary for the purposes of the investigation:

Provided that the Magistrate shall not authorize seizure of books, registers, other documents and record, of any listed public company or a public company (not being the intermediaries specified under section 12) which intends to get its securities listed on any recognised stock exchange unless such company indulges in insider trading or market manipulation.

(10) The Investigating Authority shall keep in its custody the books, registers, other documents and record seized under this section for such period not later than the conclusion of the investigation as it considers necessary and thereafter shall return the same to the company or the other body corporate, or, as the case may be, to the managing director or the manager or any other person, from whose custody or power they were seized and inform the Magistrate of such return;

Provided that the Investigating Authority may, before returning such books, registers, other documents and record as aforesaid, place identification marks on them or any part thereof.

(11) Save as otherwise provided in this section, every search or seizure made under this section shall be carried out in accordance with the provisions of the Code of Criminal Procedure, 1973(2 of 1974), relating to searches or seizures made under that Code.

E. Cease and desist proceedings

If the Board finds, after causing an inquiry to be made, that any person has violated, or is likely to violate, any provisions of this Act, or any rules or regulations made there under, it may pass an order requiring such person to cease and desist from committing or causing such violation:

Provided that the Board shall not pass such order in respect of any listed public company or a public company (other than the intermediaries specified under section 12) which intends to get its securities listed on any recognized stock exchange unless the Board has reasonable grounds to believe that such company has indulged in insider trading or market manipulation.

4.5 Procedure for listing of securities

Listing of securities means the inclusion of the securities in the official list of stock exchange for the purpose of trading. A stock exchange does not deal in the securities of all companies. It has to select the companies whose securities may be allowed to be bought and

sold. The companies selected for this purpose are included in the official trade list of the stock exchange.

As per the Securities Contract Rules, 1957, a public company desirous of getting its securities listed has to apply for the purpose to the stock exchange and forward with its application the following documents and particulars:

- (i) Memorandum and articles of association and in the case of a debenture issue, a copy of the trust-deed.
- (ii) Copies of all prospectuses or statement in lieu of prospectuses issued by the company at any time.
- (iii) Copies of offers for sale and circulars or advertisement offering any securities for subscription or sale during the last 5 years
- (iv) Copies of balance-sheets and audited accounts for the last 5 years
- (v) A statement showing
 - dividends and cash bonuses
 - Dividends or interest in arrears if any
 - Brokers and sub-brokers
 - Managing and technical directors, manager, general manager, sales manager or secretary
 - Particulars of share and debentures issued
 - Particulars of shares forfeited
 - A list of highest ten holders of each class
 - Particular of shares or debentures for which permission to deal is applied for.

4.6 SEBI guidelines for FII (Foreign Institutional Investors)

The SEBI has issued a list of guidelines for FIIs. Some of the important guidelines are listed below:

- (i) FIIs would be required to obtain an initial registration with SEBI for securities markets before any investment is made by them in the securities of companies listed on the stock exchanges in India.
- (ii) Since there are foreign exchange controls also in force, FIIs shall also file with SEBI another application addressed to RBI for seeking various permissions under FERA, in a format that would be specified by RBI for this purpose.
- (iii) For granting registration to the FII, SEBI shall take into account, the track record of the FII, its professional competence, financial soundness, experience and such other criteria that may be considered by SEBI to be relevant.
- (iv) SEBI's initial registration would be valid for five years
- (v) RBI's general permission under FERA would enable the registered FII to buy, sell and realize capital gains on investment made
- (vi) There would be no restriction on the volume of investment-minimum or maximum for the purpose of entry of FIIs in the primary/secondary
- (vii) Portfolio investments in primary or secondary markets will be subject to a ceiling of 24 percent of issued share capital for the total holding of all registered FIIs, in any one company

4.7 Guidelines to Investors

The SEBI has issued a list of guidelines for individual investors for their protections

- (i) Deal with a registered member of the stock exchange. If you are dealing with a sub-broker, make sure that all bills and contracts are made in the name of a registered broker.
- (ii) Insist that all your deals are done in the trading ring or electronically recorded.
- (iii) Give specific orders to buy and sell within the fixed price limits and/or time periods within which orders have to be executed.
- (iv) Insist on contract notes to be passed on to you on the dates, when the orders are executed.

- (v) Make sure that your deal is registered with the stock exchange in a Souda Block Book or recorded electronically.
- (vi) Collect a settlement table from the stock exchange mentioning the pay-in and pay-out days.
- (vii) Keep separate records of dealings in specified shares (Group A) and non-specified shares (Group B1, and B2). The settlement for each is on different days.
- (viii) Execute periodic settlements of dues and delivery of shares to avoid accumulation of transactions,
- (ix) Insist on delivery. If the company returns your papers and shares with objections, contact your broker immediately.
- (x) Ensure that shares bought are transferred in your name before the company's book closure date.
- (xi) Complain if the broker does not deliver the shares bought in your name.
- (xii) Do not sell shares that are not transferred in your name after the book closure as these are not valid in the market.
- (xiii) Do not sell/deal in shares where any one of the holders has passed away.
- (xiv) Do not expect the money for shares to come immediately. It will take at least a week at present from the date of transaction.
- (xv) Unless you have special arrangement with the broker, do not expect the adjustment of purchases and sales against one another. One pays first and receives later.
- (xvi) Do not take delays or harassment lying down. You have to complain to the Grievance Cell of the stock exchange or the Securities and Exchange Board of India (SEBI) in case of delay or harassment.

4.8 Primary Market

Meaning

Primary market also known as New Issues Market (NIM) is a market for raising fresh capital in the form of shares and debentures. Corporate enterprises, which are desirous of raising capital funds through the issue of securities, approach the primary market and issues financial securities for long-term funds. The primary market allows for the formation of capital in the country and the accelerated industrial and economic development.

Modes of raising capital

Following are the popular ways by which capital funds are raised in the primary market:

- Pure Prospectus Method / Public Issue
- Private Placement Method
- Initial Public Offer (IPO) Method
- Rights Issue Method

Pure Prospectus Method

The method whereby a corporate enterprise mops up capital funds from the general public by means of an issue of a prospectus, is called 'Pure Prospectus Method'. It is the most popular method of making public issue of securities by corporate enterprises.

Exclusive subscription under this method, the new issues of a company are offered for exclusive subscription of general public. According to the SEBI norms, a minimum of 49 percent of the total issue at a time is to be offered to public.

Issue price direct offer is made by the issuing company to the general public to subscribe to the securities at a stated price. The securities may be issued either at par, or at a discount or at a premium.

Public issue through the 'pure prospectus method' is usually underwritten. This is to safeguard the interest of the issuer in the event of an unsatisfactory response from public.

Private Placement Method

A method of marketing of securities whereby the issuer makes the offer of sale to individuals and institutions privately without the issue of a prospectus is known as 'Private

Placement Method'. This is the most popular method gaining momentum in recent times among the corporate enterprises.

Under this method, securities are offered directly to large buyers with the help of share brokers. This method works in a manner similar to the 'Offer for Sale Method' whereby securities are first sold to intermediaries such as issues houses, etc. They are in turn placed at higher prices to individuals and institutions. Institutional investors play a significant role in the realm of private placing. The expenses relating to placement are borne by such investors.

Initial Public Offer (IPO) Method

The public issue made by corporate entity for the first time in its life is called 'Initial Public Offer'(IPO). Under this method of marketing, securities are issued to successful applicants on the basis of the orders placed by them through their brokers.

The essential steps involved in this method of marketing of securities are as follows:

1. Order Broker receives order from the client and places orders on behalf of the client with the issuer.
2. Share allocation: The issuer finalizes share allocation and informs the broker regarding the same.
3. The Client: The broker advises the successful clients of the share allocation. Clients then submit the application forms for shares and make payment to the issuer through the broker.
4. Primary issue account: The issuer opens a separate escrow account (primary issue account) for the primary market issue. The clearing house of the exchange debits the primary issue account of the broker and credits the issuer's account.
5. Certificates: Certificates are then delivered to investors. Otherwise depository account may be credited.

Rights Issue Method

Where the shares of an existing company are offered to its existing shareholders, it takes the form of 'rights issue'. Under this method, the existing company issues shares to its existing shareholders in proportion to the number of shares already held by them.

The relevant guidelines issued by the SEBI in this regard are as follows:

1. Shall be issued only by listed companies.
2. Announcement regarding rights issue once made, shall not be withdrawn and where withdrawn, no security shall be eligible for listing up to 12 months.
3. Underwriting as to rights issue is optional and appointment for Registrar is compulsory.
4. Appointment of category I Merchant Bankers holding a certificate of registration issued by SEBI shall be compulsory.
5. Rights shares shall be issued only in respect of fully paid shares
6. Letter of Offer shall contain disclosures as per SEBI requirements
7. Agreement shall be entered into with the depository for materialization of securities to be issued
8. Issue shall be kept open for a minimum period of 30 days and for a maximum period of 60 days.
9. A minimum subscription of 90 percent of the issue shall be received
10. No reservation is allowed for rights issue as regards FCDs and PCDs
11. A 'No Complaints Certificate' is to be filled by the 'Lead Merchant Banker' with the SEBI after 21 days from the date of issue of offer document
12. Obligatory for a company where increase in subscribed capital is necessary after two years of its formation or after one year of its first issue of shares, whichever is earlier (this requirement may be dispensed with by a special resolution)

Book-building Method

A method of marketing the shares of a company whereby the quantum and the price of the securities to be issued will be decided on the basis of the 'bids' received from the prospective shareholders by the lead merchant bankers is known as 'book-building method'.

- (v) Make sure that your deal is registered with the stock exchange in a Souda Block Book or recorded electronically.
- (vi) Collect a settlement table from the stock exchange mentioning the pay-in and pay-out days.
- (vii) Keep separate records of dealings in specified shares (Group A) and non-specified shares (Group B1, and B2). The settlement for each is on different days.
- (viii) Execute periodic settlements of dues and delivery of shares to avoid accumulation of transactions,
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Private Placement Method

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Book-building facility is available as an alternative to firm allotment. Accordingly, a company can opt for book-building route for the sale of shares to the extent of the percentage of the issue that can be reserved for firm allotment as per the prevailing SEBI guidelines.

The book-building process involves the following steps:

1. **Appointment of book-runners:** The first step in the book-building process is the appointment by the issuer company, of the book-runner, chosen from one of the lead merchant bankers. The book-runner in turn forms a syndicate for the book building. A syndicate member should be a member of National Stock Exchange (NSE) or Over-The-Counter Exchange of India (OTCEI). Offers of 'bids' are to be made by investors to the syndicate members, who register the demands of investors. The bid indicates the number of shares demanded and the prices offered. This information, which is stored in the computer, is accessible to the company management or to the book-runner. The name of the book-runner is to be mentioned in the draft prospectus submitted to SEBI.
2. **Drafting prospectus:** The draft prospectus containing all the information except the information regarding the price at which the securities are offered is to be filed with SEBI as per the prevailing SEBI guidelines.
3. **Circulating draft prospectus:** A copy of the draft prospectus filed with SEBI is to be circulated by the book-runner to the prospective institutional buyers who are eligible for firm allotment and also to the intermediaries who are eligible for firm allotment and also to the intermediaries who are eligible to act as underwriters.
4. **Maintaining offer records:** The book-runner maintains a record of the offers received.
5. **Intimation about aggregate orders:** The underwriters and the institutional investors shall give intimation on the aggregate of the offers received to the book-runner.
6. **Bid analysis:** The bid analysis is carried out by the book-runner immediately after the closure of the bid offer date. An appropriate final price is arrived at after a careful evaluation of demands at various prices and the quantity. The final price is generally fixed reasonably lower than the possible offer price.
7. **Bank accounts:** The issuer company has to open two separate accounts for collection of application money, one for the private placement portion and the other for the public subscription.
8. **Collection of completed applications:** The book runner collects the application forms along with the application money.
9. **Allotment of securities:** Allotment for the private placement portion may be made on the second day from the closure of the issue.
10. **Payment Schedule and listing:** The book-runner may require the underwriters to the 'net offer to the public' to pay in advance all moneys required to be paid in respect of their underwriting commitment by the eleventh day of the closure of the issue.

Suggested Questions

1. Discuss SEBI regulations regarding primary market operations.
2. Discuss how secondary markets are regulated?
3. What are the regulations relating to pricing of public issue of shares?
4. What are the principal functions and power of SEBI?
5. Describe the key initiatives taken by SEBI?
6. What is listing of share? Describe the advantages provided for listing. What documents should be filed for listing of shares?
7. Discuss the SEBI guidelines for FII and individual investors
8. What are the different modes of raising money from primary market? Discuss the salient features of each method of marketing securities.
9. What is book-building method? Why is it required? What are the various steps involved in the book-building process.

UNIT-V

STOCK EXCHANGES IN INDIA, STOCK & BOND MARKET INDICES

Learning Objectives: This unit aims to provide the students with an introduction to operations of stock exchanges and construction of stock market index. After going through Unit V, students will be able to learn the following concepts:

- Stock Exchange in India
- National Stock Exchange-The Premier Exchange
- Construction of Stock index
- Construction of Bond Index

5.1 Stock Exchange in India

The stock exchanges are the most perfect type of market for securities whether of government and semi-government bodies or other public bodies as also for shares and debentures issued by the joint stock companies. In the stock exchanges, the purchases and sales of shares are made in conditions of free competition. The bargains that are struck in the trading ring or system by the members of the stock exchanges are the fairest prices determined by the basic laws of supply and demand.

Definition-

Stock exchange means any body or individuals whether incorporated or not, constituted for the purpose of assisting, regulating or controlling the business of buying, selling or dealing in securities. It is an association of member brokers for the purpose of self-regulation and protecting the interests of its members. It can operate only if it is recognized by the Government under the Securities Contract (Regulation) Act, 1956. The recognition is granted under Section 3 of the Act by the Ministry of Finance, Central Government.

The Securities Contract (Regulation) Act, 1956 is the basis for operation of the stock exchanges in India.

Recognized stock Exchange

A stock exchange is recognized only after the government is satisfied that the Rules and Bye laws conform to the conditions prescribed for ensuring fair dealings and protection to investors. Government has to be satisfied that it would be in the interest of the trade and public interest to grant such recognition. Bombay, Calcutta, Delhi, Madras, Ahmedabad, Hyderabad, Bangalore Indore etc have so far been granted permanent recognition. Others are granted temporary recognition from time to time. At present there are 25 stock exchanges recognized under the Securities Contract (Regulation) Act, 1956. They are -

- Bombay Stock Exchange
- National Stock Exchange
- Kolkata Stock Exchange
- Madras Stock Exchange
- Delhi Stock Exchange
- Ahmedabad Stock Exchange
- Hyderabad Stock Exchange
- Bhubaneswar Stock Exchange
- Kanara (Mangalore) Stock Exchange
- Magadh (Patna) Stock Exchange
- Bangalore Stock Exchange
- Saurashtra Kutch (Rajkot) Stock Exchange
- Guwahati Stock Exchange
- Jaipur Stock Exchange
- Uttarpradesh (Kanpur) Stock Exchange
- Ludhiana Stock Exchange

- Vadodara(Baroda) Stock Exchange
- Cochin Stock Exchange
- Pune Stock Exchange
- Coimbatore Stock Exchange
- Meerut Stock Exchange
- Visakhapatnam Stock Exchange
- Sikkim Stock Exchange

History of Stock Exchange

The Indian stock market is one of the oldest in Asia. The origin of the stock market in India goes back to the end of the eighteenth century when long-term negotiable securities were first issued. However, the real beginning occurred in the middle of the nineteenth century after the enactment of the Companies Act in 1850, which introduced the features of limited liability and generated investor interest in corporate securities. A significant event in the development of the stock market in India was the formation of the Native Shares and Stock Brokers' Association at Bombay in 1875, which is today the Bombay Stock Exchange. Then the second stock exchange 'Ahmedabad Stock Exchange' was set up in 1894. Both the Exchanges were organized as voluntary non-profit making associations of brokers to regulate and protect their interests. The Bombay Securities Contracts (contract) Act of 1925 used to regulate trading in securities. Under this Act, the Bombay Stock Exchange was recognized in 1927 and Ahmedabad in 1937. During the war boom, a number of stock exchanges were organized even in Bombay, Ahmedabad and other centres, but they were not recognized. Soon after, it became a Central subject and The Securities Contract (Regulation) Act, became law in 1956, which is the basis for operation of the stock exchanges in India.

Subsequently, 25 stock exchanges were set up and recognized by the central government, the most important development being the establishment of the National Stock Exchange (NSE) in 1994. Within a short period, it emerged as the largest stock exchange in the country, and even surpassed the Bombay Stock Exchange which was historically the leading stock exchange in India.

5.3 Functions of Stock Exchanges

A stock exchange has an important role to play in the development of a country. In the process of capital formation and in raising resources for the corporate sector, the stock exchange performs four essential functions.

1. It provides a market place for purchase and sale of securities such as shares, bonds, debentures, etc. Investors desirous of buying securities would be able to buy securities in the primary market only occasionally, that is, at the time of issue of such securities by the company, whereas they would be able to buy securities in the stock exchange at any time, as trading in stock exchanges is continuous. Similarly, holders of securities who are desirous of selling the securities would be able to sell them only in the stock exchanges, as the issuing companies do not ordinarily buy back the shares. Thus, stock exchanges provide the facility for continuous trading in securities.
2. Stock exchanges provide liquidity to the investments in securities, that is, it gives the investors a place to liquidate their holdings. This is essentially the basis for the joint stock enterprise system. Investors would not be interested to invest in corporate securities without the assurance provided by the stock exchanges to the owners of corporate securities that these securities can be sold in the exchanges at any time.
3. The stock exchanges help in the valuation of securities by providing the market quotations of the prices of securities. The market quotations represent the collective judgment on the value of the securities arrived at simultaneously by many sellers and buyers in the market. The value of shares is influenced by macro economic factors as well as micro economic factors, long-term economic trends as well as short-term fluctuations in economic variables. Speculative forces in the securities market also influence share valuations. Market quotations of share prices provide valuable

information to prospective investors as well as share holders regarding the value of shares traded in the stock exchanges.

4. Stock exchanges play the role of a barometer, namely, an indicator of the state of health of the nation's economy as whole. The shares of a large number of companies are listed for trading in the important stock exchanges of the country. The market quotations of individual shares represent their current valuation. The trend of price movements in the market is indicated by calculating stock market indices which represent the weighted average of prices of selected shares representing all the industries. These stock market indices are used to represent the share market as a whole. Their movements and levels are indicative of the economic health of the nation to a great extent because movements of prices of shares are influenced by macro economic factors such as growth of GDP, financial and monetary policies, tax changes, political environment, etc.

The stock exchanges provide the linkage between the savings in the household sector and the investments in the corporate sector. They indirectly help in mobilizing savings and channelising them into the corporate sector as securities.

Functions of Stock Exchange members:

- **Broker/Dealer:** The broker in the stock exchange acts as retailers, i.e., as a link between those who want to buy shares and those who want to sell them. The broker, for this intermediary function is paid a commission called brokerage which is negotiable between the broker and the client. Brokers are categorized into:
 - **Foreign brokers:** ABN Amro Asia Equities (India) Ltd., Birla Sun Life Securities Ltd.
 - **Industrial Groups:** Cholamandalam Securities Ltd., Reliance Shares and Stock Brokers Ltd.
 - **Local Bodies:** Acme Shares and Stock Pvt. Ltd.
 - **Subsidiaries of Indian Financial Institutions and Banks:** SBI Capital Markets Ltd., UTI Securities Exchange Ltd.
 - **Subsidiaries of stock exchanges:** LSE Securities Ltd., Cochin Stockbrokers Ltd.
- **Market makers:** They fulfil the traditional role of a wholesaler. A jobber is a wholesaler and also acts as a market maker; he places both buy and sell orders for selected shares. Thus they give two quotations, the purchase price and the sale price, for the same share. The profitability or otherwise, of a market maker will depend on correct anticipation of market movements. The function of a market maker is to provide liquidity so that investors can buy/sell at the current market price.
- **Agency Brokers:** Commonly referred to as a stockbroker, agency brokers act as an intermediary between the investor and the market maker. They provide advice and charge a fee for this service. Some stockbrokers however do not provide any advice and render their service as "execution-only" brokers, that is, purely taking orders and carrying out deals but not providing service.

Intermediaries: These intermediaries perform functions to help both the issuers and investors achieve their respective goals. There are large variety and number of intermediaries providing various services in the Indian securities market. This process of mobilizations of resources is carried out under the supervision and overview of the regulators. The regulators develop fair market practices and regulate the conduct of issuers of securities and the intermediaries. They are also in charge of protecting the interests of the investors. The regulator ensures a high service standard from the intermediaries and supply of quality securities and non-manipulated demand for them in the market.

5.4 National Stock Exchange-The Premier Exchange

The National Stock Exchange came much after the Bombay Stock Exchange but within a short period, it emerged as the largest stock exchange in the country, and even

surpassed the Bombay Stock Exchange which was historically the leading stock exchange in India.

After the formation of the Securities Market regulator, the Securities and Exchange Board of India (SEBI), attention were drawn towards the inefficiencies of the bourses and the need was felt for better regulation, discipline and accountability. A Committee recommended the creation of a second stock exchange in Mumbai called the "National Stock Exchange". The Committee suggested the formation of an exchange which would provide investors across the country a single, screen based trading platform, operated through a VSAT network. It was on this recommendation that setting up of NSE as a technology driven exchange was conceptualized. NSE has set up its trading system as a nation-wide, fully automated screen based trading system. It has written for itself the mandate to create a world-class exchange and use it as an instrument of change for the industry as a whole through competitive pressure. NSE was incorporated in 1992 and was given recognition as a stock exchange in April 1993. It started operations in June 1994, with trading on the Wholesale Debt Market Segment. Subsequently it launched the Capital Market Segment in November 1994 as a trading platform for equities and the Futures and Options Segment in June 2000 for various derivative instruments.

NSE was set up with the objectives of:

- (a) Establishing a nationwide trading facility for all types of securities;
- (b) Ensuring equal access to investors all over the country through an appropriate communication network;
- (c) Providing a fair, efficient and transparent securities market using electronic trading system;
- (d) Enabling shorter settlement cycles and book entry settlements; and
- (e) Meeting international benchmarks and standards.

NSE has been able to take the stock market to the doorsteps of the investors. The technology has been harnessed to deliver the services to the investors across the country at the cheapest possible cost. It provides a nation-wide, screen-based, automated trading system, with a high degree of transparency and equal access to investors irrespective of geographical location. The high level of information dissemination through on-line system has helped in integrating retail investors on a nation-wide basis. The standards set by the exchange in terms of market practices, products, technology and service standards have become industry benchmarks and are being replicated by other market participants.

Within a very short span of time, NSE has been able to achieve all the objectives for which it was set up. It has been playing a leading role as a change agent in transforming the Indian Capital Markets to its present form. The Indian Capital Markets are a far cry from what they used to be a decade ago in terms of market practices, infrastructure, technology, risk management, clearing and settlement and investor service.

Today, NSE's nationwide, automated trading system has helped in shifting the trading platform from the trading hall in the premises of the exchange to the computer terminals at the premises of the trading members located at different geographical locations in the country and subsequently to the personal computers in the homes of investors and even to hand held portable devices for the mobile investors. It has been encouraging corporatisation of membership in securities market. It has also proved to be instrumental in ushering in scripless trading and providing settlement guarantee for all trades executed on the Exchange. Settlement risks have also been eliminated with NSE's innovative endeavors in the area of clearing and settlement viz., establishment of the clearing corporation (NSCCL), setting up a settlement guarantee fund (SGF), reduction of settlement cycle, implementing on-line, real-time risk management systems, dematerialisation and electronic transfer of securities to name a few of them. As a consequence, the market today uses state-of-the-art information technology to provide an efficient and transparent trading, clearing and settlement mechanism.

Ownership and Management

The NSE is owned by a set of leading financial institutions, banks, insurance companies and other financial intermediaries. It is managed by a team of professional

managers and the trading rights are with trading members who offer their services to the investors. The Board of NSE comprises of senior executives from promoter institutions and eminent professionals, without having any representation from trading members.

While the Board deals with the broad policy issues, the Executive Committees (ECs), which include trading members, set out rules and parameters to manage the day-to-day affairs of the Exchange. The ECs have constituted several committees, like Committee on Trade Related Issues (COTI), Committee on Settlement Issues (COSI) etc., comprising mostly of trading members, to receive inputs from the market participants and implement suggestions which are in the best interest of the investors and the market. The day-to-day management of the Exchange is delegated to the Managing Director and CEO who is supported by a team of professional staff.

Market Segments and Products

NSE provides an electronic trading platform for all types of securities for investors under one roof - Equity, Corporate Debt, Central and State Government Securities, T-Bills, Commercial Paper (CPs), Certificate of Deposits (CDs), Warrants, Mutual Funds (MFs) units, Exchange Traded Funds (ETFs), Derivatives like Index Futures, Index Options, Stock Futures, Stock Options, Futures on Interest Rates etc., which makes it one of the few exchanges in the world providing trading facility for all types of securities on a single exchange.

The Exchange provides trading in 3 different segments viz., Wholesale Debt Market (WDM) segment, Capital Market (CM) segment and the Futures & Options (F&O) segment.

The Wholesale Debt Market segment provides the trading platform for trading of a wide range of debt securities which includes State and Central Government securities, T-Bills, PSU Bonds, Corporate Debentures, CPs, CDs etc. However, along with these financial instruments, NSE has also launched various products e.g. FIMMDA-NSE MIBID/MIBOR owing to the market need. Keeping in mind the requirements of the banking industry, FIs, MFs, and insurance companies, NSE also started the dissemination of its yet another product, the 'Zero Coupon Yield Curve'.

The Capital Market segment offers a fully automated screen based trading system, known as the National Exchange for Automated Trading (NEAT) system. This operates on a price/ time priority basis and enables members from across the country to trade with enormous ease and efficiency. Various types of securities e.g. equity shares, warrants, debentures etc. are traded on this system. The average daily turnover in the CM Segment of the Exchange during 2004-05 was nearly Rs. 4,506 crores.

Futures & Options segment of NSE provides trading in derivatives instruments like Index Futures, Index Options, Stock Options, Stock Futures and Futures on interest rates. Though only four years into its' operations, the futures and options segment of NSE has made a mark for itself globally. In the Futures and Options segment, trading in Nifty and CNX IT index and 53 single stocks are available. W.e.f. May 27 2005, futures and options would be available on 118 single stocks. The average daily turnover in the F&O Segment of the Exchange during 2004-05 was nearly Rs. 10,067 crores.

5.5 STOCK INDICES

The stock indices are devised by stock exchanges as representatives of market movements. The indices generally used are of three types:

Price-weighted index: It is the index which reflects the sum of the prices of the sample shares in a certain year (or month or week or day) with reference to the base year. The assumption here is that the investor buys one share of each stock included in the index.

Equal-weighted index: It is the index which reflects the simple arithmetic average of the price relatives of the sample shares in a certain year (or month or week or day) with reference to a base year. It is assumed that the investor invests an equal amount of money in each stock included in the index.

Value-weighted index: It is the index reflecting the aggregate market capitalization of the sample shares in a certain year (or month or week or day) in relation to a base year. Such an

index assumes that the investor allocates money across various stocks included in the index such that the weights assigned to various stocks are proportional to their market capitalization.

Example: The stocks A, B and C are the sample companies considered for computation of the index. The base index is 100 and the base date price and current market prices are given below. It is required to compute the current stock index when no change in share representation takes place, dividends or stock splits have not occurred and no additional shares have been issued.

Share	Outstanding Shares	Base Price	Current Price
A	5,00,000	120	200
B	8,00,000	150	900
C	6,00,000	110	150

(i) Market value weighted method

Share	Outstanding Shares	Base Price	Base Value	Current Price	Current Value
A	5,00,000	120	6,00,00,000	200	10,00,00,000
B	8,00,000	150	12,00,00,000	900	72,00,00,000
C	6,00,000	110	6,60,00,000	150	9,00,00,000
Total Value			24,60,00,000		91,00,00,000

Market value weighted index = $(91,00,00,000 / 24,60,00,000) * 100 = 370$

(ii) Price-weighted method

Share	Base Price	Current Price
A	120	200
B	150	900
C	110	150
Total	380	1,250

Market Price-weighted index = $(1250 / 380) * 100 = 329$

(iii) Equal weight method

Share	Percentage change in share price	Weight	Weighted Average
A	66.67	1/3	22.22
B	500	1/3	166.67
C	36.36	1/3	12.12
Total			201.01

Equal Weighted Index = $100 + 201.01 = 301.01$

Several stock market indices are constructed in India: BSE National Index, SENSEX, S&P CNX Nifty Index, RBI Share Price Index, BSE 200 Index, Dollex etc.

- **Bombay Stock Exchange Sensitive Index:** Popularly known as the Sensex, this value-weighted index is probably the most widely followed stock market index in India. Sensex indicates the movement of 30 sensitive shares from specified and non-specified groups. The index on any trading day represents the aggregate market value of the 30 specified shares as on that date in relation to the average aggregate market value of these shares in the base year 1978-79. From September 1, 2003, Sensex is being constructed on the basis of free float market cap rather than full market cap.
- **S&P CNX Nifty:** The Nifty index which reflects the price movement of 50 stocks selected on the basis of market cap and liquidity or impact cost is one of the most carefully constructed stock market index of India. The base value of this value-

weighted index has been set at 1000 and the base period selected is the closing price as on November 3, 1995.

- **The Economic Times Index of Ordinary Share Prices:** *The Economic Times* on trading days, publishes the all-India index of ordinary share prices. The base year of this equal-weighted index is the financial year 1984-85. This index comprises 72 actively traded shares, and the average employed in the construction of this index is a simple arithmetic average of price relatives.
- **The Financial Express Equity Index:** Published by *The Financial Express*, this index has the calendar year 1979 as the base year. Composed of 100 actively traded shares, this index employs a weighted arithmetic average of the price relatives of the shares in the sample.
- **Bombay Stock Exchange National Index:** This index comprising 100 actively traded shares drawn from specified and non-specified groups of five major stock exchanges, is calculated in a way similar to that of Sensex. The base year for this broad-based index is 1983.

The most popular stock market indices around the world are Dow Jones Industrial Average, the Standard & Poor's Composite 500 index, Nikkei 225, and FTSE (pronounced "footsie").

- **The Dow Jones Industrial Average (DJIA)** is based on 30 large "blue chip" corporations in the US. It is a price-weighted index.
- **The Standard & Poor's Composite 500 (S&P 500)** stock index is a broad based index of 500 US stocks. It is a market value-weighted index.
- **The Nikkei 225** is based on the largest 225 stocks of Tokyo Stock Exchange. It is a price-weighted average.
- **FTSE** published by the Financial Times of London is based on 100 large London Stock Exchange stocks. It is a value-weighted index.

Bond Market Indices: A bond market index measures the performance of the bond market. i-SEC BOND INDEX (i-BEX) is the most popular bond market index in India. There are two versions of i-BEX.

- **Total return index:** This index tracks the total returns and considers interest payment (accrued and actual) and capital gains/losses.
- **Principal return index:** This index indicates the net price movement (quoted price exclusive of accrued interest) in the market.

A major problem in the construction of bond market index is that it is difficult to obtain reliable and up-to-date prices of many bonds as they trade infrequently.

Issues in Index Construction:

Some of the important points in the construction of an index are: reliability, trade-off between diversification and liquidity, and choice of the type of index.

Indices based on samples are reasonably reliable because of the tendency of all stocks to move together and relatively few companies account for a large proportion of the value of all companies. Selection of the index securities is based on several criteria such as liquidity, depth, industry representation etc.

- **Market capitalization:** The scrip should be preferably among the top listed companies by market capitalization. The BSE imposes a minimum weight of 0.5% for a company's scrip to be selected into the BSE Sensex.
- **Liquidity:** Diversifying the index reduces risk but at a diminishing rate. However, inclusion of illiquid stocks may worsen the quality of the index. Therefore, construction of a good index involves a trade-off between diversification and liquidity. Liquidity may be assessed through
 - the average number of trades of the scrip per day over a specified period of time,
 - the average value of shares traded per day over a specified period of time,
 - trading frequency of the scrip over a specified time duration,

-trading activity or the average number of shares traded per day as a percentage of the total number of outstanding shares of the company compared to a certain percentage for the specified time duration.

- **Continuity:** The computation of an index has to consider certain adjustments when the composition of the sample changes, when one of the component stocks pays bonus or issues right shares. If the required adjustments are not made, there would be discontinuity between the current value of the index and its previous value. The continuity of the historical series of index values is to be re-established by correlating the value of the revised index value to that of the index before revision. And this correlation of the revised index to the old index should not be less than a certain point in order to ensure historical continuity of the index.
- **Industry Representation:** Index companies should be the balanced representation of the listed companies from all industries participating in the stock market, and should preferably be the leading companies in their industry group.
- **Listed History:** The scrip to be included in an index should have prior trading history in the respective stock exchange.
- **Company record:** The company to be included in the index should preferably have a continuous dividend paying record and should be promoted by a management with a proven record.

Stock Market Quotations and Stock Market Indices:

Information on stock market movements is reported in various media such as newspapers, business periodicals, television etc. The manner in which daily newspapers generally provide information on stock prices is illustrated below:

It is a combined share quotation of the BSE and the NSE. The former quotes are given first and the NSE quotes are given in italics:

Co.,(Prev. Cl.),Open, High, Low, Close [Vol., Val. Rs.'000s,Trades]	P/E	M Cap	52-Wk H/L
A Ltd.(932.65),937,948,931,932.85 [46436,43591.29,1384]	12.7	(9438.6)	1200/692
(932.80), 940, 949, 931,933.20 [138630, 130216.84,4404]	12.7	(9438.6)	1200/692

The first column gives information on prices, volume, value and trade. The number in the brackets to the right of the company's name, which in the case of A Ltd. is Rs.932.65, represents the previous closing quotation. The set of four unbracketed prices after this figure stand for the opening price, the highest price, the lowest price, and the closing price. For A Ltd., these are Rs.937, Rs.948, Rs.931 and Rs.932.85 respectively. After these stock price quotations, there is a square bracket containing three numbers indicating the volume of shares traded, the value (Rs. in '000) of shares traded and the number of trades respectively. For A Ltd., these will be 46436, 43591.29 and 1384 respectively.

The second column represents the diluted P/E ie, the ratio of the share's market price to the fully diluted earnings per share, which in this case is 12.7. The third column indicates the market capitalization figure (Rs. in crores) of the company which is Rs.9438.6crore for A Ltd.

The final column reflects the highest and lowest prices during the immediately preceding 52 weeks, after adjusting for bonus and rights issues of equity shares, which in the case of A Ltd. are Rs.1200 and Rs.692.

Important abbreviations used in the context of stock exchange quotations are:

- con - convertible
- xd - ex(excluding) dividend
- cd - cum(with) dividend
- xr - ex(excluding) right
- sl - small lot

Suggested questions

- 1) "The Indian stock market is one of the oldest in Asia" explain
- 2) What are the key features of the National Stock Exchange? What are its market segments and products ?
- 3) How is a stock index calculated? Explain with an example
- 4) What is the difference between a price -weighted index, an equal-weighted index, and a value-weighted index?
- 5) What are the functions of a stock exchange? What are the functions of stock exchange members?
- 6) What are the different kinds of brokers operating in the stock markets? How do they trade securities in the stock market?
- 7) Explain the role played by stock exchange in the economic development.
- 8) Compute the index using the market value weighted method and price weighted method for the following market information. The base index is 100.

Share	Outstanding Shares	Base Price	Current Price
X	6,00,000	110	190
Y	7,00,000	130	800
Z	5,00,000	120	170

UNIT-VI

DEBT INSTRUMENTS AND THEIR VALUATION

Learning Objectives: This unit aims to provide the students with an introduction to debt instruments and their valuation. After going through Unit VI, students will be able to learn the following concepts:

- Characteristics of bond
 - Bond pricing methods
 - Yield to maturity
 - Bond duration
 - Risk management in bond market
 - Credit rating
-

6.1 Debt security

A debt security is a claim on a specified periodic stream of income. Debt securities are often called fixed-income securities because they promise either a fixed stream of income or a stream of income that is determined according to a specified formula. Risk considerations are minimal as long as the issuer of the security is sufficiently creditworthy.

Bond Characteristics

A bond is a security that is issued in connection with a borrowing arrangement wherein the borrower issues (i.e., sells) a bond to the lender for some amount of cash. The issuer is under an obligation to make specified payments to the bondholder on specified dates.

A typical coupon bond places an obligation on the issuer to make semiannual payments of interest to the bondholder for the life of the bond. These are called coupon payments. When the bond matures, the issuer repays the debt by paying the bondholder the bond's par value (i.e., its face value). The coupon rate of the bond serves to determine the interest payment. The coupon rate, maturity date, and the par value of the bond are part of the bond indenture, which is the contract between the issuer and the bondholder.

For example, a bond with a par value of Rs.100 and a coupon rate of 8% might be sold to a buyer for Rs.100. The bondholder then is entitled to a payment of 8% of Rs.100 or Rs.8 per year for the life of the bond (say, 20years).The Rs.8 payment normally comes in two semiannual installments of Rs.4 each. At the end of the 20-year life of the bond, the issuer also pays Rs.100 par value to the bondholder.

Sometimes, zero-coupon bonds are issued that make no coupon payments. Here, the investors receive par value at the maturity date but receive no interest payments, for the bond has a coupon rate of zero. The bonds are issued at prices considerably lower than par value and the investor's return comes solely from the gap between the issue price and the payment of par value at maturity.

Government Bonds:

Government enterprises that need long-term financial assistance issue fixed-interest securities. Government participants could be the Central Government, state governments and other regional administrations. When public sector enterprises issue bonds, they are also normally categorized as government bonds since they have characteristics similar to government bonds. The issue of government bonds is crucial since it reflects the monetary policy of the country. Maturities of Government securities (or G-secs, as they are popularly called in India) range from 2-30 years. The face value of all government bonds in India is Rs.100.

Corporate Bonds:

In most countries, private sector debt instruments are called 'corporate bonds'. However, within this category, there are a number of instruments that are differentiated on the basis of their claim on the enterprise's assets. In this context, debentures are debt instruments

that are secured on the assets of the enterprise issuing the instrument. The security may be by a fixed charge (on specific assets) or a floating charge (on the assets in general). Those private sector debt instruments having no fixed or floating charge on the assets of the company are called 'unsecured bonds'. Again, 'guaranteed bonds' are those debt instruments that could be guaranteed by a third party, generally the parent company or a group to which the enterprise belongs.

Corporate bonds are also called 'convertibles'. Such instruments, along with the general characteristics of a bond, also carry an option at future time duration to convert to other types of financial instruments such as equity shares. Other corporate debt instruments with options are called 'callable bonds' or 'puttable bonds'. The redemption (repayment) date of these bonds can be decided at a future date, at the discretion of the issuer (callable) or the holder (puttable). Some corporate bonds are doubly dated, indicating that their redemption can take place at any time between two dates, usually agreed upon when the debt instrument is issued.

Floating-rate bonds make interest payments that are tied to some measure of current market rates. For instance, the rate might be adjusted annually to the current T-bill rate plus 2%. If the 1-year T-bill rate at the adjustment date is 4%, the bond's coupon rate over the next year would then be 6%. This arrangement means that the bond always pays current market rates.

Preferred Stock:

Preferred stock is often included in the fixed-income category because like bonds, preferred stock promises to pay a specified stream of dividends. In case of non-payment of dividends, they simply cumulate and the common stock holders do not receive any dividends until the preferred stockholders have been fully paid. In case of bankruptcy, preferred stockholders' claims to the firm's assets have low priority than those of bondholders, but higher priority than those of common stockholders.

International Bonds:

These bonds are generally divided into two categories: foreign bonds and Eurobonds. Foreign bonds are issued by a borrower from a country other than the one in which the bond is sold. The bond is denominated in the currency of the country in which it is marketed. For example, if an Indian firm sells a dollar-denominated bond in the United States, the bond is considered a foreign bond.

Eurobonds are bonds issued in the currency of one country but sold in other national markets. For instance, the Eurodollar market refers to dollar-denominated bonds sold outside the United States. Similarly, Euroyen bonds are yen-denominated bonds selling outside Japan.

Innovative Bond Instruments:

Bond security design can be extremely flexible. Examples of some novel bonds are: Inverse Floaters, Asset-backed bonds, Indexed Bonds etc..

- **Inverse Floaters:** The coupon rate on these bonds falls when the general level of interest rates rises. Investors in these bonds suffer doubly when rates rise. Not only does the present value of each rupee of cash flow from the bond fall, but the level of those cash flows falls also. On the other hand, investors in these bonds benefit doubly when the rates fall.
- **Asset-backed Bonds:** In this kind of securities, the income from a specified group of assets is used to service the debt. Conventional asset-backed securities are mortgage-backed securities or securities backed by credit card loans.
- **Indexed Bonds:** These bonds make payments that are tied to a general price index or the price of a particular commodity.
- **Catastrophe Bonds:** These bonds are a means to transfer 'catastrophe risk' from the firm to the capital markets. They represent a novel way of obtaining insurance from the capital markets against specific disasters. Investors in these bonds receive

compensation for bearing such risk, in the form of higher coupon rates. For example, Electrolux once issued a bond with a final payment that depended on whether there had been an earthquake in Japan.

6.2 Bond Pricing

Since debt instruments mature at a definite time in the future, the valuation of debt instruments is the present value of all future cash flows discounted at an expected rate of return. Thus, the cash flows from a bond consist of coupon payments until the maturity date plus the final payment of par value.

Therefore,

Bond Value = Present value of coupons + Present Value of par value

The general formula for the valuation of debt instruments is:

$$V_D = \sum_{j=1}^n \frac{I_j}{(1+k)^j} + \frac{P_n}{(1+k)^n}$$

where

V_D = value of debt instrument

I_j = interest due at time j

P_n = Value (par or premium) at redemption time

k = Discount rate per annum

n = Maturity of the debt instrument

Problem: What is the value of a Rs 1,000 bond with an 8 percent coupon rate, 3 years before maturity? The discount rate (YTM) is 10 percent

Solution:

$$I_j = 0.08 * 1000 = \text{Rs } 80$$

$$P_n = \text{Rs } 1000$$

$$k = 0.1$$

$$n = 3$$

Value of the bond = present value

$$\begin{aligned} V_D &= \frac{\text{Rs } 80}{(1+0.1)^1} + \frac{\text{Rs } 80}{(1+0.1)^2} + \frac{\text{Rs } (80+1000)}{(1+0.1)^3} \\ &= \text{Rs } (72.72+66.16+811.42) = \text{Rs } 950.26 \end{aligned}$$

Most of the debt instruments are valued using this formula since it accommodates for change in interest rates, change in par value, and also change in discount rates over a period of time. However, debt instruments such as the zero coupon bonds do not have the characteristic of interest payment. Hence their valuation will be based on the discounted value at redemption.

The formula for pricing zero-coupon bonds is:

$$V_D = \frac{P_n}{(1+k)^n}$$

Yield to Maturity

The bond's yield to maturity or YTM is the internal rate of return on an investment in the bond. In the above methods for bond valuation, the value of 'k' is presumed. That is, the investors' expectation of the return from the debt instrument is assumed considering the time value of future returns. When the return expectation varies from investor to investor, the price/ value of the instrument also tends to be different across different investors. To overcome this problem, the bond yield is computed considering the traded price of the debt instrument as the current value of the instrument. The YTM is the rate that equates the current price to the future cash flows from the debt instrument. Therefore,

$$V_D = \sum_{j=1}^n \frac{I_j}{(1+YTM)^j} + \frac{P_n}{(1+YTM)^n}$$

For e.g.: Suppose an 8% bond, 30-year bond is selling at Rs.1276.76. We find the interest rate at which the present value of the remaining 60 semiannual payments equals the bond price. This is the rate consistent with the observed price of the bond. Therefore, we solve for 'r' in the following equation:

$$\text{Rs. } 1276.76 = \sum_{t=1}^{60} \frac{\text{Rs. } 40}{(1+r)^t} + \frac{\text{Rs. } 1000}{(1+r)^{60}}$$

Or equivalently, Rs.1,276 = Rs.40 × Annuity Factor(r, 60) + Rs.1,000 × PV Factor(r,60)

These equations have only one unknown variable, the interest rate, r. On calculation, we have r = 0.03 or 3% per half year; this is the bond's yield to maturity. The effective annual yield of the bond however accounts for compound interest. If one earns 3% interest every 6 months, then after one year, each rupee invested grows with interest to Re.1 × (1.03)² = Rs.1.0609, and the effective annual interest rate on the bond is 6.09%.

Yield to maturity is different from the current yield of a bond, which is the bond's annual coupon payment divided by the bond price. In the above example, for the 8%, 30-year bond currently selling at Rs.1,276.76, the current yield would be Rs.80/Rs.1,276.76 = 0.0627, or 6.27% per year, whereas the effective annual yield to maturity is 6.09%. Thus, for this bond, which is selling at a premium over par value (Rs.1,276 rather than Rs.1,000), the coupon rate (8%) exceeds the current yield (6.27%), which exceeds the yield to maturity (6.09%).

Bond Duration

Bond duration compares the sensitivity of the instruments to changes in interest rates. It is the average amount of time required by a security to receive the interest and the principal. This measure is used to make a comparison across different coupon rates.

Duration hence is a weighted average of the times that interest payments and the final return of principal are received. The weights are the present values of the payments, using the bond's yield to maturity as the discount rate. Duration is stated in terms of years.

Fund managers use this calculation when they are planning for cash flows that will be required over time. Bond duration helps in determining the need for additional cash flows. As duration increases, the risk of recovering the full value of the bond also increases.

Duration analysis becomes all the more useful when duration is multiplied by the percentage change in interest rates. Duration measure predicts how much a bond's price should change given a percentage change in interest rates. Thus a bond with duration of 5 years will decrease 5% in price if yields rise by 1%. Again, if a bond has duration of 10 years and if interest rates fall from 8% to 6% (a drop of 2% points), the bond's price is expected to rise by 20% (10 × 2).

Duration =

$$\frac{\sum(\text{Present Value of cashflows} * \text{Times to cash flows})}{\sum(\text{Present Value of cash flows})}$$

6.3 Risk Management in Bonds

A bond ensures a fixed return over a period of time, defined by the bond agreement. In the market-place, the rates of interest are not constant and vary over time. Since bonds are traded in the market, when interest rates in the market change, the price received/paid for the bond in the market would be below/above the expected levels.

Besides this price risk, bond investors also face a reinvestment risk, purchase power risk and liquidity risk.

- **Default Risk:** Though bonds usually promise a fixed flow of income, that income stream is not riskless unless the investor can be certain that no default shall take place on the payment obligation. Though government bonds are generally risk-free, the same cannot be said for corporate bonds. Such bond returns are dependent to some extent on the ultimate financial status of the firm. To do away with this fear and to improve the trading volume in the debt market, there are several credit rating agencies who measure the repayment capacity of the issuer of debt instruments. Issuers with lower credit ratings normally have to offer investors higher coupon rates to make up for the additional credit risk.
- **Reinvestment Risk:** This risk is inherent in a bond instrument since it is assumed that interest rates are reinvested at the same rate as defined in the bond contract. However, with changing interest rates, the reinvestment rates also differ and would result in below/above expectations benefit at maturity. For instance, when interest rates fall, market prices will rise, because higher rates on prevailing debt securities will make them more valuable. Downward trends in interest rates also result in reinvestment risk- the risk that income or principal repayments will have to be invested at lower rates.
- **Purchasing Power Risk:** Inflation reduces the purchasing power of the investment income and principal. Therefore, debt investors have to look at the real rates of return or the actual return minus the rate of inflation, while making an investment decision. Rising inflation has a negative effect on the real rates of return or the actual return minus the rate of inflation.
- **Price Risk:** Investors in debt securities have the advantage of the exchange listing to sell their instruments prior to maturity (if required); however, the price received may be more or less than the purchase price due to the market risk factor (demand and supply for funds).
- **Liquidity Risk:** The liquidity in the market is generally influenced by the demand and supply situation for that instrument by the market players. The differential demand and supply might induce the price received in a sale prior to maturity to be more or less than the liquidation value or principal amount, and more or less than the amount an investor originally paid. A bond investor can attempt to minimize these risks in a bond portfolio by a process called immunization. If an investor gets back a yield from the bond which is at least the computed yield from holding the bond till its maturity period, then the bond investment is said to be immunized.

Determinants of Bond Safety

Bond safety is often measured using financial ratio analysis. Credit rating agencies base their credit ratings on an analysis of the level and trend of some of the issuers' financial ratios. The key ratios used to evaluate safety are:

- **Coverage ratios:** Ratio of earnings before interest payments and taxes to interest obligations. Declining coverage ratios are an indicator of possible cashflow difficulties.
- **Leverage ratios:** Ratio of debt to equity. A very high leverage ratio is a signal of excessive indebtedness, a possibility that the firm will be unable to earn enough to satisfy the obligations on its bonds.
- **Liquidity ratios:** The most common ratios in this category are current ratio (current assets/ current liabilities) and the quick ratio (current assets minus inventories/ current liabilities). These ratios measure the firm's ability to pay its immediate liabilities with its most liquid assets.
- **Profitability ratios:** Ratios such as return on assets (earnings before interest and taxes divided by total assets) in this category, are indicators of a firm's overall financial health and measures the return on assets or equity.
- **Cash flow-to-debt ratio:** The ratio of total cash flow to outstanding debt.

6.4 Credit Rating

Security rating popularly known as credit rating in India and is mandatory for the issuance of debt instruments. Credit ratings are judgment about the firm financial and business prospects. It may be defined as "a process by which a statistical service prepares various ratings identified by symbols which are indicators of the investment quality of the securities rated". The security may be a debt instrument or equity.

Credit rating of debt securities is a mechanism adopted for assessing the default risk involved. The credit rating process involves a qualitative analysis of the company's business and management and a quantitative analysis of the company's financial performance. It also considers the specific features of the bond being issued.

Credit rating services have developed rapidly in India. There are five main players namely-

- Credit Rating Information Services of India Limited (CRISIL),
- Investment Information and Credit Rating Agency of India Limited (ICRA),
- Credit Analysis and Research Limited (CARE).
- Phelps and Duff
- Fitch Ratings

These rating agencies or firms provide financial information on firms and quality ratings of large corporate bond issues. An investor may rely on the rating provided by these credit rating agencies or, alternatively, do his own credit rating, to assess the default risk of a bond. The different levels of bond rating class are used. For example CRISIL uses the following classes for a particular type of security

CRISIL ratings	Rating definitions
AAA	This is the highest credit rating and implies that the rated instrument carries the lowest credit risk.
AA	The rated instrument carries low credit risk and differs in safety from AAA issues only marginally.
A	The rated instrument carries average credit risk. However, adverse circumstances can affect such issues more than those in the higher rated categories.
BBB	The rated instrument carries higher than average credit risk. They offer moderate safety in timely payments of interest and principal.
Speculative Grade Bonds	
BB	This instrument carries high credit risk. Though less susceptible to default than other speculative grade bonds, the uncertainties that the issuer faces can lead to inadequate capacity to make timely payments of interest and principal.
B	This instrument carries very high credit risk. Though the company is currently making timely payments of interest and principal, unfavourable business conditions would lead to lack of ability or willingness to make these payments.
C	These instruments have limited prospects of recovery and are quite vulnerable to default.
D	Such instruments have very high possibility of default. Such bond instruments are very speculative and return from them may be realized only on reorganization or liquidation.

Rating methodology

The following features appear to be common in the rating methodology employed by different agencies.

- Two broad types of analyses are done: (i) industry and business analysis and (ii) financial analysis
- The key industry and business factors are-growth rate, industry risk, structure and competition in industry, competitive position of the issuer and managerial capability of the issuer
- The key financial factors are-earning power, business and financial risk, asset protection, cash flow adequacy, financial flexibility, and quality of accounting
- Subjective judgment seems to play an important role in the overall assessment of the issuer
- While each factor is normally scored separately, no mechanical formula is used for combining the scores on different factors to arrive at the final rating.

6.5 Wholesale Debt Market in India

The bond market in India has registered an impressive growth after the liberalization of Indian economy. There have been contextual/structural changes in bond market and the same is depicted in Table-6.1.

Table:6.1 Changing bond market in India

Parameters	Pre-liberalization	Post-liberalization
Instruments	The plain vanilla bond was the most popular instrument	Bonds with complex features like option, hybrid bond are gaining in importance
Interest rates	Stable and administered interest rates prevailed	Volatile and market-determined interest rates have come into play
Numbers of players	There are few players in the debt market	Many players have entered the debt market
Reference rate	Practically, there was no reference rate	A reference rate is gradually emerging
Method of analysis	Investors used simplistic measures like current yield and years to maturity and followed ad hoc rules of thumb	Investors started using more scientific measures like yield to maturity, duration of bond etc.
Nature of market	The market was by and large highly illiquid	There are signs of increasing liquidity, but less compare to equity market
Approach to portfolio management	In general, investors followed a fairly passive approach	The active approach is now receiving more attention

Instruments traded in the Wholesale Debt Market in India

Large numbers of bonds are traded in the Wholesale Debt Market (WDM) segment and the list is increasing day-by-day. The list includes:

- central government securities,
- treasury bills (T-bills),
- state development loans (SDLs),
- bonds issued by public sector undertakings (PSUs),
- floating rate bonds (FRBs),
- zero coupon bonds (ZCBs),
- index bonds,
- commercial papers (CPs),
- certificates of deposit (CDs),
- corporate debentures,

- SLR and non-SLR bonds issued by financial institutions (FIs),
- bonds issued by foreign institutions and units of mutual funds (MFs).

Major participants

- Financial Institutions
- Mutual Funds
- Corporates
- Primary dealers
- Indian Banks
- Foreign Banks
- Trading dealers

Turnover

The trading volume on the WDM segment has been growing rapidly. The trading volume (face value) increased from Rs.6, 781crore during 1994-95 (June-March) to Rs.887, 294crore during 2004-05 in NSE WDM segment. The average daily trading volume increased from Rs.30crore to Rs.3, 028crore during the same period. The highest recorded WDM trading volume of Rs.13, 912crore was registered on August 25, 2003.

The transactions in dated government securities account for a substantial share of transactions on the WDM segment. The market is dominated by dated government securities (including state development loan), which accounted for 81.69% of WDM trades during 2004-05. Among the market participants, the dominance of the domestic banks reduced this year to 29.89% from 36.36% in 2003-04.

Market Capitalisation

Market capitalization of the WDM segment has witnessed a constant increase indicating an increase in the number of securities available for trading on this segment. Total market capitalization of the securities available for trading on WDM segment stood at Rs.1, 461,734crore as on March 31, 2005. Central Government securities accounted for the largest share of the market capitalization with 68.83%.

Suggested Questions and problems

- (1) Discuss the changes that have started taking place in the debt market in the post-liberalization scenario.
- (2) Describe various types of corporate bond
- (3) State the basic bond pricing formula and explain its components
- (4) Explain and illustrate to find the approximate YTM on a bond
- (5) Discuss the risks to which debt instruments are subject to.
- (6) Discuss the functions of credit rating agencies and their methodology
- (7) What symbols and classes are employed by CRISIL for rating debentures?
- (8) What is the value of a Rs.1000 bond that is paying 4 percent annual coupon rate in annual payments over 10 years until it matures if its yield-to-maturity is $YTM=6.0\%=0.06$?
- (9) In Question (8), what is the bond's present value if the coupons are semiannually?
- (10) Determine the price of a Rs.1000 zero coupon bond with a YTM of 16 percent and 10 years until maturity. What is the YTM of this bond if its price is Rs.200?
- (11) Determine the price of a Rs.1000 face value zero coupon bond with a YTM of 14 percent and 20 years until maturity if it is compounded annually.
- (12) Bonds of Zacko Corporation with a par value of Rs.1000 sell for Rs.960, mature in 5 years, and have a 7% annual coupon rate paid semiannually. Calculate the current yield and the yield to maturity.

- (13) A 20-year maturity bond with par value of Rs.1000 makes semiannual coupon payments at a coupon rate of 8%. Find the bond equivalent and effective annual yield to maturity of the bond if the bond price is (a) Rs.950 (b)Rs.1000 (c)Rs.1050
- (14) Consider a bond paying a coupon rate of 10% per year semiannually when the market interest rate is only 4% per half year. The bond has 3 years until maturity.
- (a) Find the bond's price today and 6 months from now after the next coupon is paid.
- (b) What is the total (6 month) rate of return on the bond?
- (15) A 10% coupon bond has a maturity of 12 years. It pays interest semiannually. Its yield to maturity is four percent per half-year period. What is its duration?
- (16) A Rs.100 par value bond bearing a coupon rate of 12 percent will mature after five years. What is the value of the bond, if the discount rate is 15 percent?

UNIT-VII

EQUITY INSTRUMENTS AND THEIR VALUATION

Learning Objectives: This unit aims to provide the students with an introduction to an overview of the various techniques of share valuation. After going through Unit VII, students will be able to learn the following concepts:

- Intrinsic value of a stock
- Present Value
- Discount Rate
- Book Value
- Liquidation value
- Share Valuation Techniques

7.1 Introduction

The purpose of equity valuation is to determine whether the market price of a share is overvalued/undervalued/correctly valued. Share price is said to be undervalued if the current market price is less than the fundamental/intrinsic worth of the share. Similarly, the share price is said to be overvalued if the current market price is above the fundamental value of the share. Since the current market price is available from the day-to-day trading of the share in the stock exchange, investors need to calculate the fundamental value of a share. Hence, equity valuation involves determining the fundamental/intrinsic worth of a stock based on the earning prospects of the company in future, which is calculated by using a few valuation techniques. The purpose of this chapter is to give an overview of the various techniques of share valuation with suitable illustrations.

7.2 Key Concepts

Application of equity valuation techniques requires understanding of few financial concepts which are described below:

- **Present Value:** Money has a 'time value' which implies that a rupee received before has more value than a rupee received after one year. This is so because the rupee received now can be deposited in a bank at 10% interest rate to receive Rs.1.10 after one year. The time value of money suggests that earlier receipts are more desirable than later receipts, since the former can be reinvested to generate additional returns before the later receipts come in.

If an amount P is invested now for n years at r rate of interest, the future Value F to be received after n years can be calculated using the compound interest formula:

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

Example: If Charlie deposits Rs.100 in a savings account at a bank now at 12 percent interest, how much will accumulate in the account in 7 years if no withdrawals are made? How much will Charlie accumulate if interest is compounded semiannually?

Solution:

We have, $P_0 = \text{Rs.}100$, $i = 12\% = .12$ and $t = 7$

$$P_7 = P_0(1.12)^7 = \text{Rs.}100(2.2106) = \text{Rs.}221.06$$

With semiannual compounding,

$$P_t = P_0(1 + i/m)^{mt}$$

where m is the number of compounding periods in a year.

$$P_7 = \text{Rs.}100(1 + 0.12/2)^{2 \times 7} = \text{Rs.}100(1.06)^{14}$$

$$= \text{Rs.}100(2.2609) = \text{Rs.}226.09$$

Discounted Present Value: Similarly, the future value of a present sum to be received in future can be calculated by a reverse process known as discounting. Therefore,

$$P = \frac{F}{(1+k)^n}$$

where, F = Amount to be received after n years

n = No. of years to maturity

k = the rate of interest = Discount Rate

P = Present Value of the sum to be received in the future.

Example: If Rs.1000 would be received after 2 years and if the discount rate is 10%, the present value can be calculated as below:

$$P = 1000 / (1.1)^2 = 826.45$$

Rs. 826.45 invested now at 10% interest would grow to Rs.1000 by the end of 2 years.

Table 7.1: The Present Value of Rs.1 to be received t periods in the future discounted at the rate I

Time Period,t	Discount Rate or Interest Rate			
	i =1%	i =5%	i =10%	i =15%
1	0.990	0.952	0.909	0.870
2	0.980	0.907	0.826	0.756
3	0.971	0.864	0.751	0.658
4	0.961	0.823	0.683	0.572
5	0.951	0.784	0.621	0.497
6	0.942	0.746	0.564	0.432
7	0.933	0.711	0.513	0.376
8	0.923	0.677	0.467	0.327
9	0.914	0.645	0.424	0.284
10	0.905	0.614	0.386	0.247
15	0.861	0.481	0.239	0.123
20	0.820	0.377	0.149	0.061
25	0.780	0.295	0.092	0.030
30	0.742	0.231	0.057	0.015

Example: The Reliable Corporation promised Anita a Rs.10,000 retirement at the end of 25 more years of service. Assume 10% is the best interest rate Anita can earn on his long-term savings. What is the present value of the retirement bonus?

Solution:

We have, $i = 10\% = .10$, $t = 25$ and $P_{25} = \text{Rs.}10,000$

$$P_0 = \frac{P_{25}}{(1.10)^{25}} = \frac{\text{Rs.}10000}{10.8347} = \text{Rs.}922.96$$

- **Discount Rate:** The discount rate used in the present value models is the investor's required rate of return. This has to take into consideration the time value of money plus the riskiness of the proposed investment. The time value of money is represented by the risk-free interest rate such as those on government securities. A premium is added to this risk-free interest rate to take care of the risk to be borne by the investor by investing in that particular share. The more risky the investment, the greater the risk premium that the investor will require.

Expected Rate of return on common stock:

$$\text{Rate of return} = \frac{\text{Dividens} + \text{Capital gain}}{\text{Beginning Price}}$$

$$= \text{dividend yield} + \text{capital gain yield}$$

Example: Consider a stock that sells for Rs.50. The company is expected to pay a Rs.3 cash dividend at the end of the year, and the stock's market price at the end of the year is expected to be Rs.55 a share. Thus the expected return would be:

$$r = \frac{D_1 + (P_1 - P_0)}{P_0} = \frac{\text{Rs. } 3.00 + (\text{Rs. } 55 - \text{Rs. } 50)}{\text{Rs. } 50} = 16\%$$

Alternatively,

$$\text{Dividend Yield} = \frac{\text{Rs. } 3.00}{\text{Rs. } 50} = 6\%$$

$$\text{Capital Gain Yield} = \frac{\text{Rs. } 5.00}{\text{Rs. } 50} = 10\%$$

$$r = \text{dividend yield} + \text{capital gain yield} = 16\%$$

Example: The share of a stock can be purchased for Rs.40. The company is expected to pay a Rs.2.50 dividend at the end of the year, and its market price after the payment of the dividend is expected to be Rs.45 a share. What is the expected return on the investment in this stock?

Solution:

$$r = \frac{\text{Dividends} + (\text{ending price} - \text{beginning price})}{\text{Beginning price}} = \frac{D_1 + (P_1 - P_0)}{P_0}$$

$$r = \frac{\text{Rs. } 2.50 + (\text{Rs. } 45 - \text{Rs. } 40)}{\text{Rs. } 40} = 18.75\%$$

- **Book Value:** The Book-value per share is simply the net worth of the company (which is equal to paid-up equity capital plus reserves and surplus) divided by the number of outstanding equity shares. The formula for computing the same is :
Book Value = Equity Worth (capital including reserves belonging to shareholders) / No. of outstanding shares
- **Liquidation value:** This is the amount of money that could be realized by breaking up the firm, selling its assets, repaying its debt, and distributing the remainder to the shareholders. Thus,
Liquidation value per share = (Value realized from liquidating all the assets of the firm - Amount to be paid to all the creditors and preference shareholders) / Number of outstanding equity shares

7.3 Share Valuation Techniques

(1) Dividend Discount Model:

The basic idea behind the dividend discount models is that the value of an equity share is equal to the present value of dividends expected from its ownership plus the present value of the sale price expected when the equity share is sold.

- **Single-period valuation model:** Here, the investor expects to hold the equity share for one year. The price of the equity share will be:

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

where,

- P_0 = current price of the equity share
- D_1 = dividend expected a year hence
- P_1 = price of the share expected a year hence
- r = rate of return required on the equity share

Example: ABC Ltd.'s equity share is expected to provide a dividend of Rs.2 and fetch a price of Rs.18 a year hence. What price would it sell for now if investors' required rate of return is 12%?

Solution: The current price will be:

$$P_0 = \frac{2.00}{(1.12)} + \frac{18.00}{(1.12)} = \text{Rs. } 17.86$$

What happens if the price of the equity share is expected to grow at a rate of $g\%$ annually? If the current price P_0 becomes $P_0(1+g)$ a year hence, we have:

$$P_0 = \frac{D_1}{(1+r)} + \frac{P_0(1+g)}{(1+r)}$$

Example: Assume an investor is considering the purchase of stock A at the beginning of the year. The dividend at year-end is expected to be Rs.1.50, and the market price by the end of the year is expected to be Rs.40. If the investor's required rate of return is 15 percent, the value of the stock would be:

$$\begin{aligned} P_0 &= \frac{D_1}{(1+r)^1} + \frac{P_1}{(1+r)^1} \\ &= \frac{\text{Rs. } 1.50}{(1+0.15)} + \frac{\text{Rs. } 40}{(1+0.15)} = \text{Rs. } 1.50 (0.870) + \text{Rs. } 40 (0.870) = \text{Rs. } 36.11 \end{aligned}$$

Since common stock has no maturity date and is held for many years, a more general, multi-period model is needed. The general common stock valuation model is defined as follows:

$$P_0 = \sum_{t=1}^{\infty} \frac{D_t}{(1+r)^t}$$

There are three cases of growth in dividends. They are (1) zero growth; (2) constant growth; and (3) nonconstant, or supernormal growth.

In case of zero growth, if

$$D_0 = D_1 = \dots = D_{\infty}$$

Then the valuation model

$$P_0 = \sum_{t=1}^{\infty} \frac{D_t}{(1+r)^t}$$

reduces to the formula:

$$P_0 = \frac{D_1}{r}$$

Example: Assuming D equals Rs.2.50 and r equals 10%, then the value of the stock is:

$$P_0 = \frac{\text{Rs. } 2.50}{0.1} = \text{Rs. } 25$$

In the case of constant growth, if we assume that dividends grow at a constant rate of g every year [i.e., $D_t = D_0(1+g)^t$], then the above model is simplified to:

$$P_0 = \frac{D_1}{r-g}$$

This formula is known as the *Gordon growth model*.

Further, the formula for the expected rate of return on an investment in stock can be derived as follows:

$$P_0 = \frac{D_1}{r-g} \Rightarrow r = \frac{D_1}{P_0} + g$$

Example: Alberta Ltd.'s common stock is currently selling at Rs.60 per share. The next annual dividend is expected to be Rs.3 per share, and the earnings, dividends, and stock prices are expected to grow at a rate of: (a) 0 percent; (b) 4 percent; and (c) 6 percent. What is the expected total return in each case from the purchase of the common stock?

Solution:

$$r = \frac{D_1}{P_0} + g$$

$$(a) \quad r = \frac{\text{Rs. } 3}{\text{Rs. } 60} + 0 = 5\%$$

$$(b) \quad r = \frac{\text{Rs. } 3}{\text{Rs. } 60} + 4\% = 5\% + 4\% = 9\%$$

$$(c) \quad r = \frac{\text{Rs. } 3}{\text{Rs. } 60} + 6\% = 5\% + 6\% = 11\%$$

Example: Investors require a rate of return of 12%. At what price will the stock sell if the next expected dividend D_1 is Rs.1 per share and investors expect the dividends and earnings to grow: (a) at 8 percent (b) at 12 percent and (c) at 14 percent?

Solution:

$$P_0 = \frac{D_1}{r-g}$$

$$(a) \quad P_0 = \frac{\text{Rs. } 1}{0.12-0.08} = \text{Rs. } 25$$

$$(b) \quad P_0 = \frac{\text{Rs. } 1}{0.12-0.10} = \text{Rs. } 50$$

$$(c) \quad P_0 = \frac{\text{Rs. } 1}{0.12-0.12} = \text{undefined}$$

The formula is invalid since a necessary condition is $r > g$.

$$(d) \quad P_0 = \frac{\text{Rs.1}}{0.12-0.14} = \text{undefined}$$

Example : Consider a common stock that paid a Rs.3 dividend per share at the end of the last year and is expected to pay a cash dividend every year at a growth rate of 10%. Assume the investor's required rate of return is 12 percent. The value of the stock would be:

$$D_1 = D_0(1+g) = \text{Rs.3} (1+0.10) = \text{Rs.3.30}$$

$$P_0 = \frac{D_1}{r - g} = \frac{\text{Rs.3.30}}{0.12-0.10}$$

Finally, we consider the case of non-constant, or supernormal growth. Firms typically go through life cycles, during part of which their growth is faster than that of the economy and then falls sharply. The value of stock during such supernormal growth can be found thus:

- Compute the dividends during the period of supernormal growth and find their present value;
- Find the price of the stock at the end of the supernormal growth period and compute its present value; and
- Add these two present value figures to find out the value(P_0) of the common stock.

Example: Consider a common stock whose dividends are expected to grow at a 25 percent rate for 2 years, after which the growth rate is expected to fall to 5 percent. The dividend paid last period was Rs.2. The investor desires a 12 percent return. We find the value of this stock as follows:

- Compute the dividends during the supernormal growth period and find their present value. Assuming D_0 is Rs.2, g is 25%, and r is 12%,

$$D_1 = D_0(1+g) = \text{Rs.2}(1+0.25) = \text{Rs.2.50}$$

$$D_2 = D_0(1+g)^2 = \text{Rs.2}(1+0.25)^2 = \text{Rs.3.125}$$

$$\text{PV of dividends} = \frac{D_1}{(1+r)^1} + \frac{D_2}{(1+r)^2} = \frac{\text{Rs.2.50}}{(1+0.12)} + \frac{\text{Rs.3.125}}{(1+0.12)^2}$$

$$= \text{Rs.2.50} (\text{PVIF}_{12\%, 1}) + \text{Rs.3.125} (\text{PVIF}_{12\%, 2})$$

$$= \text{Rs.2.50} (0.8929) + \text{Rs.3.125} (0.7972) = \text{Rs.4.72}$$

- Find the price of the stock at the end of the supernormal growth period. The dividend for the third year is:

$$D_3 = D_2(1+g \ddot{)}, \text{ where } g \ddot{)} = 5\%$$

$$= \text{Rs.3.125}(1+0.05) = \text{Rs.3.28}$$

The price of the stock is therefore,

$$P_2 = \frac{D_3}{r-g \ddot{)}} = \frac{\text{Rs.3.28}}{0.12-0.05} = \text{Rs.46.86}$$

$$PV \text{ of stock price} = Rs.46.86 (PVIF_{12\%,2}) = Rs.46.86 (0.7972) = Rs.37.36$$

- Add the two PV figures obtained in steps 1 and 2 to find the value of the stock.

$$P_0 = Rs.4.72 + Rs.37.36 = Rs. 42.08$$

Example: Investors require a 20 percent per year return on the stock of ABC Ltd. Yesterday, the company paid a Rs.2 dividend (dividends are paid annually). The dividend is expected to grow 30 percent per year for the next 2 years and at 8 percent per year thereafter. At what price should the stock sell?

Solution:

$$D_0 = Rs.2$$

$$D_1 = Rs.2 (1 + 0.3) = Rs.2.60$$

$$D_2 = Rs.2 (1 + 0.3)^2 = Rs.3.38$$

$$D_3 = Rs.3.38 (1 + 0.08) = Rs.3.65$$

Present value of dividends for the first two years is:

$$\frac{Rs.2.60}{(1+0.2)} + \frac{Rs.3.38}{(1+0.2)^2} = Rs.2.60 (PVIF_{20\%,1}) + Rs.3.38(PVIF_{20\%,2})$$

$$= Rs.2.60 (0.8333) + Rs.3.38 (0.6944) = Rs.4.52$$

Find P_2 :

$$P_2 = \frac{D_3}{r - g} = \frac{Rs.3.65}{0.2 - 0.08} = Rs.30.42$$

Present value of Rs.30.42 is:

$$\frac{Rs.30.42}{(1+0.2)^2} = Rs.30.42 (PVIF_{20\%,2}) = Rs.30.42(0.6944) = Rs.21.12$$

$$\text{Thus, } P_0 = Rs.4.52 + Rs.21.12 = Rs.25.64$$

- **Multi-Period Valuation Model:** Since equity shares have no maturity period, they may be expected to bring a dividend stream of infinite duration. Therefore, the value of the equity share may be put as:

$$P_0 = \frac{D_1}{(1+r)} + \frac{D_2}{(1+r)^2} + \dots + \frac{D_\infty}{(1+r)^\infty}$$

$$= \sum_{t=1}^{\infty} \frac{D_t}{(1+r)^t}$$

where,

P_0 = current price of the equity share

D_1 = dividend expected a year hence

D_∞ = dividend expected at the end of infinity

r = rate of return expected on the equity share

(2) Price-Earnings Ratio:

A common approach to valuation is the P/E ratio or the earnings multiplier approach. It is a ratio of the current market price (P) to earning per share (E) of the

company. It represents the investor's willingness to pay for per rupee of the share's earnings or in other words, the investor's confidence in the earning prospects of the company.

There are many ways a stock or a market can be considered/ judged expensive or cheaper:

- P/E ratio of a company or a market index (Sensex/Nifty) may be compared with its historical P/E ratio. A positive trend will indicate stocks are becoming expensive and a negative trend will mean stocks are cheaper if there is little improvement in the growth rate.
- P/E ratio of a stock may also be compared with that of a market index or other stocks to gauge its relative performance.
- P/E ratio of a stock may also be compared with the P/E ratio of the industry it belongs to. If the company is doing good and have better future prospects, and the P/E ratio is less than the industry P/E ratio, it implies that stocks are still cheaper.
- The inverse of prevailing interest rate may also indicate value of a stock. For example., interest rate in an economy is 20%, then the stock index with P/E 5 (1/20%) or less may be considered cheaper.
- Lower P/E does not necessarily indicate that the stock is cheaper. In fact, in many cases, it does indicate the weak performance of a company.

Example: The market price per share of Beta company stock was Rs.20 on December 31, 2003 and Rs.22 on December 31, 2002, while the earnings per share are Rs.2.13 and Rs.2.67 respectively as on that dates. Therefore, the P/E ratio in 2003 is:

$$\frac{\text{Rs.20}}{\text{Rs.2.13}} = 9.39$$

The ratio in 2002 was 8.24 (Rs.22/Rs 2.67). The rise in the P/E multiple indicates that the stock market has a favourable opinion of the company.

Example: ABC Corporation's earnings per share is Rs.7. It is expected that the company's stock should sell at eight times its earnings. The market price is therefore,

$$\text{P/E} = \frac{\text{Market price per share}}{\text{Earnings per share}}$$

$$\text{Market price per share} = \text{P/E multiple} \times \text{earnings per share} = 8 \times \text{Rs.7} = \text{Rs.56}$$

(3) Price to Book Value Ratio:

This is the ratio of price per share divided by book value per share. The book value is determined by economic events as well as accounting conventions. The market price of the share is mainly determined by how the market assesses its earning power. Some analysts view book value as a useful measure of value and therefore, treat the ratio of price to book value as an indicator of how aggressively the market values the firm.

(4) Price to Sales Ratio:

The PSR is calculated by dividing a company's current stock price by its revenue per share for the most recent twelve months. It may also be obtained by dividing the current market value of equity capital by annual sales of the firm. PSR essentially reflects what the market is willing to pay per rupee of sales.

(5) PEG Ratio:

The price-earnings growth ratio considers the annualized rate of growth and compares this with the current share price. Since it is future growth that makes a company valuable to the investors in the market, the earnings growth is expected to depict the valuation of a company better than the historical earnings per share. The PEG ratio is used to get some measure of comparability for stocks growing at different rates. It is a valuation benchmark that puts a stock's PE in a relevant growth framework. It helps to gauge how much premium is appropriate to value the company fairly and how much growth is already priced into a stock. Because of this advantage, the PEG ratio is now extensively used by financial analysts in India.

Some growth stocks tend to get overvalued and subsequently underperform other growth stocks. Study shows that stocks with low PEG tend to outperform stocks with high PEG and the market index. High PEG stock even underperforms the market index. Hence they are generally overvalued.

If a company has a P/E ratio of 15 and is expected to grow at 10% a year over the next two years and has a current P/E multiple of 15, the PEG will be computed as $15/10=1.5$. The interpretation of PEG is that the market price is worth 0.5 times more than what it really is worth; since the assumption is that the P/E multiplier ought to be equal to the earnings growth rate.

A PEG ratio of 1.0 suggests that a company is fairly valued.

(6) EV/EBITDA (Enterprise Value Analysis):

By looking at the enterprise value (EV) to EBITDA ratio, most of the shortcomings of the traditional PE ratio can be avoided. Many companies artificially improve the EPS by manipulating the depreciation policy, by capitalizing their interest payments, and temporarily enjoying tax holidays etc. All these drawbacks may be removed if EBITDA is used, as use of the same will make the depreciation policy irrelevant. It does not make companies capitalizing their interest payment cheaper and also, treats tax paying and non-tax paying companies alike.

$EV = \text{Market capitalization} + \text{Debt} -$

Non-operating assets such as cash and liquid assets)

$EBITDA = \text{Sales} - \text{Cost of goods sold excluding depreciation} -$

selling & administration expenses

In general, low EV/EBITDA indicates cheap stock whereas a high ratio implies expensive stock at the current market price. This ratio shall be compared to the same of other companies in the industry (same sector).

(7) Yield Ratio:

It is a valuation tool, especially when making investment in index. It is the ratio of PLR (Prime Lending Rate) to the Earnings yield (EPS/market rate). A low yield ratio means the stock is cheap while a high ratio implies the stock is expensive. When the yield ratio is used for the market index, low yield ratio means the market is cheap.

(8) Economic Value Addition (EVA):

EVA is a way of measuring real corporate profits. It measures the value creation for the shareholders by a company and is computed as the difference between the net operating profits after tax and the cost of capital employed. A positive EVA (when return on capital exceeds the cost of capital) implies that the company is enhancing shareholders' value and vice-versa.

There are three determinants of EVA:

- **Capital intensity** i.e., the amount of capital used in the business.

- **Capital cost** i.e., the weighted average cost of debt and equity as calculated using CAPM
- **Capital efficiency** i.e., the efficiency with which the capital is employed in the business.

$$EVA = [NOPAT - IC \times WACC]$$

where,

NOPAT = EBIT (Earning before interest and taxes) + interest income + other income - income tax total - tax shield on interest expenses

IC = Invested Capital (Total capital employed) i.e., the sum of average debt and average shareholders' equity.

Shareholders' equity excludes revaluation reserves and any goodwill write-offs so that companies can be made more comparable.

WACC = The weighted average cost of capital is calculated using the CAPM and can be defined as follows:

$$WACC = \left(\frac{D}{V} \times R_b \right) + \left(\frac{E}{V} \times R_e \right)$$

Here,

D = total debt at year end

E = total equity (i.e., market capitalization)

V = D + E

R_b = borrowing rate (1 - marginal tax rate)

R_e = required rate of return on the company's shares
= risk-free rate + (beta × market risk premium)

A positive trend in EVA is likely to push up the prices of the stock in the future and vice-versa. There is evidence that the market price moves in tandem with the EVA either concurrently or in anticipation.

(9) Market Value Addition (MVA):

'Market value added' refers to the premium which the market is willing to pay over the share holders' funds and the loan funds. MVA reveals the market's assessment of the current performance as well as future prospects of the company. It also reveals what the market is willing to pay for the business as a going concern.

MVA = Market value of equity and debt minus (equity + free reserves + debt)

Example:

Total debt: Rs.800 cr.

Equity capital (Rs.10 paid up share) Rs.200 cr.

Reserves: Rs.1000 cr.

Market Price per share: Rs.100

Now, Market value = market capitalization + debt = Rs. [(20 shares * 100) + 800]
= Rs.2800 cr. ----- (A)

Economic Book value = Equity capital + free reserves + debt
= Rs.(200 + 1000 + 800)
= Rs.2000 cr. ----- (B)

MVA = (A) - (B) = Rs.800

Suggested Questions and Problems:

1. Explain the concept of present value with examples
2. How would you estimate the intrinsic value of a share which is to be held for one year?
3. Explain Gordon's share valuation model (constant growth model) with suitable illustration. What are the advantages of the model?

4. Illustrate the two-stage growth model of share valuation with an example
5. How would you determine the discount rate to be applied in the present value models of share valuation?
6. Describe the multiplier approach to share valuation. What is P/E ratio ? How is it used?
7. Explain the following methods of share valuation- PEG, Yield ratio, EVA, MVA, EV/EBITDA
8. The share of a certain stock paid a dividend of Rs.2.00 last year ($D_0 = \text{Rs.}2.00$). The dividend is expected to grow at a constant rate of 6% in the future. The required rate of return on this stock is considered to be 12%. How much should this stock sell for now? Assuming that the expected growth rate and required rate of return remain the same, at what price should the stock sell 2 years hence?
9. Mayfield Ltd.'s previous dividend was Rs.12.00. Earnings and dividends are expected to grow at a rate of 10%. The required rate of return on Mayfield's stock is 15%. What should be the market price of the stock now?
10. The current dividend on an equity share of Azure Ltd. is Rs.2.00. Azure Ltd. is expected to enjoy an above-normal growth rate of 18% for 6 years. Thereafter, the growth rate will fall and stabilize at 12%. Equity investors require a return of 16% from the stock. What is the intrinsic value of the equity share of Azure Ltd.?
11. The equity stock of XYZ Ltd. is currently selling at Rs.32 per share. The dividend expected next is Rs.2.00. The investors' required rate of return on this stock is 12%. Assume that the constant growth model applies to XYZ Ltd. What is the expected growth rate of XYZ Ltd.?
12. A company recently paid an annual dividend on its stock of Rs.3 per share. The dividend is expected to grow at Re.1 per share for the next four years. Thereafter, the dividend is expected to grow at 6% per year indefinitely. The required return on stocks with similar risk is 15%. What is the intrinsic value of the stock?
13. Disha Ltd. paid a dividend of Rs.2 per share for the current year. A constant growth in dividend of 10% has been forecast for an indefinite future period. Investor's required rate of return has been estimated to be 15%. The current market price of the share is Rs.60. Would you buy the share?
14. XYZ Corporation's dividends have been growing at a rate of 7 percent per year over the last 10 years, and this rate is expected to continue in the future. Current dividends per share are Rs.3.85, and its required return is 14.5%. What is the value of XYZ's stock?
15. Amity Corporation has been experiencing rapid growth the last few years. Analysts expect the 30 percent growth rate in dividends to continue for the next 4 years. After the above normal growth period ends, dividends should grow at a more normal rate of 6 percent thereafter. The company has a current dividend of Rs.2.60 per share. If the company has a required return of 17 percent, what is the value of its stock?
16. The earnings of Wellington Ltd. have been growing at a rate of 10 percent per year over the last 5 years, and analysts expect this rate of growth to continue for the next 5 years. Current earnings per share are Rs.4.65. The company has a current dividend-payout ratio of 60 percent, and this should continue in the future. If an investor is interested in purchasing Wellington's stock, and holding it for 5 years, what is the stock worth? Assume an ending P/E ratio of 17 and a required return of 15 percent.
17. The stock of Shine Corporation has a required return of 16.5 percent. Shine's current price is Rs.55, and its current dividend per share is Rs.1.80. Determine Shine's dividend growth rate.
18. Blueberry Ltd. has current earnings per share of Rs.6. Assume a dividend-payout ratio of 55 percent. Earnings grow at a rate of 8.5 percent per year. If Blueberry's required rate of return is 15 percent, what is its current value?

UNIT VIII

FUNDAMENTAL ANALYSIS-ECONOMY, INDUSTRY & COMPANY ANALYSIS

Learning Objectives: This unit aims to provide the students with an introduction to a fundamental analysis of a stock. After going through Unit VIII, students will be able to learn the following concepts:

- Economic Analysis
 - Industry Analysis
 - Company Analysis
-

8.1 Fundamental Analysis

The purpose of the fundamental analysis is to assess the intrinsic/fundamental value of the stock. In general, the market or fundamental value of the stock in the long run depends on the fundamental strength of the company which in turn depends of the strength of the industry and the economy as a whole. However, a surprising number of investors subscribe to the “bigger fool” theory of investing, which argues that the value of an asset is irrelevant as long as there is a “bigger fool” around who is willing to buy the asset from them.

A fundamental analyst believes that analyzing the economy, strategy, management, product, financial status, and other related information will help choose shares, that underperforms the market and provide consistent gains to the investors.

Fundamental analysis is the examination of the underlying forces that affect the interests of the economy, industrial sectors, and companies, the presumption being that a thriving economy fosters industrial growth which in turn leads to development of companies. It tries to forecast the future movement of the capital market using signals from the economy, industry, and company. Fundamental analysis requires an examination of the market from a broader perspective.

This analysis focuses on economic data to evaluate the present and future growth of the economy and usually compares one economy with similar or superior national economies. At the industry level, there is an examination of the market forces for the products, industry cycles etc., while at the company level, it examines financial data, management policies, business strengths etc.

Fundamental analysis thus combines these three analyses to derive a share's current market share price and forecast its future value from this information. If the current fair value is not equal to the current share price and the future estimates are favourable, fundamental analysts believe that the share is either overvalued or undervalued and the market prices will ultimately approach expected fair value. Based on the assumption that market prices do not accurately reflect all available information, fundamentalists see an opportunity to invest and capitalize on perceived price discrepancies.

The problem with fundamental analysis is the evaluation of indicators which requires comparison over different periods of time (for economic analysis) or over various industry groups (for industry analysis).

The models used in valuation may be quantitative but there are inputs for subjective judgments. Even at the end of most careful and detailed valuation, there will be uncertainty about the final numbers, as the assumptions about the future of the economy and company may be subjective.

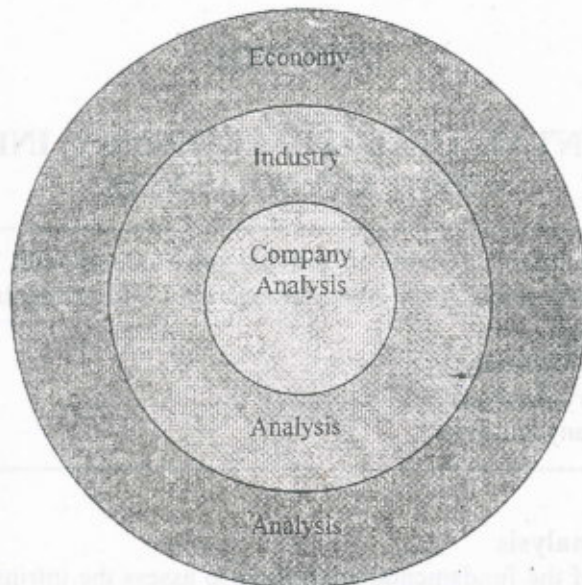


Figure 8.1 - EIC analysis framework

The analysis of economy, industry and company fundamentals constitute the main activity in the fundamental approach to security analysis. These can be viewed as different stages in the investment decision-making process and can be depicted graphically with three concentric circles as shown in Figure 8.1. In this era of globalization we may add one more circle to the diagram to represent the international economy

8.2 Economic Analysis

Economic analysis aims at determining if the economic climate is conducive and capable of encouraging the growth of business sector, especially the capital market. It is important to predict the direction of the national economy because economic activity affects corporate profits; no growth or a slow growth rate of the economy can lead to lower business profits, a prospect that can endanger investor outlook and lower share price.

When the economic expands, most industry groups and companies are expected to benefit and grow. When the economy declines, many sectors and companies usually face survival problems. Hence, to predict share prices, an investor has to spend time exploring the forces operating in the overall economy. Exploring the global economy is essential in an international investment setting. Selection of a country for investment has to focus itself on the examination of a national economic scenario.

Variables used for Economic Analysis

The most used variables for performing economic analysis are:

- 1) Gross Domestic Product
- 2) Monetary Policy and Liquidity
- 3) Inflation
- 4) Interest Rates
- 5) International Influences
- 6) Consumer Sentiment
- 7) Fiscal Policy
- 8) Long-Term Growth Expectations
- 9) Influences on Short-Term Expectations
- 10) Savings and Investment
- 11) Agriculture and Monsoon
- 12) Foreign investment (FII and FD1)
- 13) Global Economy

1) **Gross Domestic Product (GDP):** It is computed by adding the market values of all the final goods and services produced in a year. The major components of GDP are:

- Consumption spending
- Investment spending
- Government expenditure
- Goods and services produced domestically for export
- Production of goods and services consumed in the process of distributing imports to the domestic consumer

A component analysis is useful to investors since other economic indicators such as interest rates and exchange rates have differential effects on the components of GDP.

2) **Monetary Policy and Liquidity:** A good monetary policy and liquidity is important for the growth of the economy. However, excess money supply can result in inflation, high interest rates etc., which in turn leads to costly sources of capital and also slows down economic growth.

3) **Inflation:** This phenomenon of rising prices takes place when demand exceeds supply. The economic effects of minor inflationary movements can be positive and can generally be interpreted as signs of an expanding economy.

4) **Interest rates:** Generally increase in interest rates result in reduced borrowing and consequently, an economic slowdown. There are many kinds of interest rate: bank prime lending rate, Treasury bill rate etc. Movements in long-term interest rates provide information on the probable changes in the level of activity in the interest-sensitive sectors of the economy.

5) **International Influences:** In case of a liberalized economy, any major fluctuation in the international scenario may have a major impact on the local market. An important yardstick for measure of influence of international economies is the exchange rate; a rising exchange rate stimulates the demand for securities in the share market.

6) **Consumer Sentiment:** Variations in consumer sentiment often results in alternating phases of sales growth and decline for consumer-oriented industries. Consumer sentiment is usually expressed in terms of future expenditures planned and the general feeling about the future economy. For instance, a favourable savings environment with high interest rates may persuade customers to defer current purchases for future spending.

7) **Fiscal Policy:** It refers to efforts of the government to stimulate the economy directly, through spending. Government decisions pertaining to taxation and government spending, with the goals of price stability, full employment and economic growth, lead to favourable and unfavourable outlook toward the share market.

8) **Long-term Growth Expectations:** Long-term economic growth is mostly determined by supply factors. The growth has direct impact on share prices.

9) **Influences on Short-term Expectations:** Short-term economic expectations are mostly driven by demand factors. Short-term economic forecasting focuses on the sources of demand to predict future trends in economic variables.

10) **Savings and investment-** The demand for corporate securities has an important bearing on stock price movements. Hence, it is important to know what the level of investment in the economy is and what proportion of that investment is directed towards the capital market. Domestic savings are one of the significant sources of fund for investment in the economy

11) **Agriculture and Monsoon-**Agriculture accounts for about 20% of our GNP and has important linkages directly and indirectly with industry. Hence, the increase or decrease of agricultural production has a significant bearing on industrial production and corporate performance. A spell of good monsoons imparts dynamism to the industrial sector and buoyancy to the stock market.

12) **Foreign investment (FII and FDI)-** Foreign investments in India consist of foreign direct investment (for setting up new projects) and foreign portfolio investment (for investment in securities). Foreign Institutional Investors who make foreign portfolio investment has emerged as a powerful force on the Indian Capital Market and is driving the market sentiment.

13) **Global economy**-The global economy has a bearing on the export prospects of the domestic companies, and also the profitability of their overseas investments and operations. A summary of the economic situation and the resultant impact on the share market is summarized below:

ECONOMIC INDICATOR	SITUATION	IMPACT ON THE SHARE MARKET
1)Gross domestic market	Growth Decline	Positive(Bullish Market) Negative(Bearish Market)
2)Inflation	Constant Prices Inflationary/ Deflationary prices	Positive(Bullish Market) Negative(Bearish Market)
3)Unemployment	Increase Decline	Negative(Bearish Market) Positive(Bullish Market)
4)Individual Savings	Increase Decline	Positive(Bullish Market) Negative(Bearish Market)
5)Interest Rate	High Low	Negative(Bearish Market) Positive(Bullish Market)
6)Exchange Rate	Favourable(Strong against foreign currency) Unfavourable(Weak against foreign currency)	Positive(Bullish Market) Negative(Bearish Market)
7)Domestic Corporate Tax rate	High Low	Negative(Bearish Market) Positive(Bullish Market)
8)Balance of Trade	Positive trade balance (exports>imports) Negative trade balance (imports>exports)	Positive(Bullish Market) Negative(Bearish Market)
9)Forex Reserves	High Low	Positive(Bullish Market) Negative(Bearish Market)
10)Industrial Production	Good Poor	Positive(Bullish Market) Negative(Bearish Market)
11)Monsoon and agricultural production	Good Poor	Positive(Bullish Market) Negative(Bearish Market)
12)Budgetary deficit	High Low	Negative(Bearish Market) Positive (Bullish Market)
13)Public Debt	High Low	Negative (Bearish Market) Positive (Bullish Market)
14)Spending on infrastructure	High Low	Positive(Bullish Market) Negative(Bearish Market)
15)Political situation/stability	High Stability Low Stability	Positive(Bullish Market) Negative(Bearish Market)
16)FDI investment	High Low	Positive(Bullish Market) Negative(Bearish Market)
17)FII activities	High Low	Positive(Bullish Market) Negative(Bearish Market)
18)Money supply	High Low	Negative (Bearish Market) Positive (Bullish Market)
19)Money flow to capital market	High Low	Positive(Bullish Market) Negative(Bearish Market)
20)CRR	High Low	Negative (Bearish Market) Positive (Bullish Market)

8.3 Industry Analysis

Industry analysis demands an insight into the segments/sectors/subdivisions of overall economic activity that influence particular industries, and the relative strength or weakness of a particular industry within an economic environment. Investors perform industry analysis because they believe it helps them isolate profitable investment opportunities. Investment

analysis is more relevant than economic analysis since the final investment decision is to identify investment opportunities. This helps in the next process that of focusing on companies with sustainable competitive advantage in their respective industries. The ability to compute the growth rate of an industry assists in better pricing of specific companies/securities. Two very important reasons to do an industry analysis are:

-It provides an awareness of the market performance and ability to anticipate the future of the industry.

-It is an important part of any company's business plan.

Data needs for an industrial analysis: Industrial analysis requires a variety of quantitative and qualitative data. Though one single source for all the data needs might not be found, industry associations, business publications and the Department of Economic Analysis perform a comprehensive industry analysis.

Tools for industry analysis: Industry analysis examines the performance in terms of certain established accounting parameters and qualitative grading. In other words, industry analysis involves the analysis of data in terms of:

- 1) Cross-sectional industry performance
- 2) Industry performance over time
- 3) Differences in industry risk
- 4) Prediction about market behaviour
- 5) Competition over the industry life-cycle

Tools used are SWOT Analysis, cross sectional industry scrutiny, evaluation of risk measures, and quantitative industry analysis in terms of employment potential, location advantages, growth rates, input-output analysis and industry earnings potential.

1) **Cross-sectional industry performance:** This analysis is made to assess if the rates of return among different industries varied during a given time period. Industry performance is usually measured in terms of growth in sales, profits, market capitalization and the dividend of various industries.

2) **Industry performance over time:** This detailed analysis of industry performance over a period of time identifies the stage of the product life-cycle that the industry is expected to be in, in subsequent time periods. A successful forecast of future performance of the industry is a difficult task in certain economies.

3) **Differences in Industry Risk:** This risk specifically analyses the issues of whether risk varies across industries in a given time period and if industry risk measures are stable over time. Industry risk, measured in terms of market performance of shares belonging to a particular industry group, seeks to identify market perception about industry risk.

4) **Prediction about market behaviour:** SWOT analysis, the assessment of an industries' strengths (internal), weaknesses (internal), opportunities (external) and threats (external), helps to evaluate an industry's position to exploit its competitive advantages or defend against its weaknesses. An effective investment strategy is one which takes advantage of the industry's opportunities by using its strengths and wards off threats by avoiding them or by compensating for its weaknesses. SWOT analysis strategies can be described as below:

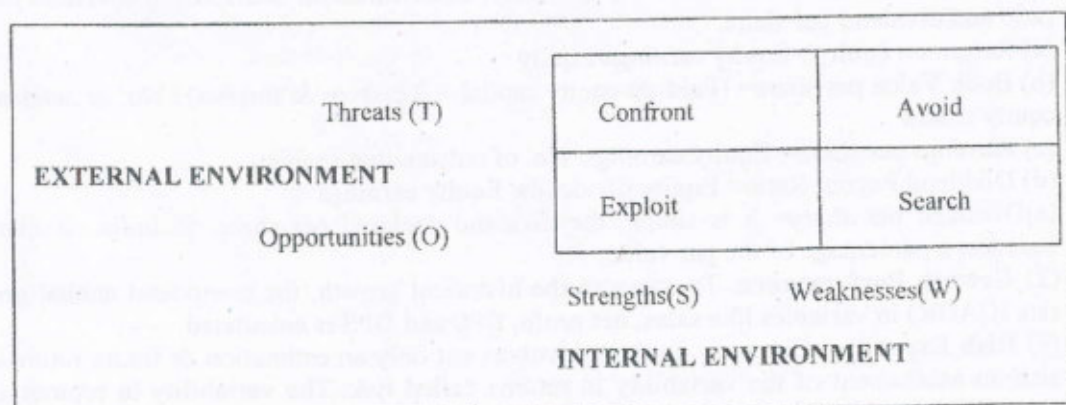


Figure 8.2 - SWOT Analysis

5) **Industry life cycle analysis:** Every industry may be analysed in terms of a life cycle with four well-defined stages:

(a) **Pioneering stage:**

- The product or technology is relatively new
- Entry of many entrepreneurs due to promising prospects
- Existence of keen competition; only a few entrants may survive this stage

(b) **Rapid growth stage**

- Orderly growth
- Firms that survived the first stage, experience significant expansion in sales and profits

(c) **Maturity and stabilization stage**

- Industry leaders are established by competitive dominance
- Many consolidations and mergers take place.
- Growth rate is comparable to that of the economy as a whole

(d) **Decline stage**

- Crucial stage for business houses
- Industry may grow slightly during prosperous periods, stagnate during normal periods, and decline during recessionary periods

There are considerable variations in terms of the relative duration of the various stages and the rates of growth during these stages. For evaluation of industry performance, it is essential to be aware of the business cycles and how they may impact investment analyses.

6) **Quantitative Industry Analysis:** A complete analysis and interpretation of industry performance involves both quantitative and qualitative analysis. Quantitative data analysis may include employment data analysis, input-output analysis and earnings data analysis, and is undertaken to identify the right industry for investment opportunities.

8.4 Company Analysis

Analysis of a company consists of measuring its performance and ascertaining the cause of this performance. When some companies do well irrespective of economy or industry failures, this implies that there are certain unique characteristics that had made it a success. The identification of these characteristics, whether quantitative or qualitative, is referred to as company analysis.

Quantitative indicators of company analysis are the financial indicators and operational efficiency indicators. *Financial indicators* are the profitability indicators and financial position indicators analyzed through the income and balance-sheet statements of the company. *Operational efficiency indicators* are capacity utilization and cost versus sales efficiency of the company, which includes the marketing edge of the company. The sources for such information are the published statements of the company besides other financial magazines, newsletters and websites supply consolidated reports of the companies.

The key financials examined in historical financial analysis are:

(1) **Earnings and Dividend Level:** Assessment of the earnings and dividend level include examination of financials like return on equity, book value per share, EPS, dividend payout ratio and dividend per share.

(a) Return on equity = $\text{Equity earnings} / \text{Equity}$

(b) Book Value per share = $(\text{Paid-up equity capital} + \text{Reserves \& surplus}) / \text{No. of outstanding equity shares}$

(c) Earnings per share = $\text{Equity earnings} / \text{No. of outstanding shares}$

(d) Dividend Payout Ratio = $\text{Equity dividends} / \text{Equity earnings}$

(e) Dividend per share = It is simply the dividend declared per share. In India, dividend is stated as a percentage of the par value.

(2) **Growth Performance:** To measure the historical growth, the compound annual growth rate (CAGR) in variables like sales, net profit, EPS and DPS is calculated.

(3) **Risk Exposure:** Company analysis involves not only an estimation of future returns, but also an assessment of the variability in returns called risk. The variability in returns arises primarily because of variability in sales. The sensitivity of profits to changes in the levels of

sales is measured by a ratio called degree of total leverage (DTL). This ratio is used as a measure of risk. It is calculated as follows:

$$\text{DTL} = \frac{\text{Contribution (sales-the variable costs)}}{\text{Profit before tax (PBT)}}$$

DTL may be subdivided into two components: (a) the degree of operating leverage (DOL) arising from the cost structure of the company, and (b) the degree of financial leverage (DFL) arising from the capital structure of the company.

DOL measures the percentage change in EBIT for a one percent change in sales and is computed as:

$$\text{DOL} = \frac{\text{Contribution}}{\text{EBIT}}$$

DFL measures the percentage changes in PBT for a one percent change in EBIT and is computed as:

$$\text{DFL} = \frac{\text{EBIT}}{\text{PBT}}$$

The degree of the total leverage is the product of DOL and DFL and measures the percentage changes in PBT for a one percent change in sales.

Measures like beta and volatility of return on equity may also be used to assess the risk. According to the Capital Asset Pricing Model (CAPM), the risk of a stock is denoted by its beta which measures how sensitive are the return on the stock to variations in the market return.

Volatility of return on equity may be stated as: $\frac{\text{Range of return on equity over n years}}{\text{Average return on equity over n years}}$

(4) **Valuation Multiples:** The most commonly used valuation multiples are:

-Price to Earnings Ratio: The PE ratio indicates the price that investors are willing to pay for every rupee of earnings per share.

-Price to Book Value Ratio: This ratio indicates the price investors are willing to pay for every rupee of book value per share.

A qualitative analysis of the company would include evaluation of the following aspects:

(1) **Present situation and future prospects:** Issues regarding availability and cost of inputs, regulatory framework, technological and production capabilities, marketing and distribution, finance and accounting, human resources etc. are examined while analysing the current position and future prospects of the company. The future prospects of a company would also depend upon a number of other factors some of which are: company's market share, capacity utilization, modernization and expansion plans, order book position etc. One of these information may be available in the directors' report and the Chairman's speech at the annual general meeting of the company.

(2) **Evaluation of Management:** Management quality is a key factor that shapes the profitability of a firm and subsequent returns to shareholders. Important points to be considered in this regard are management objectives, plans and programmes, organizational structure, management systems, research and development programmes, corporate governance, management commitment and competence, professionalism, future orientation, image building, investor friendliness etc.

Illustrations

The following examples illustrate how financial analysis of a company may be carried out.

Example: The financials of XYZ Ltd. are given below:

(Rs. in crores)

	2003	2004	2005	2006	2007
Net Sales	1020	1090	1210	1350	1520
Cost of Goods sold	734	807	883	959	1095
Gross Profit	286	283	327	391	425
Operating Expenses	72	74	85	105	120
Operating Profit	214	209	242	286	305
Non-operating surplus/ deficit	11	14	18	-12	-5
PBIT	225	223	260	274	300
Interest	40	45	60	66	55
Profit before tax	185	178	200	208	245
Tax	35	38	40	52	50
Profit after tax	150	140	160	156	195
Dividends	60	60	65	65	70
Retained Earnings	90	80	95	91	125

Equity Share Capital (Rs.10par)	200	200	200	250*	250
Reserves & Surpluses	400	480	575	616	741
Shareholders' funds	600	680	775	866	991
Loan funds	400	450	550	600	615
Capital employed	1000	1130	1325	1466	1606
Net fixed assets	600	650	710	850	900
Investments	50	55	60	70	80
Net current assets	350	425	555	546	626
Total assets	1000	1130	1325	1466	1606
Market price per share (end of year)	60	55	65	57	75

- (a) Calculate the following for the last five years: return on equity, book value per share; EPS; PE ratios; MB ratios
 (b) Calculate the CAGR of sales and EPS
 (c) Estimate the EPS based on past growth rate for the year 2008
 (d) Comment on the market price of the share in the year 2008

Solution

Return on equity = profit after tax / shareholder's fund

Book Value per share = shareholders' funds / number of shares

EPS = profit after tax / number of shares

P/E ratio (prospective) = (price per share at the beginning of the year) / Earnings per share for the year

MB ratios (retrospective) = (price per share at the end of the year) / (Book value per share at the end of the year)

CAGR in sales = $(\text{sales for 2007} / \text{sales for 2003})^{1/4} - 1$

CAGR in EPS = $(\text{EPS for 2007} / \text{EPS for 2003})^{1/4} - 1$

(a)	2003	2004	2005	2006	2007
Return on equity	150/600 =25%	140/680 =20.6%	160/775 20.6%	156/866 =18.0%	195/991 =19.7%
Book value share	600/20 =Rs30	680/20 =Rs34	775/20 =Rs38.8	866/25 =Rs34.6	991/25 =Rs39.6
EPS	150/20 =Rs 7.5	140/20 =Rs 7	160/20 =Rs 8	156/25 =Rs6.24	195/25 =Rs7.8
P/E ratio	60/7 =8.6	55/8 =6.9	65/6.24 =10.4	57/7.8 =7.3	
M/B ratio	60/30 =2.0	55/34 =1.6	65/38.8 =1.7	57/34.6 =1.6	75/39.6 =1.9

- (b) CAGR in sales = $(1520/1020)^{1/4} - 1 = 0.105 = 10.5\%$
 CAGR in EPS = $(9.75/7.5)^{1/4} - 1 = 0.068 = 6.8\%$
- (c) Estimated EPS for the year 2008 = $7.8 * (1+0.068) = \text{Rs } 8.33$
- (d) Estimated market price of the share in the year 2008
 = Estimated EPS * PE ratio
 = $\text{Rs } 8.33 * (75/7.8) = \text{Rs } 80$

The share price is likely to go up.

Example Giving below are the financial data relating to two scrips in the pharmaceutical industry with a paid-up value of Rs. 10 per share. Based on the data presented, identify the scrip you would select, giving reasons. The required rate of return is 20%, the

$MP_A = \text{Rs. } 120$
 $MP_B = \text{Rs. } 500$

Year	1992		1993		1994		1995		1996	
	Company		Company		Company		Company		Company	
	A	B	A	B	A	B	A	B	A	B
	Rs		Rs		Rs		Rs		Rs	
FV	10	10	10	10	10	10	10	10	10	10
BV	15.12	26.29	17.60	28.99	19.98	36.73	23.26	41.05	25.04	47.18
EPS	2.78	2.26	5.48	2.96	5.87	8.97	8.06	6.90	6.28	9.13
DPS	2.40	1.00	3.00	2.00	3.50	3.00	4.00	1.50	4.50	3.00

Solution

Based on above analysis we would select the scrip of Co. A for investment as:

- (i) It is less risky
- (ii) It yield stable and consistent returns
- (iii) It pay more average DPS
- (iv) DPS paid by Co. A is increasing.

Suggested Questions

1. What is fundamental Analysis?
2. Describe the key economic variables that investors must monitor as part of his fundamental analysis.
3. Explain the impact of the following economic variables on the performance of the economy and share prices
 a) interest rate b) inflation c) GDP growth rate d) Fiscal policy
4. What is industry analysis?
5. Explain the concept of industry life cycle. Describe the different stages in the industry life cycle.
6. "The first step in industry analysis is to determine the stage of growth through which the industry is passing." Explain
7. Describe the various characteristics of an industry that an analyst must considered while doing industry analysis
8. What is company analysis? Explain how financial ratios can be used to determine the strengths and weaknesses of a company.

UNIT-IX

TECHNICAL ANALYSIS AND EFFICIENT MARKET THEORY

Learning Objectives: This unit aims to provide the students with an introduction to an overview of the various techniques of technical analysis. After going through Unit IX, students will be able to learn the following concepts:

- Dow Theory
- Principles of Technical Analysis
- Share price and volume indicators
- Charts of price patterns
- Mathematical indicators of future price
- Market/technical indicators of future price
- Efficient market theory

9.1 Technical Analysis (TA)

The Concept : Prices of securities in the stock market fluctuate daily on account of continuous buying and selling. Stock prices move in trends and cycles and are never stable. An investor is interested in buying securities at a low price and selling them at high price so as to get high profit. He, therefore, tries to analyse the movement of the share prices in the market. Two approaches are commonly used for this purpose-**Fundamental and technical analysis**. Through fundamental analysis, he tries to determine the worth or intrinsic value of the stock based on the current and future earnings of the company. He generally looks into the distant future. Through technical analysis, he tries to study the stock price behaviour preferably in the short-run.

Technical analysts believe that important information about future stock price movements can be obtained by studying the historical price movement of stock prices. Prices move in trends or waves which may be upward or downward. The present trends are influenced by the past trends and that the projection of future trends is possible by an analysis of the past price trends. A technical analyst analyses the price and volume movements of individual securities as well as the market index. Thus, he studies the past price and volume behaviour so as to predict the future price behaviour of the securities and the market index. A technical analyst attempts precisely at two basic questions (i) is there a discernible trend in the prices? (ii) if there is, then there are indications that the trend would reverse?

The methods used to answer these questions are visual and statistical. The visual methods are examination of a variety of charts to make out patterns, while the statistical procedure analyse price and return data to make decisions. Thus, the technical analysis only helps to improve the knowledge of the probabilities of price behaviour (upswing or downswing) and help the investment process.

In general, the prices and volume data are recorded on graph paper and the data are scrutinized in search of repetitive patterns. Technical analysts base their buy and sell decisions on the charts they prepare.

Principles of Technical Analysis (TA)

The principles involved in technical analysis and in particular in the Dow Theory Analysis, can be summarized as follows:

1. Principle of wave motion and trends leads to different types of price trends.
2. Action and reaction resulting from buying and selling pressures lead to corrections and rallies to the major up trends and downtrends respectively.
3. The prices move within a band of resistance and support lines, and the trends involve up and down movements in a more or less horizontal path, until the prices are driven up and down.

Basic Tenets of Technical Analysis:

1. TA assumes that all fundamental factors are discounted by the market and are reflected in prices. TA is not concerned with intrinsic worth of a share. A true technical analyst is not

worried about a company's assets, turnover, profits, dividends. The TA analyst only looks at its price chart in order to decide whether to invest in it.

2. These prices move in trends or waves which can be both upward and downward depending on the sentiment, psychology of operators/investors. Supply and demand of shares are governed by many rational and irrational factors.
3. The present trends are influenced by the past trends, and the projection of future trends is possible by an analysis of past price trends.
4. Irrespective of minor fluctuations in the stock market, share prices tend to move in trends which persist for an appreciable length of time.
5. Shift in supply and demand, no matter why they occur, can be detected sooner or later in the charts of market action.
6. Some chart patterns tend to repeat themselves.

Framework for Technical Analysis

Technical analysis can be applied to both an aggregate of price (example- market index) and individual stocks. Technical analysis includes the use of graphs/charts and technical trading rules and indicators. Tools and techniques available for technical analysis can be classified into three categories-

- Stock price and volume indicators/techniques
- Mathematical indicators
- Technical/market indicators

Stock price and volume indicators/techniques

Price and volume are the primary tools of the pure technical analyst, and chart is the most important mechanism for displaying this information. Volume data are used to gauge the general condition in the market and to help assess its trends. Some of the indicators are:

1. Dow Theory

Technical analysis has its roots in the Dow Theory. The theory was postulated by Charles H. Dow during 1900-1902. The Dow Theory views the movement of market prices as occurring in three categories:

Primary movements: These are called bull and bear markets. Bull markets are where prices move in an upward manner for several years. Bear markets, on the other hand, are where prices move in a downward manner for several months or a few years. It is the long term trend in the market.

Secondary movements: These are up and down movements of the stock prices that last for a few months and are called corrections.

Daily movements: These are the minor movement and meaningless random daily fluctuations. These movements are not significant and have no analytical value.

According to Dow Theory, the price movement in the market can be identified by means of a line chart. In this chart, the closing prices of the shares or market index may be plotted against the corresponding trading days. The charts would help identifying the primary and secondary movements

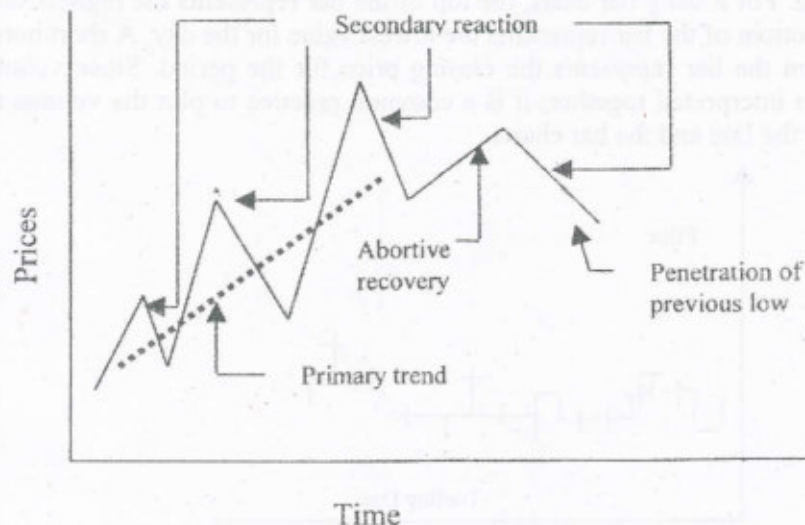


Figure:9.1

2. Charts of price patterns

Charts have the strength of condensing information into a pattern that is easy to understand and grasp rather than numbers or statements. Chart patterns put all buying and selling that takes place in the capital market into perspective by consolidating the forces of supply and demand into an overall picture. As a complete pictorial record of all trading, chart patterns provide a framework to analyze the position of the market in terms of a single share or a consolidation of the market position.

Technical analysts use three types of charts:

- (i) Line Chart,
- (ii) Bar Chart, and
- (iii) Point & Figure Chart

Line Chart:

In a line chart, the closing price for each period is plotted as a point. These points are joined by a line to form the chart. Hence the name line charts. The period may be a day, a week or a month. When the share is not traded on a day, the chart displays a gap in the line. Chart pattern can last from a few days to many months or even years.

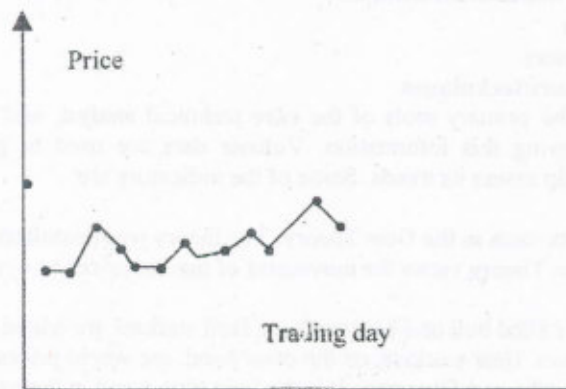


Figure:9.2

Bar Chart:

The bar chart is also commonly used by technical analysts. The horizontal scale on the bottom of the chart indicates time. The time scale can be daily, weekly or monthly depending on trading frequency in the market. The daily bar chart indicates the range of prices for one day's trade, on the vertical scale of the chart. The bar is the range of price for a specific time period. For a daily bar chart, the top of the bar represents the highest value for the day while the bottom of the bar represents the lowest value for the day. A short horizontal line protruding from the bar represents the closing price for the period. Since volume and price data are often interpreted together, it is a common practice to plot the volume traded, immediately below the line and the bar charts.

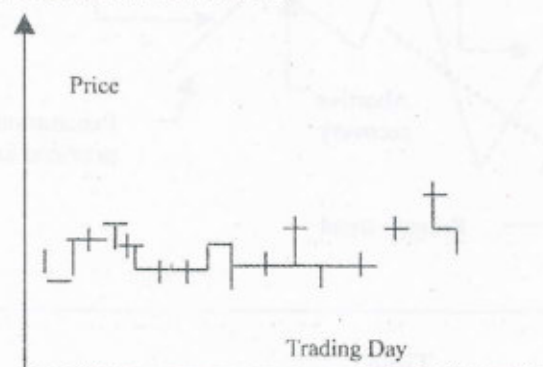


Figure:9.3

Point and Figure (P&F) Charts

P&F charts are based on the average prices or closing prices of shares. They are one-dimensional; they only indicate price changes. Since the points on the graph are marked with the figures, i.e. the share prices, these charts are called P&F charts.

3. Chart Patterns

Support and Resistance Levels:

Fitting a trend line for price changes on daily basis is the first step in the analysis of charts. These changes may be pointing upwards or downwards or stable over a horizontal one.

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

Reversal patterns

Price movements exhibit up-trends and down-trends. The trends reverse direction after a period of time. These reversals can be identified with the help of certain charts formations that typically occur during these trend reversals. Thus, reversal patterns are chart formations that tend to signal a change in direction of the earlier trend. Reversal patterns indicate that an important reversal in trend is taking place. Examples of these are the head and shoulder formations, double tops and bottoms, saucer formations and so on.

Continuation patterns

There are certain patterns which tend to provide a breathing space to the earlier sharp rise or fall and after the completion of these patterns, the price tends to move along the original trend. These patterns are formed during side way movements of share prices and called continuation patterns because they indicate a continuation of the trend prevailing before the formation of the pattern. Examples- Triangles, Flags and Pennants.

Mathematical Indicators

Share prices do not rise or fall in straight lines. The movements are erratic. This makes it difficult for the analysts to gauge the underlying trend. He can use the mathematical tools to smoothen out the apparent erratic movements of share prices and highlight the underlying trend. Some of mathematical tools are

1. Moving Averages

Moving averages are used to help identify the trend of prices. By creating an average of prices that "move" with the addition of new data, the price movement on the security being analyzed is "smoothed". In other words, by calculating the average value of a share or indicator, day to day fluctuations are reduced in importance and what remains is a stronger indication of the trend of prices over the period being analyzed. The term "moving" refers to the method of calculation of the average while dropping the first period of the calculation. This ensures that the average continues to be calculated by the same number of periods but moves with each new period of data occur. Thus, the average "moves" along with price and changes in value as price data is generated. An 18 day moving average represents the trend in prices over a period of 18 days. A long 50 day moving average is smoothed more than an 18 day moving average, with each new day's data making less impact on the calculation of the moving average value than a shorter term moving average such as the 18 day moving average. A long term moving average such as the 200 day moving average is plotted to identify long-term trends in price.

Example- Given the following closing prices for the Marvel Corporation, calculate a 4-day moving average for its stock prices.

Day	Closing Prices(Rs.)
1	10.125
2	10.500
3	11.250
4	11.750
5	12.000
6	11.500
7	11.125
8	13.250
9	13.750
10	14.250

Solution: We will start with day 4 and go through day 10 dropping and adding a price each day as we move forward one day at a time:

Day	Computations	Moving average Price
4	$(10.125+10.50+11.25+11.75)/4 =$	Rs.10.90625
5	$(10.50+11.25+11.75+12.00)/4 =$	Rs.11.375
6	$(11.25+11.75+12.00+11.50)/4 =$	Rs.11.625
7	$(11.75+12.00+11.50+11.125)/4 =$	Rs.11.59375
8	$(12.00+11.50+11.125+13.250)/4 =$	Rs.11.96875
9	$(11.50+11.125+13.25+13.75)/4 =$	Rs.12.40625
10	$(11.125+13.25+13.75+14.25)/4 =$	Rs.13.09375

2. Relative Strength Index:

Relative strength index (RSI) was first introduced by Welles Wilder in an article in the *Commodities* (now known as *Futures*) magazine in June, 1978. Subsequently, calculations and interpretations of the RSI were provided in his book, *New Concepts in Technical Trading Systems*.

The RSI is a price following oscillator that ranges between 0 and 100. It measures the internal strength of a share by monitoring changes in its closing prices. The RSI usually tops above 70 and bottoms below 30. It usually forms these tops and bottoms before price chart. A popular method of analyzing the RSI is to look for a divergence in which the security is making a new high, but the RSI is falling to surpass its previous high. This divergence is an indication of an impending reversal. When the RSI then turns down and falls below its most recent trough, it is said to have completed a "failure swing". The failure swing is considered a confirmation of the impending reversal.

Divergences occur when the price is at new high (or low), but, this is not confirmed by a new high (or low) in the RSI. Prices usually correct and move in the direction of the RSI. The most significant signal is generated on "bullish" or "bearish" divergences between the RSI and the price of the share. The RSI is a simple formula numerous variations of the same formula have been used in the computation of the RSI. The basic formula is:

$$RSI = 100 - \frac{100}{(1+RS)}, \quad RS = \frac{\text{Average of n-period price gains}}{\text{Average of n-period price loss}}$$

Most widely used period (n) is 14 days

Example:

Day	Closing Price(Rs.)	Price Gain	Price Loss
1	43	✓	-
2	45	2	-
3	44	-	1
4	46	2	-
5	45	-	1
6	43	-	2
7	47	4	-
Total		8	4

$$RS = \frac{8/7}{4/7} = 2$$

$$RSI = 100 - \frac{100}{(1+2)} = 66.67$$

When Wilder introduced the RSI, he recommended using a 14-day RSI. Since then, the 9-day and 25-day RSIs have also been used. When less number of days is used to calculate the RSI, the indicator is subject to more volatility.

The other variation of computing RSI is as follows:

$$RSI = 100 * \left(1 - \frac{D}{-D+U} \right) \quad RSI = 100 - \left\{ \frac{100}{1 + U/D} \right\}$$

where-

D = an average of downward price change;

U = an average of upward price change.

RSI fluctuates between 0 and 100. RSI peaks indicate overbought level and suggest price tops, while RSI troughs denote oversold levels and share price bottoms. Absolute levels vary in meaning from share to share and in different market environments. Two horizontal reference lines are normally placed at 30 (indicating an oversold area) and 70 (indicating an overbought area). These reference lines can be adjusted depending on the market environment. Sometimes these lines can be moved to 40 and 80 in bull market and lower them to 20 and 60 in bear market. The RSI can stay overbought in bull markets and oversold in bear markets for prolonged periods.

Example: Charles, a technical analyst, is doing a relative strength assessment of World Chem Ltd. with the following data:

Year	Price(P _w) Of World Chem Ltd.	Price(P _m) Of Index	Price(P _i) Of Index Chemical Industry
19X4	Rs.40	Rs.250	Rs.20
19X5	Rs.45	Rs.270	Rs.22
19X6	Rs.65	Rs.300	Rs.25

The relative strength calculations are as follows:

(1)	(2)	(3)	(4)
YEAR	$\frac{P_W}{P_I}$	$\frac{P_W}{P_M}$	$\frac{P_I}{P_M}$
19X4	$\frac{\text{Rs.40}}{\text{Rs.20}} = 2.00$	$\frac{\text{Rs.40}}{\text{Rs.250}} = .160$	$\frac{\text{Rs.20}}{\text{Rs.250}} = .080$
19X5	$\frac{\text{Rs.45}}{\text{Rs.22}} = 2.05$	$\frac{\text{Rs.45}}{\text{Rs.270}} = .167$	$\frac{\text{Rs.22}}{\text{Rs.270}} = .081$
19X6	$\frac{\text{Rs.65}}{\text{Rs.25}} = 2.60$	$\frac{\text{Rs.65}}{\text{Rs.300}} = .217$	$\frac{\text{Rs.25}}{\text{Rs.300}} = .083$

As column(2) indicates, World Chem Ltd. showed some relative strength in its industry during 19X5, but considerable *industry strength* was shown in 19X6 as the ratio went from 2.05 to 2.60. Similar *market relative strength* was exhibited in column (3). Column (4) indicates that the average firm in the chemical industry in 19X5 had relative market strength. However, comparing column (3) and column (4) shows that in 19X6, World Chem had significantly more relative market strength than the typical chemical company.

3. Stochastic Oscillator (%K and %D)

The stochastic process has an infinite progression of jointly distributed random variables. The Stochastic Oscillator compares where a share's price closed, relative to its trading range over the n-time periods.

Basically, this is an overbought/oversold technical indicator. If a share or index identified as "over-sold", there exists the possibility that buyers will enter the market, driving the price upward. On the other hand, if a share is "overbought", the sellers will overpower buyers to drive the price lower.

The stochastic indicator is plotted as two lines: the 'Percent D' %D line and the 'Percent K' %K line. The %K is the more sensitive of the two oscillators, but it is the %D line, that carries greater weight and give major signals. Both these values range from zero to 100. Values above 80 are considered strong and suggest prices are closing near their highs. Values below 20 indicate prices are closing near their lows and are indicative of weakness.

It is usually estimated that %K will change before %D. However, when the %D line changes directions prior to the faster %K line, a slow and steady reversal is often indicated. When both %K and %D lines change direction, and the faster %K changes direction to retest a crossing of the %D line, but does not cross it, a confirmation of the stability of the prior reversal is made.

The formula for %K parameter of the stochastic or "raw stochastic" is:

Closing price-lowest low %K periods

%K Parameter = x 100

(Highest high %K periods) - (lowest low %K periods)

This formula can be restated as follows:

$$\%K = 100 * [(CL - L_n) / (H_n - L_n)]$$

where CL = the current day's close

L_n = the lowest point over the past n days
 H_n = the highest point over the past n days
n = the number of days, typically five or more

A moving average of %K is then calculated using the number of time periods (n days) used in the %K computations. This moving average is called %D. %D represents a smoothing of %K and is a n-day moving average of %K.

The formula for %D sometimes can be computed as follows:

$$\%D = 100 * (H_n / L_n)$$

Where L = the lowest low for the n-day period

H = the highest high for the same n-day period

The fast stochastic (%K) and (%D) are plotted on the same chart.

The slow stochastic, a less sensitive indicator, goes a step further in the smoothing process. The %D of the fast stochastic becomes the new %K, which is then smoothed once again using a n-day moving average to obtain the new "slow" %D. The slow stochastic is preferred for filtering out market noise and is less prone to violent price movements.

The calculation of %K and %D stochastic (from the following information considering 5-days period) is illustrated below:

DAY	HIGH	LOW	CLOSE	(C-L ₅)	(H ₅ -L ₅)	%K	%D*
1	650	570	620				
2	700	600	650				
3	670	580	630				
4	650	550	580				
5	680	620	650	650-550	700-550	66.67	
6	750	680	700	700-550	750-550	75	
7	800	700	750	750-550	800-550	80	73.89
8	830	780	780	780-550	830-550	82.14	79.05

* %D is the 3 days moving average of %K

When %D scores above 70%, it indicates an overbought situation and therefore, a sell strategy is recommended.

When %D scores below 30%, it indicates an oversold situation and therefore, a buy strategy is recommended.

4. Rate of Change (ROC)

Rate of change displays a share's price performance as a percentage. ROC displays in percentage the increase/decrease in the price over a specified time period. For example, if ROC is 10, it means that the share price has increased 10 percent since the prior period. Similarly, a value of -10 percent means that, the share's price has fallen by 10 percent since the prior period.

ROC measures the rate of change of the current price as compared to the price a certain number of days or week back. To calculate a 7 day rate of change, each day's price is divided by the price which prevailed 7 days ago and then 1 is subtracted from this price ratio

$$ROC = \frac{\text{Current price}}{\text{Price 'n' period ago}} - 1$$

The calculation of 7 day ROC is illustrated below:

Days	closing price	closing price 7 day ago	price ratio	ROC =ratio-1
1	70	-	-	-
2	72	-	-	-
3	73	-	-	-
4	70	-	-	-
5	74	-	-	-
6	76	-	-	-
7	77	-	-	-
8	75	70	1.07	0.07
9	78	72	1.08	0.08
10	80	73	1.1	0.10
11	79	70	1.13	0.13
12	78	74	1.05	0.05
13	76	76	1.0	0.00

Market Indicators

All the technical analysis charts discussed earlier were analysed using a share data. There is another group of technical tools designed to help an investor gauge changes in all shares within a specific market. These indicators are usually referred to as market/technical indicators because they gauge an entire market, not just an individual share. Market indicators typically analyse the stock market, although they can be used for other markets (eg, futures, and commodities).

1. Advance Decline (Breadth) Indicator

The advance-decline line measures, on a cumulative daily basis, the net difference between the number of stocks advancing in price and those declining in price for a group of stocks. Subtracting the number of declines from the number of advances produces the net advance for a given day (which can also be negative). This measure may include thousands of stocks

The calculation of advance-decline line is shown below

Day	Advances	Declines	Differences	Cumulative
1	350	300	+50	+50
2	325	320	+5	+55
3	275	375	-100	-45
4	300	350	-50	-95
5	310	340	-30	-125

The advance-decline line often referred to as the breadth of the market, results from plotting a running total of these numbers across time. The line can be based on daily or weekly figures. The advance-decline line is compared to a market index in order to analyze any divergence and this divergence can signal that the trend is likely to change. If both are rising (declining), the overall market is said to be technically strong (weak). If the advance-decline line is rising while the market index is declining, the decline in the market index should reverse itself.

The breadth (advance-decline) of the market analysis is based on the number of stock market cycles. Thus the turning point for a bull phase is at that where a large number of stocks are falling when the market index is still rising. In a bull phase, if the breadth line declines to successive new low, while the market index is going up, it means that a large number of scrips are declining although blue chips included in the market index continues to

rise, but the suggestion is that they is an approaching peak and a major downtrend is in the offing later.

2. Volume indicators

Another indicator of the breadth of the market is the volume of transactions. When interpreted in conjunction with the index or price, it can provide useful clues on how the market would behave in the near future. (A rising index/price with increasing volume would signal a buy because the situation reflects an unsatisfied demand in the market, similarly, a falling market with increasing volume signals a bear market and the prices would be expected to fall further. A rising market with decreasing volume indicates a bull market that is running out of steam, while a falling market with dwindling volume indicates a bear market that is becoming breathless. Thus, by combining the index/price and the volume data, a suitable strategy can be formed for trading. Nowadays as volume data is regularly supplied by the stock exchanges, it is possible to analyse the index/price and volume data for the market as a whole and for individual securities listed in the specified category.

9.2 Efficient Market Theory

Introduction

The efficient market hypothesis otherwise known as the Random Walk Model is the logical extension of the fundamental and technical analysis for equity investment decisions. The Efficient Market Hypotheses (EMH) considers that individuals cannot out perform the market for the simple reason that, there are numerous knowledgeable analysts and investors who would not allow the market price to deviate from the intrinsic value due to their active buying and selling. It is also observed that the current market price will reflect the intrinsic value and therefore, there is no need for fundamental or technical analysis.

The information known to the public is immediately discounted by all investors and will be reflected in share prices in the stock market. All investors know the all-possible information and behave rationally. The price changes will be influenced by new information and stock prices will automatically adjust accordingly. The securities markets are said to be efficient if the following conditions are satisfied:

- (a) Transaction costs are ignored.
- (b) Every investor is freely allowed to borrow or lend at the same rate.

Definition of Market Efficiency

Eugene Fama states that "An efficient capital market is a market that is efficient in processing information. The prices of securities observed at any time are based on correct evaluation of all information available at that time in efficient market prices fully reflecting all available information".

William Sharpe stated that "A perfectly efficient market is one in which every security price equals its market value all times".

The Random Walk Theory points out that the financial markets are so competitive that there is immediate price adjustment. This is because of great communication system through which information can be distributed. The speed at which information spreads will determine the efficiency of the market. According to the theory, the changes in prices of stocks in different period show independent behaviour and are dependent on the new piece of information that are received but with in themselves are independent of each other.

The basic essential fact of random walk theory is that the information on stock prices is immediately and fully spread so that other investors have full knowledge of information.

Forms of Efficient Market Theory

The information available to the public can be categorised into three forms. The past price information, other public information and inside information. These factors may be used to make average returns on investment. Based on the information available, the market efficiency can be classified as follows:

- (a) Weak form (past price information)
- (b) Semi strong form (other public information)
- (c) Strong form (Inside information)

A. Weak Form

Weak Form is the oldest technique of the efficient market theory. A market is said to be weakly efficient market if the current price reflects all the past market data (stock price and volume data). According to this theory, the past history of price information is of no value in assessing future changes in price. The stock market price reflects all known information with reference to past stock prices, trends and volumes. This theory reveals that past data cannot be used to predict future stock price.

This theory is also popularly known as Random Walk Theory. It reveals that the successive price changes are independent. The prices of the stock market at any time will on the average reflect the intrinsic value of the security, thus, the trends provide no basis for forecasting the future.

B. Semi Strong Form

A market can be said to be 'efficient in the semi-strong form' if current prices reflect all available information. According to the Semi Strong Form Theory, the market absorbs quickly and efficiently not only the price information but also all publicly available information. The public information is found in the form of financial reports such as balance sheet, profit and loss accounts, and earning and financial results. The other financial elements like financial structure, liquidity, solvency effects, and the profitability of the company also form a part of public information. The business related information would also flow in as news affecting the market. The market will discount some events even before its announcement is made. The events such as earnings bonus issue, rights issue would affect the market even before the formal announcement by the company.

C. Strong Form

This represents the highest level of market efficiency, which asserts that the current market prices of a stock fully reflect all information including inside information. If the market is strong-form efficient, no group of investors should be able to earn abnormal rates of return by using any information because this information has already been discounted in the current market price.

The research studies found that the strong form of efficient market does not exist in developed markets.

Challenges to the Securities Analysis

The efficient market hypothesis challenges the traditional security analysis in the following manner:

- (a) Challenge to the chartists.
- (b) Challenge to the fundamental analyst.

A technical analyst/chartist maintains that history repeat itself. Hence he tries to predict future movement in share prices by studying the historical patterns in share price movements. The weak-form of market efficiency directly contradicts technical analysis by maintaining that past price and price change cannot be used to forecast future price changes because successive price changes are independent of each other. Hence, past prices are useless.

Fundamental analysts believe that by analyzing key economic and financial variables they can estimate the intrinsic value of a security and then determine what investment action to take. Fundamental analysis seeks to identify under-priced securities and over-priced securities. Their investment strategy consists of buying under-priced securities and selling over-priced securities, thereby earning superior returns. The semi-strong form contradicts fundamental analysis to some extent by claiming that the market is efficient in the dissemination of information and hence publicly available information cannot be used consistently to earn superior investment returns.

The strong-form of market efficiency claims that all information including inside information is useless. Hence, fundamental analysts' attempt to identify under-priced and over-priced securities is futile.

Suggested questions

1. What is technical analysis? How is it conducted?
2. Explain the basic principles and hypotheses of Dow Theory?
3. What are price charts? Describe the different types of price charts used by technical analysts.
4. How are moving averages calculated? How are moving averages useful in studying trends? Explain with an example
5. What is RSI? Explain its calculation and interpretation.
6. Describe the important market indicators that are useful in studying the trend of the market.
7. What is breadth of market? How is it used?
8. Explain the following indicators- Stochastic oscillator, support and resistance level, volume indicator.
9. What is random walk theory?
10. Explain the weak-form and strong-form of the efficient market hypothesis?
11. Compare and contrast efficient market hypothesis with fundamental and technical analysis.
12. Compute the ROC of 10 day period from the following TATA Steel share price data:

Days	1	2	3	4	5	6	7	8	9	10
Price	123	121	122	124	126	129	133	126	123	125
Days	11	12	13	14	15	16	17	18	19	20
Price	120	119	112	111	111	109	117	113	115	113
Days	21	22	23	24	25	26	27	28	29	30
Price	112	116	117	118	114	114	118	116	117	120

Unit X

Portfolio Analysis and portfolio Construction

Learning Objectives: This unit aims to provide the students with an introduction to an overview of Portfolio Analysis and portfolio Construction. After going through Unit X, students will be able to learn the following concepts:

- Basic concept of portfolio construction
 - Expected risk and return of a Individual security
 - Expected risk and return of a portfolio
 - Reduction of risk through diversification
 - Portfolio Construction
 - Capital Market theory
-

10.1 Basic concept

Individual securities have risk return characteristics of their own. The future return expected from a security is variable and this variability of returns is term as risk. It is rare to find investors investing their entire wealth in a single security. This is so because most investors have an aversion to risk. It is hoped that if money is invested in several securities simultaneously, the loss in one will be compensated by the gain in others. Hence, most investors tend to invest in a group of securities rather than a single security in order to spread and minimise risk. Such a group of securities held together as an investment is what is known as portfolio. The process of creating such a portfolio is called diversification. This is sought to be achieved by holding different types of securities across different industry groups.

For a given set of securities, any number of portfolios can be constructed. A rational investor attempts to find the most efficient of these portfolios. The efficiency of each portfolio can be evaluated only in terms of the expected return and risk of the portfolio. Thus, determining the expected return and risk of different portfolios is a primary step in portfolio management. This step is designated as portfolio analysis.

10.2 Expected risk and return of a Individual security

Risk: Risk (or uncertainty) refers to the variability of expected returns associated with a given investment. Risk, along with the concept of return is a key consideration in investment and financial decisions and therefore, it is essential to discuss procedures for measuring risk and investigate the relationship between risk, returns and security valuation.

Probability Distributions: Probabilities are used to evaluate the risk involved in a security. The probability of an event taking place is defined as the chance that the event will occur and may be interpreted as the percentage chance of a given outcome.

Example 1: A weather forecaster may state, "There is a 30 percent chance of rain tomorrow and a 70 percent chance of no rain." Then we could set up the following probability distribution:

Outcome	Probability
Rain	30% = 0.3
No rain	70% = 0.7
	<hr/>
	100% = 1.00

Expected Rate of return: Expected Rate of return (\bar{r}) is the weighted average of possible returns from a given investment, weights being probabilities. Mathematically,

$$\bar{r} = \sum_{i=1}^n r_i p_i$$

where,

- $r_i = i^{\text{th}}$ possible return
- $p_i =$ probability of the i^{th} return
- $n =$ number of possible returns

Example 2: Consider the possible rates of return that you might earn next year on a Rs.50,000 investment in stock A or on a Rs.50,000 investment in stock B, depending upon the states of the economy: recession, normal and prosperity.

For Stock A:

State of economy	Return (r_i)	Probability(p_i)
Recession	-5%	0.2
Normal	20%	0.6
Prosperity	40%	0.2

For Stock B:

State of economy	Return (r_i)	Probability(p_i)
Recession	10%	0.2
Normal	15%	0.6
Prosperity	20%	0.2

Then the expected rate of return (\bar{r}) for stock A is computed as follows:

$$\bar{r} = \sum_{i=1}^n r_i p_i = (-5\%)(0.2) + (20\%)(0.6) + (40\%)(0.2) = 19\%$$

Stock B's expected rate of return is:

$$\bar{r} = (10\%)(0.2) + (15\%)(0.6) + (20\%)(0.2) = 19\%$$

Measuring Risk: The Standard Deviation

The standard deviation (N), which is a measure of dispersion of the probability distribution, is commonly used to measure risk. The smaller the standard deviation, the tighter is the probability distribution and thus, the lower is the risk of the investment.

Mathematically,

$$N = \sqrt{\left(\sum_{i=1}^n (r_i - \bar{r})^2 p_i \right)}$$

Example 3: Using the data given in example 2, compute the standard deviation for each stock and set up the tables as follows for stock A:

Return (r_i) (%)	Step1 Probability (p_i)	Step2 $r_i p_i$ (%)	$(r_i - \bar{r})$ (%)	Step3 $(r_i - \bar{r})^2$	$(r_i - \bar{r})^2 p_i$ (%)
-5	0.2	-1	-24	576	115.2
20	0.6	12	1	1	0.6
40	0.2	8	21	441	88.2
$\bar{r} = 19$					$N^2 = 204$

Knowing $N^2 = 204$, we proceed with step 4 and
 $N = \sqrt{204} = 14.28\%$

For stock B:

Return (r_i)(%)	Step1 Probability (p_i)	Step2 $r_i p_i$ (%)	($r_i - \bar{r}$)(%)	Step3 $(r_i - \bar{r})^2$	$(r_i - \bar{r})^2 p_i$ (%)
10	0.2	2	-5	25	5
15	0.6	9	0	0	0
20	0.2	4	5	25	5
		$\bar{r} = 15$			$N^2 = 10$

Knowing $N^2 = 10$, we take step 4 and
 $N = \sqrt{10} = 3.16\%$

Statistically, if the probability distribution is normal, 68% of the returns will lie in ± 1 standard deviation, 95% of all observations will lie between ± 2 standard deviations, and 99% of all observations will lie between ± 3 standard deviations of the expected value.

10.3 Expected risk and return of a portfolio

Portfolio Return:

As a first step in portfolio analysis, an investor needs to specify the list of securities eligible for selection or inclusion in the portfolio. Next he has to generate the risk-return expectations for these securities. These are typically expressed as the expected rate of return (mean) and the variance or standard deviation of the return.

The expected return of a portfolio is a weighted average of the expected returns of the individual securities held in the portfolio. The weight applied to each return is the fraction of the portfolio invested in that security.

Example: A portfolio consists of assets A and B. Asset A makes up one-third of the portfolio and has an expected return of 18 percent. Asset B makes up the other two-thirds of the portfolio and is expected to earn 9 percent. What is the expected return on the portfolio?

Asset	Return(r_i)	Fraction(w_i)	$w_i r_i$
A	18%	1/3	$1/3 \times 18\% = 6\%$
B	9%	2/3	$2/3 \times 9\% = 6\%$
			$r_p = 12\%$

The formula for the calculation of portfolio return is expressed as

$$\bar{r}_p = \sum_{i=1}^n w_i r_i$$

Where w_i = proportion of portfolio invested in security i &
 r_i = individual return of security i

Portfolio risk

Just as the risk of an individual security is measured by the variance or standard deviation of its return, the risk of a portfolio too is measured by the variance or standard deviation. But portfolio risk is not the weighted average of the risks of the individual securities in the portfolio.

For calculating portfolio risk we need information on weighted individual security risks and weighted co-movements between the returns of securities included in the portfolio. Co-movements between the returns of securities are measured by covariance and coefficient of correlation. Two estimates are needed: the standard deviation of each individual asset under construction and co-variance or correlation coefficient of each asset with each other assets.

The risk of a portfolio consisting of two securities is given by the following formula:

$$N_p = \sqrt{(w_A^2 N_A^2 + w_B^2 N_B^2 + 2 w_A w_B \cdot N_{AB})}$$

$$= \sqrt{(w_A^2 N_A^2 + w_B^2 N_B^2 + 2 w_A w_B \cdot \rho_{AB} N_A N_B)}$$

N_p = risk of a portfolio

N_A = standard deviation/risk of security A

N_B = standard deviation /risk of security B

w_A = proportion of investment in security A

w_B = proportion of investment in security B

N_{AB} = Covariance between security A and security B

ρ_{AB} = correlation between security A and security B

Example: Assume the following:

Asset	N	w
A	20%	1/3
B	10%	2/3

The portfolio risk then is:

$$N_p = \sqrt{(w_A^2 N_A^2 + w_B^2 N_B^2 + 2 w_A w_B \cdot \rho_{AB} N_A N_B)}$$

$$= \sqrt{(1/3)^2 (0.2)^2 + (2/3)^2 (0.1)^2 + 2 \rho_{AB} (1/3)(2/3)(0.2)(0.1)}$$

$$= \sqrt{(0.0089 + 0.0089 \rho_{AB})}$$

(a) Now assume that the correlation coefficient between A and B is +1 (a perfectly positive correlation). This means that when the value of asset A increases in response to market conditions, so does the value of asset B, and it does so at exactly the same rate as A. The portfolio risk when $\rho = +1$ then becomes:

$$N_p = \sqrt{(0.0089 + 0.0089 \rho_{AB})} = \sqrt{(0.0089 + 0.0089(1))} = \sqrt{0.0178} = 0.1334 = 13.34\%$$

(b) If $\rho = 0$, the assets lack correlation and the portfolio risk is simply the risk of the expected returns on the assets, i.e., the weighted average of the standard deviations of the individual assets in the portfolio. Therefore, when $\rho_{AB} = 0$, the portfolio risk for this example is:

$$N_p = \sqrt{(0.0089 + 0.0089 \rho_{AB})} = \sqrt{(0.0089 + 0.0089(0))} = \sqrt{0.0089} = 0.0943 = 9.43\%$$

(c) If $\rho = -1$ (a perfectly negative correlation coefficient), then as the price of A rises, the price of B declines at the very same rate. In such a case, risk would be completely eliminated. Therefore, when $\rho_{AB} = -1$, the portfolio risk is:

$$N_p = \sqrt{(0.0089 + 0.0089 \rho_{AB})} = \sqrt{(0.0089 + 0.0089(-1))} = \sqrt{0.0089 - 0.0089} = 0$$

When we compare the results of (a), (b) and (c), we see that a positive correlation between assets increases a portfolio's risk above the level found at zero correlation, while a perfectly negative correlation eliminates that risk.

10.4 Reduction of risk through diversification

A asset's total risk can be divided into systematic plus unsystematic risk, as shown below.

$$\text{Systematic risk (undiversified risk)} + \text{unsystematic risk (diversifiable risk)} = \text{total risk} = \text{var}(r)$$

Unsystematic risk is that portion of the risk that is unique to the firm (for example, risk due to strikes and management errors). Unsystematic risk can be reduced to zero by simple diversification

Simple diversification is the random selection of securities that are to be added to a portfolio. As the number of randomly selected securities added to a portfolio is increased, the level of unsystematic risk approaches to zero. However, market-related systematic risk cannot be reduced by simple diversification. This risk is common to all securities. The Figure 10.1 illustrates how total risk approaches systematic risk as the number of securities in a portfolio increases.

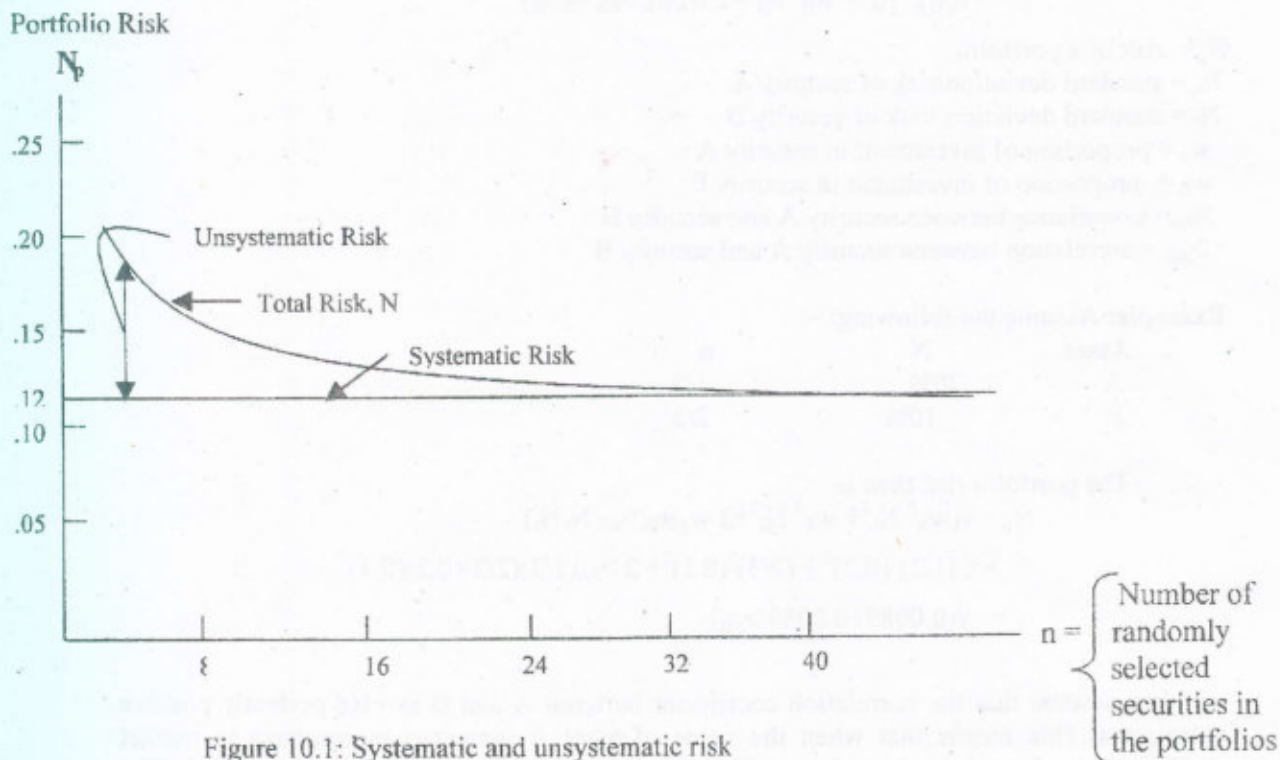


Figure 10.1: Systematic and unsystematic risk

Diversification will usually decrease the unsystematic portion of total risk because unsystematic risk is uncorrelated with the market. Diversification is a technique of reducing the risk in investment and in Portfolio Management.

Traditional approaches of diversification emphasize on the need for adequate diversification. This involves as many industries and companies as possible to get the best. Simple diversification implies that a portfolio made up of 200 different securities is 10 times more diversified than a portfolio made up of 20 different securities. However according to J. H. Evans and S. H. Archer, as the number of securities added to a simply diversified portfolio increases to 10 or 15, the portfolio's risk will usually decrease toward the systematic level of risk in the market.

10.5 Portfolio Construction

The objective of every rational investor is to maximize his returns and minimize the risk. Diversification is the method adopted for reducing risk. It essentially results in the construction of portfolios. The proper goal of portfolio construction would be to generate a portfolio that provides the highest returns and the lowest risk. Such a portfolio would be known as the optimal portfolio. The process of finding the optimal portfolio is described as portfolio selection.

The conceptual framework and analytical tools for determining the optimal portfolio in disciplined and objective manner have been provided by Harry Markowitz in pioneering

work on portfolio analysis in 1952. Harry Markowitz opened the door to modern portfolio theory when his article "Portfolio Selections" was published in the Journal of Finance in March 1952. This was the first major publication indicating the importance of security return correlation in the construction of stock portfolio.

The dominance principle states that – (1) among all investments with any given expected rate of return, the one with the least risk is the most desirable or (2) among all the assets in a given risk-class, the one with the highest expected rate of return is the most desirable.

Security	Expected return E(r)%	Risk N%
ATW	7	3
GAC	7	4
FTC	15	15
FTR	3	3
HTC	8	12

Application of dominance principle reveals that FTR is dominated by ATW because they have same risk but ATW has higher expected return. ATW dominates GAC; their expected returns are same but ATW has less risk. So GAC is dominated and can be ignored.

Dominated securities are considered to be inferior investment. Although HTC is a non-dominated asset, its relative risk and return opportunities are somewhat not as appealing as those of ATW and FTC. The dashed line from ATW to FTC represents the risk and return of all possible portfolios that can be formed from various proportions of ATW and FTC. HTC is a dominated asset if portfolios are considered as possible assets.

The concept of dominant assets should be extended to include portfolios. Dominant assets will be called efficient portfolios whether they contain one or many assets.

Portfolios that are not dominated lie on the efficient frontier. (ATW to FTC).

Convexity of the Efficient Frontier:

If the risk and return of all individual assets on all security exchanges were plotted in risk-return space, they would be dominated by portfolios. The Figure 10.2 contains individual assets (stock and bonds) represented by dots in the lower right-hand side of the opportunity set. The efficient frontier is represented by the heavy dark curve from E to F. Only dominant portfolios will lie along the efficient frontier.

Portfolios will always dominate individual assets because of the risk-reducing benefits of diversification that portfolios enjoy. Only the highest-return portfolio F is likely to be a one-asset efficient portfolio.

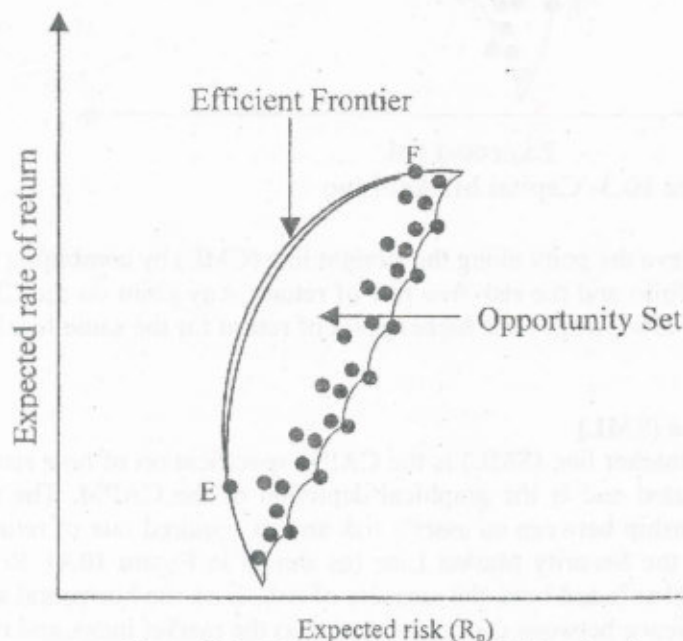


Figure 10.2 : Opportunity set and efficient frontier

10.6 Capital Asset Pricing Model (CAPM)

The Capital Asset Pricing Model has its base in the portfolio theory of Markowitz. H.M. Sharpe, W.F. Lintner, and J. Mossin have given the CAPM its present structure. CAPM asserts that the selection of a portfolio will depend upon the risk free rate and the market return.

The Capital Asset Model consists of a Capital Market Line (CML) and a Security Market Line (SML). The Capital Market Line relates the expected return and risk for a portfolio of securities. The Security Market Line relates the expected return and risk of individual securities.

Capital Market Line

The Capital Market Line states that there is a risk free rate that is provided by a security. The risk free security has, in other words, zero risk. This is also the rate available to all investors in the market, at which they can borrow or lend any amount in the market. Given this return at zero risk, and the opportunity to lend or borrow, investors will desire a mix of securities with a specific risk and risk free return at zero risk. The possibility of this risk free return modifies the efficient frontier into a straight line that begins with a risk free rate and touches the efficient front as a tangential line. This is the Capital Market Line and gives all combinations of risk free assets and risky security portfolios to the investor. The CML is shown in the Figure 10.3

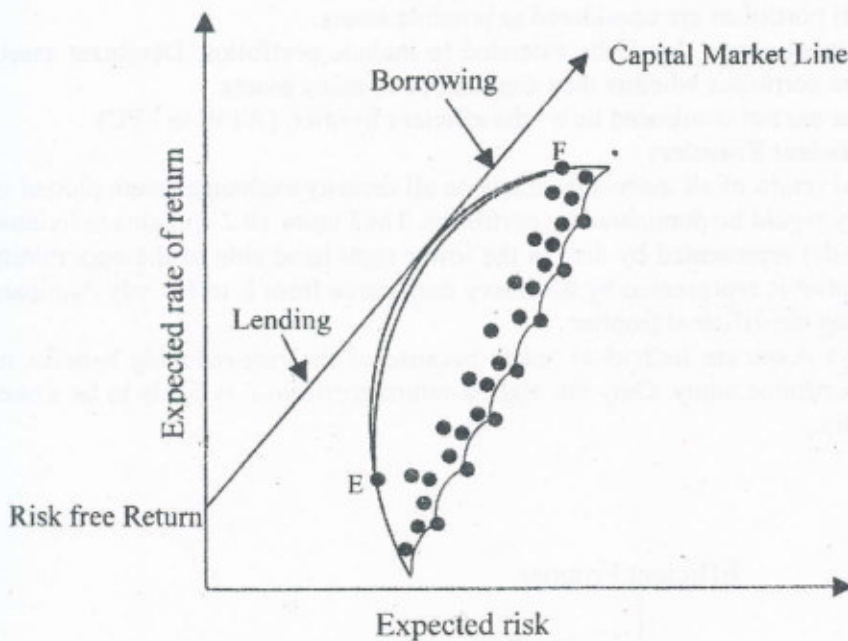


Figure 10.3- Capital Market Line

Any investor can achieve the point along the straight line (CML) by combining the proportion of risky security portfolio and the risk free rate of return. Any point on the CML is optimal since the investor can always opt for a higher point of return for the same level of risk on the Capital Market Line.

Security Market Line (SML)

The security market line (SML) is the CAPM specification of how risk and required rate of return are related and is the graphical depiction of the CAPM. The CAPM theory posits a linear relationship between an asset's risk and its required rate of return. This linear relationship is called the Security Market Line (as shown in Figure 10.4). Required rate of return is on the vertical axis and beta, the measure of risk, is on the horizontal axis. The slope of the line is the difference between the rate of return on the market index and risk free rate of return

It is worthwhile to note that the SML shows the required return and risk at a particular point in time. The SML can, and does change over time as a result of :

1. Changes in the risk free rate
2. Changes in the risk premium, which reflects investor beliefs.

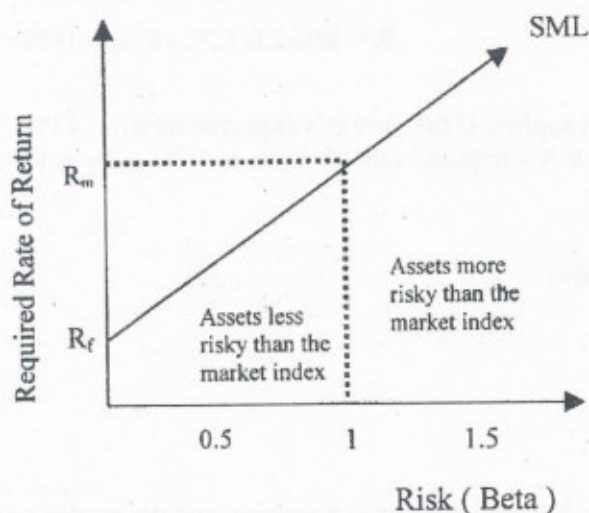


Figure 10.4 The Security Market Line (SML)

More about CAPM

Thus, the CAPM establishes a linear relationship between the required rate of return of a security and its systemic or undiversifiable risk /beta. In CAPM, the expected rate of return can also be thought of as a required rate of return because the market is assumed to be in equilibrium. First of all, investors can earn a risk less rate of return by investing in risk less asset, like treasury bills. This risk free rate of return is designated R_f and the minimum return expected by the investors. In addition to this, because investors are risk-averse, they will expect a risk premium to compensate them for the additional risk assumed in investing in a risky asset. Therefore,

Required rate of Return = Risk free Rate + Risk premium

Mathematically

$$R_j = R_f + B_j (R_m - R_f)$$

Thus the CAPM provide many useful in sights for the finance manager to maximize the value of the firm

- The CAPM provides an explicit measure of the risk premium. It is the product of the Beta for a particular security j and the market risk premium $(R_m - R_f)$
- It shows the type of risk for which shareholders require compensation in the form of a higher risk premium, and hence, a higher return. Finance manager must keep sight of the return shareholders expect for taking higher risk.
- If the market is efficient then the market discounts only the market risk. The required rate of return of the investor is proportionate to the market risk i.e. Beta.
- With the held of this equation one know the required rate of return of other investors thereby their willingness to pay value for the share.
- The elegance of this formula is that, to known the expected rate of return, you have to only predict the market movement i.e. market return and beta for the individual stock.
- This CAPM has enabled us to know the required rate of other investors without doing a survey.

Example: Assuming that the risk-free rate (R_f) is 8%, and the expected return for the market (R_m) is 12%, then if

For $b = 0$ (risk-free security)	$R_j = 8\% + 0(12\% - 8\%) = 8\%$
$b = 0.5$	$R_j = 8\% + 0.5(12\% - 8\%) = 10\%$
$b = 1.0$ (market portfolio)	$R_j = 8\% + 1.0(12\% - 8\%) = 12\%$
$b = 2.0$	$R_j = 8\% + 2.0(12\% - 8\%) = 16\%$

Example : Assuming the CAPM applies, if the market's expected return is 13%, the risk-free rate is 8%, and stock A's required rate of return is 16%, what is the stock's beta coefficient?

Solution: $R_j = R_f + B_j (R_m - R_f)$

$$16\% = 8\% + B_j(13\% - 8\%)$$

$$0.16 = 0.08 + B_j(0.05)$$

$$0.08 = B_j(0.05)$$

$$B_j = 1.6$$

Example: Assume the following: the risk-free rate is 8 percent, and the market portfolio expected return is 12 percent.

Portfolio	Beta
A	0.6
B	1.0
C	1.4

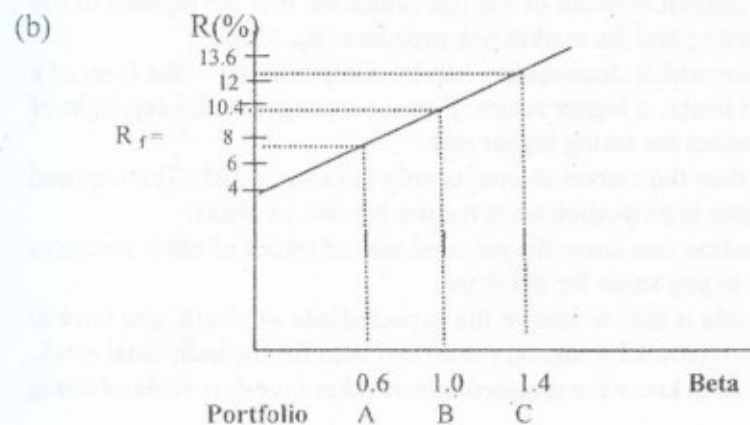
- Calculate for each of the three portfolios the expected return consistent with the capital asset pricing model.
- Show graphically the expected portfolio returns in (a).
- Indicate what would happen to the capital market line if the expected return on the market portfolio were 10%.

Solution:

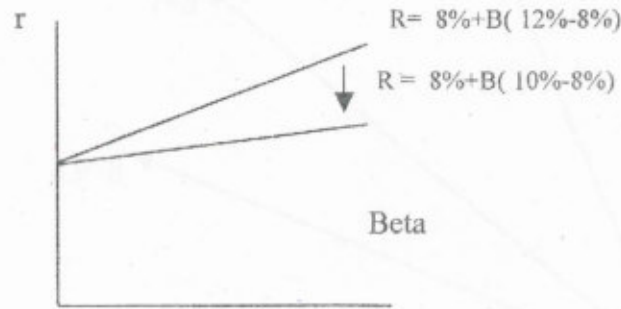
(a) Portfolio A : $R = 8\% + 0.6(12\% - 8\%) = 10.4\%$

Portfolio B : $R = 8\% + 1.0(12\% - 8\%) = 12.0\%$

Portfolio C : $R = 8\% + 1.4(12\% - 8\%) = 13.6\%$



(c) A lower expected return for the market portfolio would change the slope of the market line downward, as is shown below:



Example 4: The risk-free rate is 6 percent, the required rate of return on the market is 12 percent and stock A has a beta coefficient of 1.2. If the dividend expected during the coming year is Rs.2 and the growth rate of dividends and earnings is 7 percent, at what price should stock A sell?

Solution:

$$R_j = R_f + B_j (R_m - R_f) = 6\% + 1.2(12\% - 6\%) = 6\% + 7.2\% = 13.2\%$$

Therefore,

$$P_0 = \frac{D_1}{R_j - g} = \frac{\text{Rs.}2}{13.2\% - 7\%} = \text{Rs.}32.26$$

Significance of Beta

Beta is a measure of the systematic/market risk of a security that cannot be avoided through diversification. Beta is a relative measure of risk—the risk of an individual stock relative to the market portfolio of all stocks. If the security's returns move more (less) than the market's returns as the latter changes, the security's returns have more (less) volatility (fluctuations in price) than those of the market. For example, a security whose returns rise or fall on average 15 percent when the market return rises or falls 10 percent is said to be an aggressive or volatile security.

Securities with different slopes have different sensitivities to the returns of the market index. If the slope of this relationship for a particular security is a 45 degree angle, as shown for security B in figure-10.5, the beta is 1.0. This means that for every 1 percent change in the market's return, on an average this security's returns change 1 percent. The market portfolio has a beta of 1.0. The market portfolio represents the most diversified portfolio of risky assets an investor could buy since it includes all risky assets. A beta of 1.0 indicates an asset of average risk. A beta coefficient greater than 1.0 indicates an asset of above – average risk.

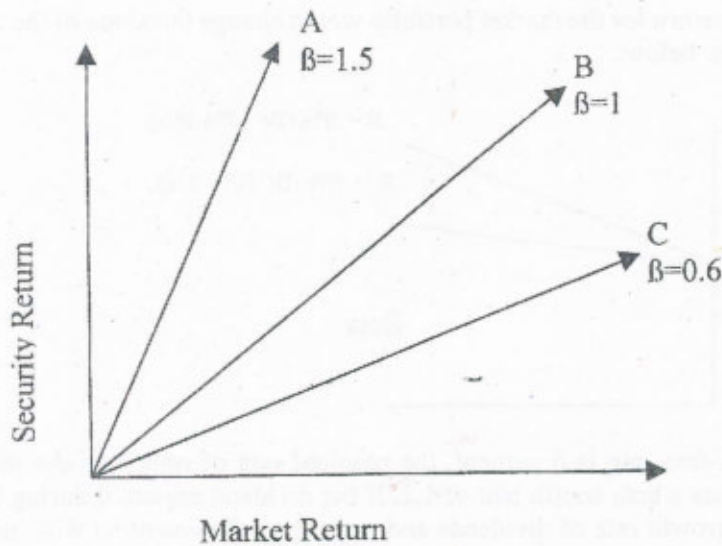


Figure 10.5 Illustrative betas of 1.5 (A), 1.0(B), and 0.6 (C)

In Figure 10.5 security A's beta of 1.5 indicates that, on average, security returns are 1.5 times as volatile as market returns, both up and down. A security whose returns rise or fall on average 15 percent when the market return rises or falls 10 percent is said to be an aggressive or volatile, security.

If the line is less steep than the 45-degree line, beta is less than 1.0; this indicates that, on average, a stock's returns have less volatility than the market as a whole. For example, security C's beta of 0.6 indicates that stock returns move up or down, on average, only 60 percent as much as the market as a whole.

In summary, the aggregate market has a beta of 1.0. More volatile (risky) stocks have betas larger than 1.0 and less volatile (risky) stocks have betas smaller than 1.0. As a relative measure of risk, beta is very convenient. Beta is useful for comparing the relative systematic risk of different stocks and, in practice, is used by investors to judge a stock's riskiness. Stocks can be ranked by their betas. Because the variance of the market is a constant across all securities for a particular period, ranking stocks by beta is the same as ranking them by their absolute systematic risk. Stocks with high (low) betas are said to be high (low) risk securities.

Measurement of Beta

The systematic relationship between the return on a security or a portfolio and that on the market can be described using a simple linear regression, taking the return on a security or portfolio as the dependent variable and the return on market portfolio as the independent variable. The regression equation is

$$R_j = R_f + B_j (R_m - R_f)$$

B_j represents the slope of the above regression model and measures the responsiveness of the security/portfolio to the general market and indicates how extensively the return of the security/portfolio will vary with changes in the market return.

Beta of a portfolio is nothing but the weighted average of the betas of the securities that constitute the portfolio, the weights being the proportions of investments in the respective securities.

Suggested Questions & Problems

1. Illustrate the calculation of the expected return of a portfolio with an example
2. Explain the significance of covariance in the estimation of the risk of a portfolio.
3. Discuss the impact of covariance or correlation between securities in a portfolio on the portfolio risk.
4. What happens to the risk of a portfolio as more and more securities are added to the portfolio? Explain the concept of risk reduction through the portfolio diversification.
5. How is expected return for one security determined? for a portfolio?
6. Define diversifiable and non-diversifiable risk?
7. "CAPM postulates the nature of the relationship between the expected return and the systematic risk of a security." Explain.
8. How can CAPM be used to assess the required rate of return of a security?
9. Compare and contrast CML and SML.
10. Security M has a beta of 0.75 while security N has a beta of 1.45. Calculate the expected return for these securities, assuming that the risk free rate is 5 percent and the expected return of the market is 14 percent.
11. Use the CAPM to ascertain the security return if the market return is 18 % and the risk-free rate is 5%.The security has a beta of 0.75 with the market.
12. Use the following data to calculate the variance and standard deviation for a portfolio containing stock A and stock B
 $\rho_{AB}(\text{correlation}) = 0.60$; $N_A = 12$; $N_B = 24$; $w_A = 0.6$; $w_B = 0.4$
13. Calculate the expected return of a portfolio composed of the following securities :

Security	expected return (percent)	proportion (percent)
1	10	20
2	15	30
3	20	50

What would be the expected return if the proportion of each security in the portfolio were 20 , 20 and 60 percent respectively ?

Unit XI

Mutual Fund and Portfolio Performance

Learning Objectives: This unit aims to provide the students with an introduction to an overview of mutual fund operations and assessment of portfolio performance. After going through Unit XI, students will be able to learn the following concepts:

- Advantages of Mutual Fund
 - Types of mutual funds
 - Calculation of NAV
 - Open and closed-ended mutual fund
 - Portfolio performance measurement
 - Risk return trade off
 - Treynor, Sharpe and Jensen's measures of portfolio performance
-

11.1 Mutual Fund

Mutual Funds (MFs) are undoubtedly an important product innovation in the financial field, as an instrument of raising capital from the wider public for corporate enterprise growth. Historically, MFs, originally called Unit Trusts in the United Kingdom, were invented for the mass of relatively small investors. Investors are issued 'units', thus, for an investor, investments in MF imply buying shares (or portions) of the MF and becoming the shareholders of the fund.

In India, the Unit Trust of India (UTI), created in 1964 was the first MF. It enjoyed complete monopoly of MF business up to 1988. The MF business was progressively opened to competition post 1988. This move gathered momentum after the adoption of economic liberalization in 1991 and the creation of SEBI in 1992. As of end March 2006, 38 MFs are registered with SEBI with an asset base of Rs. 2,318,620 million

In recent years, the MF schemes have diversified considerably thus expanding the basket of investment opportunities to suit the different needs of the investors. There are schemes that invest only in equities, in debt instruments or in both, in real estates, gold units etc. The objectives of the MFs have also widened, with the MFs investing in growth stocks, in stocks of a particular sector. The MFs are managed aggressively as well as passively. Thus investors have a variety of options such as income funds, balanced funds, liquid funds, gilt funds, index funds, exchange traded funds, sectoral funds to deploy their savings

Definition

Mutual funds are associations or trust of public members (investors) who wish to make investments in the financial instruments or assets of the business sector or corporate sector for the mutual benefits of its members. It is an investment vehicle that pool together funds from investors to purchase stocks, bonds or other securities. The fund collects moneys of the members from their savings and invests them in a diversified portfolio of financial assets with a view to reduce risks and to maximize their income and capital appreciation for distribution to its members on a pro-rata basis. The members enjoy collectively the benefits of expertise in investment by specialists in the trust, economies of scale which no single individual by himself could enjoy. Mutual fund is thus a concept of mutual help by subscribers for portfolio investments by experts in the field. The first mutual fund was set by UTI in the year 1964, i.e. Unit 64

Advantages of Mutual Fund

The followings are the advantages to the investors in the mutual funds

- 1) **Professional management-** Experienced fund managers supported by a research team, scan the market environment and select the appropriate securities, and then rebalance the portfolios as and when needed.

- 2) **Diversification-** Mutual funds invest in a diverse range of securities and over many industries and sectors. Hence, funds are not placed in one basket. Normally an investor has to have large sum of money to achieve this objective, if he invests directly in the stock market. Through mutual funds, he can achieve diversification of portfolio at a fraction of the cost.
- 3) **Convenient administration-** For the investors there is reduction in paper works and saving in time, problems related to bad deliveries of securities etc.
- 4) **Return potential-** Medium and long term mutual funds have the potential to provide high returns. The return of course depends on the securities included in the portfolio
- 5) **Low costs-** The fund handles the investments of a large number of people and huge amount, they are in a position to pass on relatively low brokerage and other costs because of economies of scale
- 6) **Liquidity-** Mutual funds provide liquidity in two ways. In open-ended schemes, the investors can get back his money at any time by selling back the units to the fund at a price linked to its NAV. In the closed-end scheme, he has the option to sell the units through stock exchange. Thus, under both categories, the liquidity is high
- 7) **Transparency-** Mutual funds provide information on each scheme about the specific investments made there-under and so on
- 8) **Flexibility-** Currently most funds have regular investment plans, regular withdrawal plans and dividend reinvestment schemes. A great deal of flexibility is assured in the process.
- 9) **Choice of Scheme-** Mutual funds offers a variety of schemes to suit varying needs of the investors. Above 500 schemes are in operation in India.
- 10) **Well –regulated** – The funds are registered with the SEBI and their operations are continuously monitored. Hence risk of fraud is limited.

Types of Mutual Funds

There are various types of mutual funds in a financial market. The mutual funds can be classified into many categories depending on the characteristic of the funds, investment objectives and pattern of investments.

- a) Based on characteristics, the funds may be
- closed ended scheme
 - Open ended scheme

The key differences between the closed-ended and open-ended schemes are as follows

Closed-ended scheme	Open-ended scheme
1) The subscription to a closed ended fund is kept open only for a limited period 2) Does not allow investors to withdraw funds as and when they like 3) has a fixed maturity period (usually 5 to 15 years) 4) listed on the secondary market 5) size of the fund is more or less stable for the entire period 6) In the secondary market, investors get value at a discount (varying from 10 % to 30 %) over their net asset value (NAV)	1) Scheme accepts funds from investors by offering its units on a continuing basis 2) permits investors to withdraw funds on a continuing basis under a re-purchase arrangement 3) has no maturity 4) ordinarily not listed 5) size varies widely; it is not constant 6) Investor gets value close to the NAV

- b) Based on the objectives, the funds may be classified into-
- Growth funds
 - Income funds
 - Balanced fund

Growth funds specialize in securing capital appreciation, and hence, mainly invest in the equity market. Risk and return possibility are very high in the case of growth fund

Income funds aim at the maximization of income by investing mainly in the fixed income securities, and hence risk and return are low to moderate

Balanced Funds aim at both and in a judicious mix of investment

c) Based on the pattern of investments, the funds may also be classified into various types

- **Equity schemes-** invest the bulk of their fund in equity shares
- **Index funds/schemes:** It is equity scheme that invests its corpus in a basket of equity stocks that comprises a given stock market index such as the Sensex or Nifty Index; Example-UTI Master Index
- **Sectoral Schemes-** invest its corpus in the equity stocks of a given sector such as IT, Automobile, Pharma, real estate and so on. Example- UTI petro and Franklin Infotech
- **Gilt Schemes-** invest mainly in Government bonds
- **Cash/liquid Schemes-** invest primarily in the money market instruments
- **Fund of fund schemes-**invests in different mutual fund schemes
- **Real estate schemes-**invest in real estate (either Own and Operate or lend money to real estate owners)
- **Municipality bond funds-**invest in a portfolio consisting entirely of tax-exempt bonds

Open-ended mutual funds

In an open ended mutual fund scheme the units are available for sale throughout the year. There is no ceiling on the units for sale. The units, which are allotted to investors, are called unit holders. The fund can redeem the outstanding units at anytime. There is no opening and closing time for these schemes. The open-ended scheme provides liquidity for the unit holders. Unit holders can sell his units whenever he wants. The purchase and sale price of the units is fixed by the mutual fund on the basis of NAV (Net Asset Value) of the units. Therefore, the NAV is the most important factor in the mutual fund sector. The NAV is calculated by the fund and is published at least once in a week. The number of units of the open-ended fund varies from day to day basis. Open-ended funds are managed, issued and operated by the fund managers as per the regulations of the SEBI. The NAV of the open-ended fund changes every day.

The open-ended funds are very popular among the investors. These schemes ensure the investors dividends, capital appreciation, safety, and liquidity. The funds are legally bound to repurchase the units. The value of the units is influenced by the NAV.

Close Ended Mutual Funds

The close-ended funds are fixed in size as regards the corpus of the funds and the number of shares. No fresh units are created in these funds after the origin of the scheme expires. The close ended fund schemes sell the units at a fixed time. The units are offered to public when the issue is open for subscription. It has fixed time duration for the operation of the scheme. They do not sell additional units, after the sale of a fixed number of units at the initial stage. The scheme corpus fund remains fixed till their redemption. The schemes have a lock-in-period of 3 to 5 years. They may offer a guaranteed dividend. The units of the close-ended are not redeemed by mutual funds before the termination of the period of the scheme. The units are listed on the stock market and can be traded by the investors. Thus, scheme offers liquidity and transparency to the investors.

Money Market Mutual Funds (MMMF)

The RBI permitted the money market mutual fund scheme in April 1992. It provides additional avenues to the individual investors. The private sector mutual funds and banks are allowed to set up these funds. The schemes are offered to the individual investors and corporate. Now, the scheme is liberalized and the lock-in- period is brought down to 15 days. The scheme provides better liquidity and ready market to the investors. The investment

should be confined to call money, certificate of deposits, commercial papers, commercial bills, treasury bills, and dated government securities. The MMMF schemes offer high liquidity and better returns than bank deposits. The return on the money market mutual funds may be in the form of bonus or capital appreciation. The low liquidity and high returns are available from commercial bills, Company Deposit Schemes (CDS) and Commercial Paper Schemes (CPS). The other financial instruments have high liquidity but low returns. The popularity of these funds with the common investors is yet to gain. SEBI is the regulatory authority to grant the permission to operate the MMMF. The sponsor of MMF should be a registered company or scheduled bank or all India level financial institution with good track record. Sponsoring company should have at least 40% of equity in the paid up equity of the MMMF.

Growth-Oriented Funds

Mutual funds offer growth-oriented schemes to the investors. These schemes are offered to meet the investors need to make money for long term purpose. These funds are aimed at achieving capital appreciation. These funds do not offer fixed regular returns but provide substantial capital appreciation in the long run. The pattern of investment is general oriented towards share of high growth companies. The growth scheme is more useful to the long-term objectives of the investors. The amount of money collected by these schemes will be invested in the growth-oriented securities. Generally 80% of the collected amount will be deployed in their segment. These schemes are useful to the investors to meet the purpose of their children's marriage or education or social customs. This scheme does not provide liquidity.

The growth funds invest primarily in equities and speculative investments. The following are the examples of growth schemes.

- (1) Primary equity fund (UTI)
- (2) Grand master (UTI)
- (3) Master gain (UTI)
- (4) UGS-5000 (UTI)
- (5) Master Share (UTI)
- (6) Magnum Triple Plus Scheme (SBI MF)
- (7) Can stock, can growth can share (Can Bank MF)
- (8) Equity growth fund (PNB MF)
- (9) Growth plus (GIC MF)
- (10) Morgan Stanley growth fund (Kothari MF)

Income Funds

Income funds are targeted towards high current income and create low risk to the investors. It offers regular income to investors. These funds offer a return much higher than the bank deposits but with less capital appreciation. The emphasis being on regular returns, the pattern of investment is also oriented towards fixed income yielding securities such as convertible debentures of consistently good dividend companies. They pay the funds return on the monthly basis. The pensioners, rural income groups and urban average groups are the major investors in these funds. These kinds of people depend on the income to meet their regular expenditure. The following are the examples of income-oriented funds.

- (1) U.S. 64 (UTI)
- (2) Magnum Monthly Income Plan (SBI MF)
- (3) Dhana Shree (LIC MF)
- (4) GIC Safe (GIC MF)

Balanced Funds

Balanced funds combine the income and growth. These offer a blend of immediate average returns and reasonable capital appreciation in the long run. The investment portfolio of these funds is evenly distributed among fixed income bearing corporate securities and common stock with growth potential. Funds investment portfolio consists of securities, which facilitates to generate income as well as capital appreciation. The balanced fund is also known

as "Income cum growth funds". The aim of the fund is to provide a regular income and capital appreciation to the investors. The following are the examples of balanced funds.

- (1) Regular Income Plus (PNB MF)
- (2) Balanced Fund (GIC MF)

Specialized Funds

Presently the market is flooded with a number of variety schemes. The mutual funds offer different schemes to investors in order to attract them. Therefore they started some specialized funds in the market. These funds are invested in a particular industry like cement, steel, jute power, textiles. These funds carry high risks because the fund is exposed to a particular industry. The specialized funds collect money from the investors and invest exclusively in specialized securities. The fund operates within the following special environment.

- (a) Investment in only equity.
- (b) Investment in blue chip company shares.
- (c) Investment in money market operations.
- (d) Investment in listed securities.
- (e) Investment in bonds.
- (f) Investment in foreign securities.
- (g) Investment in new issues.

The mutual funds state the investment objectives in the prospectus at the time of issue. The fund should invest in stated financial instruments.

Off-shore Funds

Off-shore funds are also called as "International Funds". These kinds of schemes are introduced to attract the foreign capital. These funds are registered in abroad and thus are regulated from abroad. These schemes are meant for NRIs. These schemes facilitate some tax relief to the non-residents. The RBI permits these schemes and the Ministry of Finance states required conditions. The non-residents shall invest money in the fund out of Non-resident external account. The income generated out of such fund will not be taxable. These schemes are more useful to the Non-residents.

Tax Free Funds

The tax-free funds are introduced to avail tax exemptions as per the Income Tax Act 1961. This scheme is useful to high-income earners. Tax-free fund consists of the portfolio with tax-free securities. A low rate of tax-free fund is equal to a high rate of taxable fund.

Index Funds

Index funds are associated with the stock market index. The value of index fund depends upon the stock market index. If the stock market index rises its value will increase. If it falls, the value declines. These schemes are based on Sensex. UTI has launched an index fund by considering the index value of 25 scrips listed in BSE.

Area Funds

The area fund is a newly launched scheme in the market. The fund is a vehicle to facilitate the collection of money from the public and invests in a particular area. These funds are raised in other countries for providing access to foreign investors. The India growth fund and the India Fund raised in the US and UK respectively are examples of area funds.

Customers Group Funds

These mutual funds mobilize savings of the public from the market by offering various schemes. They collect the money from the market by fulfilling the needs of the investors. The funds are designed to meet the growing needs of the investors. These funds are designed for the benefit of a particular group in society such as women, girl, and children.

Sector Funds

Sector funds will invest the mobilised amounts into a specific sector. It is the new and popular scheme available in the market. They invest the amount in a chosen sector only. The entire amount collected by way of this scheme will be deployed in a particular industry. For ex: steel, pharma, chemical etc. The funds investment portfolio consists of securities issued by

any sector of the market. Its portfolio has high risk bearing capacity. Therefore, it is not advisable to the small investors.

Benefits of Mutual Funds

Investment is an activity involving in buying and selling of the financial assets or fixed assets with a hope of receiving future benefits. The investor is rewarded with a return. All rational investors prefer return but most investors are risk averse. The investor always desires to minimise the risk and maximise the return. Some investors prefer regular return and others prefer capital appreciation. The different people will have different commitments. The pensioners and employees are interested in regular return. The wealthy investors seek minimization of taxes through making investments. The mutual funds are encouraging investors to save and invest in innovative need based various schemes in such schemes. Mutual funds offer the following benefits to the investing public:

1. Encourage saving habits in the society.
2. Develop the capital market by investing the pooled money.
3. Provide tax shelter.
4. Create safety to the investment.
5. Render the portfolio management services to the investors.
6. Provide expert portfolio management services to the investors.
7. Facilitate capital appreciation to the investors.
8. Provide tax exemption from capital gains.
9. Provide various schemes at a reduced risk.
10. Create opportunity to the small investors to enjoy the benefit of capital market.
11. Facilitate automatic reinvestment facilities of dividends and capital appreciation.

Regulation of Mutual Funds

Leaving aside UTI, which has been existing since 1964, two financial Institutions, mainly GIC and LIC has set up their mutual funds in 1989 and 1990 respectively. Since 1987, starting with SBI, a number of Public sector banks has set up Mutual Fund, which has been regulated by the RBI. The Mutual Funds of LIC and GIC were regulated by the Investment Division.

After SEBI got legal status in 1992, all mutual Funds have been brought under its supervision, except the money market mutual funds and off shore mutual funds, which are also bounded by the guidelines of RBI and the Ministry of Finance.

The investments of mutual funds are subjected to a set of regulations prescribed by the SEBI.

Restrictions on Mutual Fund Investments

Generally the mutual funds are allowed to invest the funds in transferable securities either in the money market or capital market. They include privately placed debentures or securitized debt. The RBI and the SEBI have issued guidelines by imposing the following restrictions on the investment decisions of the mutual funds.

- (a) The growth fund portfolios must consist of debentures, securitized debt and other unquoted debt instruments. These debt instruments shall not exceed 10% and 40% in case of income funds of the total funds.
- (b) The mutual funds shall purchase all debt instruments, which have been rated by credit rating agencies.
- (c) MFs are not allowed to grant the term loans to the industries.
- (d) The MFs are not allowed to invest more than 5% of its corpus fund in any one company's shares.
- (e) The MFs should not hold 5% of any company's paid up capital carrying voting rights.
- (f) The MFs should not investment more than 10% of its funds in the shares or debentures or other securities in a single company.
- (g) The MFs are not allowed to enter into transactions of the same Asset Management Company.
- (h) The MFs are not allowed to invest more than 15% of its funds in the shares and debentures of any specific industry.

- (i) The MFs are not allowed to involve in short selling or carry forward transactions or bad finances.
- (j) The MFs should take physical delivery of shares for purchases and deliver the scrips on sale of shares.
- (k) Transfers from one scheme to another scheme are allowed subject to the same conditions.

Recent Developments in Mutual Funds

One of the important features of the mutual fund is that most of them are already in leasing and hire purchase business. All the mutual funds do not get tax benefits like UTI, hence they are entering into leasing business as a tax shield. Most of these mutual funds are investing in the equities of fast growing companies. This ambition for growth may prove trouble to some funds. The mutual funds have been getting the expert services from banking, finance and academic fields with a view to introduce the professionalism. Another important development in this area is the organization of mutual funds by the reputed industrial houses like, Tata's, Birla's, Reliance etc. in collaboration of foreign banks to tap non-resident investments. These funds would be utilized for investment in shares of Indian companies, for setting new projects involving high technology.

Another important set up of the public sector mutual funds is the splitting of the UTI into two organizations such UTI-I and UTI-II. The UTI-I will be the public sector, where as UTI-II will be slowly privatized. On account of this development the private sector mutual funds will gain prominence in the mutual fund business.

The future prospects of mutual funds are considerably very bright in view of expanding investors support and initiation of the novel proposals by the government of India and mutual funds. The recent developments in the mutual funds business are listed below:

- (i) Launching of several new varieties of schemes offering triple benefits of income, liquidity and growth.
- (ii) Introduction of tax benefit schemes to attract the taxpayers to reduce the tax liability under section 88 of Indian Income Tax Act-1961
- (iii) The budget for 1992-93 has given tax exemption for the mutual fund income under income tax act. This will encourage the setting up of new mutual funds in India both in joint and private sectors.
- (iv) The government has been encouraging the private sector to set up mutual funds as per the guidelines of SEBI.

Key Financial Terminology related to Mutual Funds

Net Asset Value (NAV)-

Net Asset Value is the actual value of a share/unit on any business day. It is computed as follows:

$$\text{NAV} = \frac{\text{Market value of invested fund} + \text{Receivables} + \text{Accrued Income} - \text{liabilities} - \text{expenses}}{\text{Number of shares or units outstanding}}$$

The calculation of NAV may be illustrated with the help of a simple example, as follows

Size of the scheme= Rs 200 crores

Face value of the units= Rs 10

Number of Units outstanding = 20 crores

Market value of invested funds= Rs 300 crores

Receivables= Rs 30 cores

Accrued Income= 10 crores

Liabilities= Rs 15 crores

Accrued expenses= Rs 5 crores

NAV= (300+30+10-15-5)/20 = Rs 16

Rate of Return

The periodic rate of return on a mutual fund scheme is calculated as follows:

$$\text{Rate of Return for the period} = \frac{\text{NAV at the end} - \text{NAV at the beginning} + \text{Dividend paid}}{\text{NAV at the beginning of the period}}$$

Example:

NAV (beginning)= Rs 20

NAV (at the end)= Rs 25

Dividend Paid= Re 1

Rate of Return = $\{(25-20)+1\} / 20 = 30 \%$

Market price, repurchase price, and reissue price

A closed-ended scheme has to be listed on recognized stock exchanges to ensure that its investors enjoy liquidity. Generally, the market price of a closed-ended scheme tends to be lower than its NAV. If the market price is lower than the NAV, the scheme is said to be selling at discount. If it is higher, the scheme is said to be selling at a premium. In addition to listing, the mutual fund may also offer the facilities of repurchase. The repurchase price is usually linked to the NAV.

Unlike a closed-ended scheme, an open ended scheme is not listed on the stock exchanges. In general, the mutual fund repurchases or issues its units or shares on a continuing basis. The repurchase and reissue prices are closely linked to the NAV.

11.2 Portfolio/Mutual fund Performance

Importance

One important issue that remains is the 'bottom line' of the investing process: evaluating the performance of a portfolio. The question to answer is: Is the return on a portfolio, less all expenses, adequate to compensate for the risk that was taken? Every investor should be concerned with this issue because, after all, the objective of investing is to increase or at least protect financial wealth. Unsatisfactory results must be detected so that changes can be made.

Evaluating portfolio performance is important regardless of whether individual investors manages his own funds or invests indirectly through mutual funds. Direct investing can be time consuming and has high opportunity costs. If the results are not encouraging why do it. On the other hand if professionally portfolio managers are employed, it is necessary to know how well they perform. The performance has to be evaluated before intelligent decisions can be made about existing portfolio.

Key dimensions of portfolio performance evaluation

One of the most popular ways of measuring management's/ portfolio performance is by comparing the return of the portfolio with the market or with a random portfolio. The portfolio with the highest return is by this criterion deemed the better portfolio. However, merely measuring and comparing the returns on a managed and unmanaged portfolio is not enough. The investor must determine the relative riskiness of the portfolio under analysis. It is entirely possible that the managed portfolio has achieved higher returns than the market or the unmanaged portfolio by taking on considerably more risky investments. It is not surprising under such circumstances for higher returns to occur, for higher returns should go along with higher risk. Only after the relative risks of the portfolio is considered, the comparison of returns is meaningful.

Thus, in assessing the performance of a portfolio, it is necessary to consider both risk and return. If the skill with which management minimizes risk is not considered in the ranking of portfolios' average return, rank will be an oversimplified performance measures. Therefore, the real need is for an index of portfolio performance that is determined by both

the return and the risk of a portfolio. Therefore, the key dimensions of portfolio performance evaluation are rate of return and risk.

Rate of return

The rate of return from a portfolio for a given period is measured as follows:

$$\frac{\text{Terminal value} + \text{Dividend income} - \text{Initial value}}{\text{Initial value}}$$

To illustrate the calculation of the rate of return, let us look at the following data:

- Initial market value of the portfolio : Rs 1,00,000
 - Dividend and interest income received toward the end of the year : Rs 10,000
 - Terminal market value of the portfolio : Rs 105,000
- The rate of return on this portfolio is simply :

$$\frac{10,000 + (105,000 - 100,000)}{1,00,000} = 0.15 \text{ or } 15 \%$$

Risk

The risk of a portfolio can be measured in various ways. Two most commonly used measures of risk are: variability and beta (both of them were discussed at length in the previous unit)

Risk adjusted measure of performance

Based on the concepts of capital market theory and recognizing the necessity to incorporate return and risk into the analysis, three researchers –William Sharpe, Jack Treynor, and Michael Jensen- developed measures of portfolio performance. Thus, there are three “single-parameter portfolio performance index” that calculates its index number from both the risk and return statistics.

1. Sharpe’s portfolio performance measure
2. Treynor’s portfolio performance measure
3. Jensen’s portfolio performance measure

Sharpe’s Portfolio Performance Measure

William Sharpe has devised an index of portfolio performance, denoted S_i , which is defined in the following equation for i th portfolio

$$S_i = \frac{\text{Risk-premium}}{\text{Total risk}} = \frac{R_i - R_f}{N}$$

Where,

- S_i = Sharpe Index
- R_i = Average return on portfolio i
- R_f = risk-free rate of interest
- N = standard deviation (risk) of the returns for portfolio i

The numerator $R_i - R_f$ is called the risk-premium for portfolio. The risk-premium is that return over and above the risk-less rate that is paid to induce investors to take risk. Thus, the Sharpe Index measures the risk premium of the portfolio relative to the total amount of risk in the portfolio.

For example, assume that portfolio A has an average return of 10 % with a standard deviation of 2% and portfolio B has an average return of 12 % and a standard deviation of 4%. Further, assume that risk free rate is 5 %. Then the Sharpe Index for A equals

$$\frac{0.1-0.05}{0.02} = 2.5$$

For B,

$$\frac{0.12-0.05}{0.04} = 1.75$$

Thus, A ranked as the better portfolio because its index is higher ($2.5 > 1.75$), despite the fact that the portfolio B had a higher return ($12\% > 10\%$).

Treynor's Portfolio Performance Measure

Mr Jack Treynor conceived an index of portfolio performance that is based on systematic risk, as measured by portfolio's beta co-efficient, rather than on total risk like Sharpe measure. Treynor's single parameter investment performance index number for ranking purposes is defined in the following equation

$$T_i = \frac{\text{Risk-premium}}{\text{Systematic risk index}} = \frac{R_i - R_f}{\beta_i}$$

where,

T_i = Treynor Index

R_i = Average return on portfolio i

R_f = risk-free rate of interest

β_i = beta co-efficient for portfolio i

Thus, Treynor Index measures the risk premium of the portfolio, where risk premium equals the difference between the return of the portfolio and the riskless rate. For example, if we assume the same two hypothetical portfolios, A and B from the previous section, and furthermore assume that the beta co-efficients are 0.5 and 1.0, then the Treynor Index for A equals

$$\frac{0.1-0.05}{0.5} = 0.10$$

and for B,

$$\frac{0.12-0.05}{1.0} = 0.07$$

Again, portfolio A performed better than B. Both the Sharpe and Treynor indexes ranked A higher than B despite B's higher return.

Jensen's Portfolio Performance Measure

The Treynor and Sharpe Index models provide measures for ranking the relative performance of various portfolios, on a risk-adjusted basis. Jensen attempts to construct a measure of absolute performance on a risk-adjusted basis—that is, a definite standard against which performances of the various funds can be measured. This standard is based on measuring the portfolio manager's predictive ability that is, his ability to earn returns through successful prediction of security prices which are higher than those which we would expect, given the level of riskiness of his portfolio. In other words, he is attempting to determine if more than expected returns are being earned for the portfolio's riskiness.

Linear equation for calculating Jensen Index

$$R_i - R_f = K_i + \beta_i (R_m - R_f)$$

or $K_i = R_i - (R_f + \beta_i (R_m - R_f))$

where,

K_i = Jensen alpha

R_i = Average return on portfolio i

R_f = risk-free rate of interest

β_i = beta co-efficient for portfolio i

R_m = Average return on a market portfolio

Example

Information regarding two mutual funds and a market index are given below:

Fund	Return (%)	standard deviation (%)	Beta
Gold	7	15	0.72
Platinum	16	35	1.33
Market index	10	24	1.0

Assuming the risk-free return as 5 percent, calculate Jensen alpha for the two funds.

Solution:

Jensen alpha---- $K_i = R_i - (R_f + \beta_i (R_m - R_f))$

Gold fund----- $K_i = R_i - (R_f + \beta_i (R_m - R_f))$
 $= 7 - (5 + 0.72(10 - 5))$
 $= -1.6 \%$

Platinum fund----- $K_i = R_i - (R_f + \beta_i (R_m - R_f))$
 $= 16 - (5 + 1.33(10 - 5))$
 $= 4.35 \%$

Platinum fund is performing better than the Gold fund

A Comparison of the Three Composite Measures

The Sharpe measure, which uses the standard deviation, evaluates portfolio performance on the basis of both the portfolio's return and its diversification. Treynor's measure considers only the systematic risk of the portfolio and, like the Sharpe measure, can be used to rank portfolios on the basis of realized performance. Although the Sharpe and Treynor measures rank portfolios, they do not tell us in percentage terms how much a fund outperform (or underperformed) some benchmark.

Like the Treynor measure, Jensen's alpha uses beta as the measure of risk. Jensen's measure is not suitable for ranking portfolio performance, but it can be modified to do so. The Jensen and the Treynor measures can produce, with proper adjustments, identical relative rankings of portfolio performance.

If a portfolio is completely diversified, all three measures will agree on a ranking of portfolios. The reason for this is that with complete diversification, total variance is equal to systematic variance. When portfolios are not completely diversified, the Treynor and Jensen measures can rank relatively undiversified portfolio much higher than the Sharpe measure does. Because the Sharpe measure uses total risk, both systematic and nonsystematic components are included.

Another difference in the measures is that the Sharpe and Treynor measures use average returns over the measurement period, including the average risk-free rate. The Jensen measure uses the period -by-period returns and risk -free rate.

Suggested Questions and Problems

- 1) What are the key differences between closed-ended and open-ended schemes?
- 2) Describe the characteristics of the following broad categories of mutual fund schemes: equity scheme, index fund, money market mutual funds etc.
- 3) Describe the key regulations applicable to investments of a mutual fund.
- 4) What are risk-adjusted return measures? Explain the various measures of portfolio performance evaluation?
- 5) Consider the following information for three mutual funds A,B and C and the market.

	Mean Return(%)	Standard Deviation(%)	Beta
A	12	18	1.1
B	10	15	0.9
C	13	20	1.2
Market index	11	17	1.00

The mean risk-free rate was 6%. Calculate the Treynor measure, Sharpe measure and Jensen measure for the three mutual funds and the market index.

- 6) The information for Growth Fund A and Growth Fund B is given below:

GROWTH FUND A

End of Year	Ending NAV	Capital Gains Distribution	Cash Dividend Distribution
19X3	Rs.45	Rs.1.25	Rs.0.25
19X2	Rs.40	Rs.1.50	Rs.0.15
19X1	Rs.38	Rs.1.10	Rs.0.10

GROWTH FUND B

End of Year	Ending NAV	Capital Gains Distribution	Cash Dividend Distribution
19X3	Rs.50	Rs.3.00	Rs.0.45
19X2	Rs.42	Rs.2.50	Rs.0.40
19X1	Rs.40	Rs.1.75	Rs.0.35

Which fund had the higher rate of return in year 19X3?

- 7) The rate of return and risk for three growth-oriented mutual funds were calculated over the most recent 5 years and are listed below:

Growth Fund	Return	Risk(Std.Dev.)
Axle	15%	16%
Joseph	13%	18%
Sharp	12%	11%

Rank each fund by Sharpe's index of portfolio performance if the risk-free rate is 7%.

- 8) Use the Sharpe Index Model to select the best combination of securities for a portfolio. The risk free rate is 5% and market standard deviation is 20%.

Security	S1	S2	S3	S4	S5
Risk(Beta)	1.5	1.2	1.3	1.4	0.85
Return	12%	15%	10%	16%	8%
Error	20%	15%	12%	24%	22%

