PGBA (S4) 01

Investment Management

SEMESTER - IV

BUSINESS ADMINISTRATION

(Finance Specialisation)

BLOCK - 1

KRISHNA KANTA HANDIQUI STATE OPEN UNIVERSITY

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MASTER IN BUSINESS ADMINISTRATION

INVESTMENT MANAGEMENT
(FINANCE SPECIALISATION)
Block 1

DETAILED SYLLABUS

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COURSE INTRODUCTION

Investment Management provides a survey of the important areas of investments: valuation, the marketplace, fixed income instruments and markets, equity instruments and markets, derivative instruments, and a cross-section of special topics, such as international markets and mutual funds.

Investment is an important means for channelizing the savings into the development of economy. This course is structured into 8 units in such a manner that the learner takes a stage wise exposure to the concepts of investment management and also appreciates the instruments and the market place where the activity has to be practised.

The course has 15 units and is divided into two blocks: Block 1 and Block 2.

Block 1 deals with the introductory concepts of Investment- A Conceptual Framework,The Investment Enviornmnet,Risk and Return,Fundamental Analysis, Technical Analysis ,Efficient Market Theory and Valuation of Bonds

Block 2 concentrates on Valuation of variable Income Securities or Equity Share Valuation,Portfolio Management,Portfolio Construction, The Markowitz Model,Capital Asset Pricing Theory **,**Capital Market Theory and the Arbitrage Pricing Theory and Mutual Funds.

Each unit of these blocks includes some along-side boxes to help you know some of the difficult, unseen terms. Some “EXERCISES” have been included to help you apply your own thoughts. You may find some boxes marked with: “LET US KNOW”. These boxes will provide you with some additional interesting and relevant information. Again, you will get “CHECK YOUR PROGRESS” questions. These have been designed to self-check your progress of study. It will be helpful for you if you solve the problems put in these boxes immediately after you go through the sections of the units and then match your answers with “ANSWERS TO CHECK YOUR PROGRESS” given at the end of each unit. you in making your learning more active and efficient. And, at the end of each section, you will get “CHECK YOUR PROGRESS” questions. These have been designed to self-check

BLOCK INTRODUCTION:

This is the first block of the course 'Investment Management'. The Block is divided into 8 units and is primarily a learner oriented Self learning material, as it satisfies the requirements of the learners in the filed of 'Investment Management''.

This block comprises of the following eight units:

The first unit introduces us to Investments: Meaning, types and characteristics, Types of Investments,Characteristics of Investment,Objectives of Investments, Types of Investors, Investment vs Speculation,Investment vs Gambling, Meaning of security analysis, Meaning of portfolio management and Financial Assets

The second unit gives us an introduction to the Financial Markets,Securities Markets, National Markets,International Markets,Money Markets,Capital Markets,Debt Market,Equity Markets,Primary Markets,Secondary Markets,Spot Market and Derivative Markets

The third unit gives us an idea on the Concept of Investment Risk,Evolution of Risk Connotations,Types of Investment Risk,Returns on financial assets,Components of return, Calculation of average returns,Risk in holding securities, Systematic risk,Unsystematic Risk and Risk measurement

The fourth unit will help us in undersatnding the Economic Analysis,Macro Economic Factors,Industry Analysis, Industry Life Cycle Analysis,Classification of Industry,Characteristics of an Industry Analysis,Profit Potential of Industries: Porter Model and Techniques for Evaluating Relevant Industry Factors

The fifth unit gives us a broad idea on Comapny Analysis: An Introduction,Methods of analysing companies and Company Analysis: The Study of Financials Statements

The sixth unit will help us in understanding the Meaning of Technical Analysis,Tools of Technical Analysis:Dow Theory,Volume of Trade,Support and Resistance Level,Breadth of the market,Short Selling,Odd Lot Trading,Moving Average,Relative Strength Analysis,Charts;Technical Analysis and Fundamental Analysis and Evaluation of Technical Analysis

The seventh unit gives us an idea on Concepts of Efficient Market Theory, Assumptions of Efficient Market Theory,Random Walk Theory, Forms of Efficient Market Theory, Weak form of EMH,Semistrong form of EMH, Strong form of EMH and Efficient market hypothesis and mutual fund performancenagement, Workers Participation in Management in India and Making Workers Participation in Management Effective

The eighth unit introduces us to Bond valuation:The Time Value Concept,The Present Value,The Bond Valuation Model,Bond Yield,Price-Yield Relationship,Bond market, The term structure of interest rate (yield curve),Riding the yield curve and Duration and Immunisation

The Block is devided into eight units:

UNIT 1: Investment- A Conceptual Framework

UNIT 2: The Investment Enviornment

UNIT 3: Risk and Return

UNIT 4: Fundamental Analysis-I

UNIT 5: Fundamental Analysis-II

UNIT 6: Technical Analysis

UNIT 7: Efficient Market Theory

UNIT 8: Valuation of Bonds

UNIT 1 : INVESTMENT- A CONCEPTUAL FRAMEWORK

UNIT STRUCTURE

1.1 Learning Objectives

1.2 Introduction

1.3 Investments: Meaning, types and characteristics

- 1.3.1 Types of Investments
- 1.3.2 Characteristics of Investment

1.4 Objectives of Investments

1.5 Types of Investors

1.6 Investment vs Speculation

1.7 Investment vs Gambling

1.8 Meaning of security analysis

1.9 Meaning of portfolio management

1.10 Financial Assets

1.11 Let Us Sum Up

1.12 Further Reading

1.13 Answers to Check Your Progress

1.14 Model Question

1.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- define investments and their types
- describe meaning and objectives of portfolio management and financial assets and markets.

1.2 INTRODUCTION

Security analysis is a pre-requisite for making investments. In the present day financial markets, investment has become complicated. One makes investments for a return higher than what he can get by keeping the money in a commercial or cooperative bank or even in an investment bank.

In the finance field, it is a common knowledge that money or finance is scarce and that investors try to maximise their return. But the finance theory states that the return is higher if the risk is also higher. Return and risk go together and they have a trade off. Most of the investments are risky to some degree. The art of investment is to see that the return is maximised with the minimum of risk, which is inherent in investments. If an investor keeps his money in a bank in savings account, he/she takes the least risk, as the money is safe and he will get back when he/she wants it.

In the above discussion, we focused on the word '**Investment'.** But for making investment, we need to make security analysis. It then becomes necessary to define properly investment and security analysis at the outset. In this unit we will discuss about different types of investments, objectives of investment, security analysis and portfolio management.

1.3 INVESTMENTS: MEANING, TYPES AND CHARACTERISTICS

Financial markets have the basic function of mobilising the investments needed by corporate entities. They also act as market-places for investors who are attracted by the returns offered by the investment opportunities in the market. In this context there is a need to understand the meaning of investment and the motives of investment.

Investment may be defined as an activity that commits funds in any financial/physical form in the present with an expectation of receiving additional return in the future. The expectation brings with it a probability that the quantum of return may vary from a minimum to a maximum. This possibility of variation in the actual return is known as investment risk. Thus every investment involves a return and risk.

Investment is an activity that is undertaken by those who have savings. Savings can be defined as the excess of income over expenditure. However, all savers need not be investors. For example, an individual who sets aside some money in a box for a birthday present is a saver, but cannot be considered an investor. On the other hand, an individual who opens a savings bank account and deposits some money regularly for a birthday

present would be called an investor. The motive of savings does not make a saver an investor. However, expectations distinguish the investor from a saver. The saver who puts aside money in a box does not expect excess returns from the savings. However, the saver who opens a savings bank account expects a return from the bank and hence is differentiated as an investor. The expectation of return is hence an essential characteristic of investment.

An investor expects to earn additional monetary value from the mode of investment that could be in the form of physical/financial assets. A bank deposit is a financial asset. The purchase of gold would be a physical asset. Investment activity is recognised when an asset is purchased with an intention to earn an expected fund flow or an appreciation in value.

An individual may have purchased a house with an expectation of price appreciation and may consider it as an investment. If a bank has advanced some money to a customer, the loan can be considered as an investment for the bank. The loan instrument is expected to give back the money along with interest at a future date. The purchase of an insurance plan for its benefits such as protection against risk, tax benefits, and so on, indicates an expectation in the future and hence may be considered as an investment.

From the above examples, it can be seen that investment involves employment of funds with the aim of achieving additional income or growth in value. The essential quality of an investment is that it involves the expectation of a reward. Investment, hence, involves the commitment of resources at present that have been saved in the hope that some benefits will accrue from them in the future.

1.3.1 Types of Investments

Investments may be classified as financial investments or economic investments. In the financial sense, investment is the commitment of funds to derive future income in the form of interest, dividend, premium, pension benefits, or appreciation in the value of the initial investment. Hence, the purchase of shares, debentures,

post office savings certificates, and insurance policies are all financial investments. Such investments generate financial assets. These activities are undertaken by anyone who desires higher return and is willing to accept the risk from the financial instrument.

Economic investments are undertaken with an expectation of increasing the current economy's capital stock that consists of goods and services. Capital stock is used in the production of other goods and services desired by the society. Investment in this sense implies the expectation of formation of new and productive capital in the form of new constructions, plant and machinery, inventories, and so on. Such investments generate physical assets and also industrial activity. These activities are undertaken by corporate entities that participate in the capital market.

Financial investments and economic investments are, however, related and dependent. The money invested in financial investments is ultimately converted into physical assets. Thus, all investments result in the acquisition of some asset, either financial or physical. In this sense, markets are also closely related to each other. Hence, the perfect financial market should reflect the progress pattern of the real market since, in reality, financial markets exist only as a support to the real market.

Let us now discuss the various types of Investments:

A. Variable Income Securities:The term variable-income security refers to investments that provide their owners with a rate of return that is dynamic and determined by market forces.

B. Equity Shares: The equity shares attract the interest of many. In the early nineties, the stock market was the best and safety place for the common individual to invest. Since 1996, the share market prices have been low. This made the retail investors to turn away from the stock market .The stock market classifies shares into growth shares, income shares, defensive shares, cyclical shares and speculative shares.

1. **Growth Shares:** the stocks that have higher rate of growth than the industrial growth rate in profitability are referred to as growth

shares. For example, the list of major gainers for 1996 is dominated by software sectors stocks. The HCL and Info systems shares prices increased sharply.

2. **Income Shares:** These stocks belong to companies that have comparatively stable operations and limited growth opportunities. The bank shares and some of the fast moving consumer goods stocks such as Cadbury, Nestle and Hindustan Unilever may be termed as income shares.
3. **Defensive Shares:** Defensive stocks are relatively unaffected by the market movements. For example, a host of pharmaceutical stocks posted return in excess of 50 percent in 1998.Thepharmaceutical industry owing to its inherent nature of demand is not affected by the down turn in the economy.
4. **Cyclical Shares:** The business cycle affects the cyclical shares. The upward and downward movements of the business cycle affect the business prospects of certain companies and yield 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 cycle.
5. **Speculated Shares:** shares that have lot of speculated trading in them are referred to as speculated shares. During the bull and bear phases of the market, this type of shares attracts the attention of the trades.

C. Fixed Income Securities: A fixed income security is an investment that provides a return in the form of fixed periodic payments and the eventual return of principal at maturity. Unlike a variable-income security, where payments change based on some underlying measure such as short-term interest rates, the payments of a fixed-income security are known in advance.

1. Preference Shares: Preference shares are shares in the equity of a company that entitle the holder to a fixed dividend amount to be paid by the issuer. This dividend must be paid

before the company can issue any dividends to its common shareholders. Also, if the company is dissolved, the owners of preference shares are paid back before the holders of common stock. However, the holders of preference shares do not usually have any voting control over the affairs of the company, as do the holders of common stock.

2. Debentures: If a company needs funds for extension and development purpose without increasing its share capital, it can borrow from the general public by issuing certificates for a fixed period of time and at a fixed rate of interest. Such a loan certificate is called a debenture. Debentures are offered to the public for subscrip-tion in the same way as for issue of equity shares. Debenture is issued under the common seal of the company acknowledging the receipt of money.

3. Bonds: Bonds can be defined as the negotiable instrument, issued in relation to borrowing arrangement that indicates indebtedness. It is an unsecured debt instrument, in which the bond investor extends credit to the issuer, which in turn commits to repay the loan amount on the specified maturity date, along with interest throughout the life of the bond. The issuer can be the Municipal Corporation, government or company.

D. **Government Securities:** A government security is a bond or other type of debt obligation that is issued by a government with a promise of repayment upon the security's maturity date. Government securities are usually considered low-risk investments because they are backed by the taxing power of a government. Bonds, notes, and other debt instruments sold by a government to finance its borrowings. These are generally long-term securities with the highest market ratings.

E. **Money Market Securities:** The money market is an organized exchange market where participants can lend and borrow short-term, high-quality debt securities with average maturities of one year or less. The market enables governments, banks, and other large institutions to sell short-

term securities to fund their short-term cash flow needs. It also allows individual investors to invest small amounts of money in a low-risk market. Some of the instruments traded in this market include treasury bills, certificates of deposit, commercial paper, federal funds, bills of exchange, and short-term mortgage-backed securities and asset-backed securities.Several financial instruments are created for short-term lending and borrowing in the money market, they include:

1. Treasury Bills: Treasury bills, also known as Zero Coupon Bonds are the instrument of short term borrowing with maturity period of less than one year. This instrument is issued by Reserve Bank of India on behalf of the Central Government for fulfilling short term requirements of funds. They are issued at discount and are paid at par.
2. Commercial Paper: Commercial Paper (CP) is a short term unsecured promissory note with maturity period of 15 days to one year. Since it is unsecured, it is issued by the large and creditworthy companies to meet their short term fund requirements. Commercial Paper is issued at discount and redeemed at par. It is negotiable and transferable by endorsement. The funds raised through Commercial Paper can be used for fulfilling seasonal and working capital need. For example, for meeting the floatation cost at the time of issue of shares and debentures i.e. Bridge Financing.
3. Certificate of Deposit: Certificates of deposit are short term instruments issued by commercial banks and financial institutions to the individuals, corporations and companies. They are unsecured and negotiable. Such instruments are usually issued by banks when they have a tight liquidity position because of slow growth of bank deposits but the demand for credit is high.
4. Commercial Bills: Commercial bill is a bill of exchange used to finance the credit sales of firms. It is a short term, negotiable and self liquidity instrument. In case of goods sold on credit, the buyer is liable to make the payment on a specific date in future. The seller could either wait till the maturity date or can draw a bill of exchange. When this bill is accepted by the buyer it becomes a marketable instrument

and is called a trade bill. If the seller wants the funds before the maturity date, he can get the bill discounted from the bank. When a commercial bank accepts a trade bill it becomes a commercial bill.

F. **Non negotiable Securities:** Non-negotiable describes the price of a good or security that is firmly established and cannot be adjusted, or a part of a contract or deal that is considered a requirement by one or both involved parties. Additionally, the term can relate to a good or security whose ownership is not easily transferable from one party to another.

F. **Deposits:** A deposit is the act of placing cash (or cash equivalents) with some entity, most commonly with a financial institution such as a bank. The deposit is a credit for the party (individual or organization) who placed it, and it may be taken back (withdrawn) in accordance with the terms agreed at time of deposit, transferred to some other party, or used for a purchase at a later date.Deposits are usually the main source of funding for banks.

1. Bank Deposits: Bank deposits consist of money placed into banking institutions for safekeeping. These deposits are made to deposit accounts such as savings accounts, checking accounts and money market accounts. The account holder has the right to withdraw deposited funds, as set forth in the terms and conditions governing the account agreement.

2. Post office Deposits: Like the bank, post office also offers fixed deposits facility land monthly income scheme. Post office monthly income scheme is popular scheme for the retired. An interest rate of 13% is paid monthly. The term of the scheme is six years, at the end of which la bonus of 10% is paid. The annualised yield to maturity works out to be 15.01% per annum. After three years, premature closure is allowed without any penalty. If the closure is after one year, a penalty of 5% is charged.

3. NBFC Deposits: Non-banking financial companies (NBFCs) are financial institutions that offer various banking services, but do not have a banking license. Generally, these institutions are not allowed to take deposits from the public, which keeps them outside the scope of traditional oversight required under banking regulations. NBFCs can offer banking services such

as loans and credit facilities, retirement planning, money markets, underwriting and merger activities.

G. **Tax-sheltered saving schemes :** Tax-sheltered saving schemes provide significant tax benefits to those who participate in them. The most important tax-sheltered saving schemes in India are-

- Public Provident Fund Scheme
- National Saving Scheme
- National Saving Certificate

1. Public Provident Fund Scheme :The Public Provident Fund is a savings-cum-tax-saving instrument in India, introduced by the National Savings Institute of the Ministry of Finance in 1968. The aim of the scheme is to mobilize small savings by offering an investment with reasonable returns combined with income tax benefits.The scheme is fully guaranteed by the Central Government. Balance in PPF account is not subject to attachment under any order or decree of court. However, Income Tax & other Government authorities can attach the account for recovering tax dues

2. National Saving Scheme: NSS is mostly viewed upon as a tax-saving instrument. It combines growth in money (capital appreciation) with cuts in tax outgo, albeit at a lower rate. NSS is not meant for earning regular income. It serves primarily as an instrument to reduce tax liability. Since the NSS has a fixed rate of return, it cannot provide adequate safeguards against high inflation rates. It is a savings plan that also offers tax benefits, and it cannot be pledged as security to any bank for availing a loan. income is assured at the specified rate of interest. Since the NSS has the backing of the GOI, this is a risk-free avenue of investment.

3. National Savings Certificate : The National Savings Certificate is a fixed income investment scheme that you can open with any post office. A Government of India initiative, it is a savings bond that encourages subscribers (mainly small to mid-income investors) to invest while saving on income tax. In this article, we cover the following info about NSC. Individuals mainly use NSC for small and medium investments as well as for tax-saving purposes. A fixed income instrument like Public Provident

Fund and Post Office FDs, this scheme too is a secure and low-risk product. You can buy it from the nearest post office in your name, for a minor or with another adult as a joint account. They come with 2 fixed maturity periods – 5 years and 10 years. There is no maximum limit on the purchase of NSCs, but investments of up to Rs 1.5 lakhs in the scheme can earn a tax break under Section 80C of the Income Tax Act. The certificates earn a fixed interest, which is currently at the rate of7.6% per annum. They add this interest back to the investment and compound it annually. Many pledge these certificates for taking loans from banks.

H. **Life insurance:** Life insurance is a form of insurance in which a person makes regular payments to an insurance company, in return for a sum of money to be paid to them after a period of time, or to their family if they die. A life insurance policy is a contract with an insurance company. In exchange for premium payments, the insurance company provides a lump-sum payment, known as a death benefit, to beneficiaries upon the insured's death. Typically, life insurance is chosen based on the needs and goals of the owner. Term life insurance generally provides protection for a set period of time, while permanent insurance, such as whole and universal life, provides lifetime coverage. It's important to note that death benefits from all types of life insurance are generally income tax-free.

I. Mutual Funds: Mutual funds are the most popular investment types for the everyday investor. A mutual fund is an investment security that enables investors to pool their money together into one professionally managed investment. Mutual funds can invest in stocks, bonds, cash or a combination of those assets. The underlying security types, called *holdings*, combine to form one mutual fund, also called a *portfolio*. In simpler terms, mutual funds are like baskets. Each basket holds certain types of stocks, bonds or a blend of stocks and bonds to combine for one mutual fund portfolio.There are several different types of mutual funds you should be aware of:

· **Closed-End Mutual Funds:** Closed-end mutual funds issue a fixed number of shares to the investing public and usually trade on the major exchanges just like corporate stocks. Closed-end funds often invest in a particular sector, a specific industry, or a certain country.

· **Open-End Mutual Funds:** Open-end mutual funds stand ready to issue and redeem shares on a continuous basis. Shareholders buy the shares at net asset value (NAV) and can redeem them at the current market price.

· **Load Funds:** The term “load” refers to the sales charge paid by an investor who purchases shares in a mutual fund. When the sales charge is imposed at the time of purchase, this is known as a front-end load. Conversely, back-end loads represent charges that are assessed when the investor eventually sells the fund.

J. **Real Assets:** Real assets are physical assets that have value due to their substance and properties. Real assets include precious metals, commodities, real estate, agricultural land, machinery and oil. They are appropriate for inclusion in most diversified portfolios because of their relatively low correlation with financial assets such as stocks and bonds.



CHECK YOUR PROGRESS

Q1: Define Investment

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Q2: What is Variable Income Securities

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.....

Q3: Define Mutual Fund

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.....

1.3.2 Characteristics of investment

The features of economic and financial investments can be summarised in terms of ***return, risk, safety, and liquidity.***

1. **Return:** All investments are characterised by the expectation of a return. In fact, investments are made with the primary objective of deriving a return. The expectation of a return may be from income (yield) as well as through capital appreciation. Capital appreciation

is the difference between the sale price and the purchase price of the investment. The dividend or interest from the investment is the yield. Different types of investments promise different rates of return. The expectation of return from an investment depends upon the nature of investment, maturity period, market demand, and so on.

The purpose for which the investment is put to use influences, to a large extent, the expectation of return of the investors. Investment in high growth potential sectors would certainly increase such expectations.

The longer the maturity period, the longer is the duration for which the investor parts with the value of the investment. Hence, the investor would expect a higher return from such investments.

2. **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. While some investments such as government securities and bank deposits are almost without risk, others are more risky. The risk of an investment is determined by the investment's maturity period repayment capacity, nature of return commitment, and so on.

The longer the maturity period, greater is the risk. When the expected time in which the investment has to be returned is a long duration, the uncertainty surrounding the return flow from the investment increases. This uncertainty leads to a higher risk level for the investment with longer maturity rather than on an investment with shorter maturity.

3. **Safety:** The safety of investment is identified with the certainty of return of capital without loss of money or time. Safety is another feature that an investor desires from investments. Every investor expects to get back the initial capital on maturity without loss and without delay. Investment safety is gauged through the reputation established by the borrower of funds. A highly reputed and successful corporate entity assures the investors of their initial capital. For example, investment is considered safe especially when it is made

in securities issued by the government of a developed nation.

4. **Liquidity:** An investment that is easily saleable or marketable without loss of money and without loss of time is said to possess the characteristic of liquidity. Some investments such as deposits in unknown corporate entities, bank deposits, post office deposits, national savings certificate, and so on are not marketable. There is no well-established trading mechanism that helps the investors of these instruments to subsequently buy/sell them frequently from a market. Investment instruments such as preference shares and debentures (listed on a stock exchange) are marketable. The extent of trading, however, depends on the demand and supply of such instruments in the market for the investors. Equity shares of companies listed on recognised stock exchanges are easily marketable. A well-developed secondary market for securities increases the liquidity of the instruments traded therein.

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

1.4 OBJECTIVES OF INVESTMENT

A prudent and consistent saving habit lets income earners to set aside a certain amount of current income for future consumption. Savings kept as cash do not result in an incremental return. Hence, savings are invested in assets with the desired risk-return characteristics. The main objective of an investment process is to minimise risk while simultaneously maximising the expected returns from the investment and assuring safety and liquidity of the invested assets.

Investors look for growth/increase in current wealth through investment opportunities. Given an investment environment, an investor's preference will be for investment opportunities that give the highest return. Investors desire to earn as large returns as possible but with the minimum of risk. Risk can also be stated as the probability that the actual return realised from an investment may be different from the expected return. Financial assets can be grouped into different classes of risk based on the return.

Government securities constitute the low risk category as there is very little deviation from expectations and hence are riskless. Shares of corporate entities would form the high-risk category of financial assets as their returns depend on many uncontrollable factors.

An investor would be prepared to assume a higher risk only if the expected return is proportionately higher. Hence, there is a trade-off between risk and return.

The objective of safety and liquidity helps an investor to design a retirement plan. This is done to substantiate an investor's earnings beyond the employment tenure. With this in mind, the investor sets aside a part of the current income in growth/income-yielding assets that would give an assured return after a period of time.

Savings kept as idle cash do not become investments since it loses its value over time due to rise in prices. This rise in prices, or inflation, invariably erodes the value of money. Investments are, hence, made with the objective to provide a hedge or protection against inflation over the investment duration. This time value concept necessitates investors to choose asset types that will enable them to retain at least the cash value held at present over a future period. In effect, the real rate of return would be negative if the investment cannot earn a higher return than the inflation rate. For example, if inflation is at an average annual rate of 4 per cent, then the expected return from an investment should be above 4 per cent to help savings funds to flow into investment avenues. The objective of investment hence can be stated as giving an expected return from the asset that is higher than the prevalent inflation rate in the economy.

The third objective of investment is the utilisation of tax incentive schemes offered by the government. In order to foster investment habits, many economies offer incentives in the form of tax-saving schemes. Tax rates are applicable for a fiscal year; therefore, to cut down on immediate tax expenditures as investor would invest in tax-saving investment schemes offered by the government. This objective of the investor to reduce present tax payments and hence invest in tax-saving schemes can be considered as a short-term investment objective. Tax-saving schemes also offer a

marginal return to the investors. Based on the tax policies of the country, investment criteria could solely depend on this factor also.

1.5 TYPES OF INVESTORS

Investors can be classified on the basis of their risk bearing capacity. Investors in the financial market have different attitudes towards risk and hence varying levels of risk-bearing capacity. Some investors are risk averse, while some may have an affinity for risk. 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. A person with a higher income is assumed to have a higher risk-bearing capacity. Thus investor 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 choose instruments that do not show much variation in returns. Risk bearers fall in between these two categories. They assume moderate levels of risk.

Investors can also be classified on the basis of groups as individuals or institutions. Individual investors operate alongside institutional investors in the investment market. However, their characteristics are different. Individual investors in any financial market are large in number, but in terms of value of investment they are comparatively smaller. Institutional investors, on the other hand, are organisations with surplus funds beyond immediate business needs or organisation whose business objective is investment. Mutual funds, investment companies, banking and non-banking companies, insurance corporations, and so on are organisations with large surplus funds to be invested in various profitable avenues. While these institutional investors are fewer in number compared to individual investors, their resources are much larger. Institutional investors engage professional fund managers to carry out extensive analysis. Institutional investors and individual investors combine to make the investment market dynamic.

1.6 INVESTMENT VS. SPECULATION

Investment and speculation both involve the purchase of assets such as shares and securities, with an expectation of return. However, investment

can be distinguished from speculation by risk bearing capacity, return expectations, and duration of trade.

The capacity to bear risk distinguishes an investor from a speculator. An investor prefers low risk investments, whereas a speculator is prepared to take higher risks for higher returns. Speculation focuses more on returns than safety, thereby encouraging frequent trading without any intention of owning the investment.

The speculator's motive is to achieve profits through price change, that is, capital gains are more important than the direct income from an investment. Thus, speculation is associated with buying low and selling high with the hope of making large capital gains. Investors are careful while selecting securities for trading. Investments, in most instances, expect an income in addition to the capital gains that may accrue when the securities are traded in the market.

Investment is long term in nature. An investor commits funds for a longer period in the expectation of holding period gains. However, a speculator trades frequently; hence, the holding period of securities is very short.

The identification of these distinctions helps to define the role of the investor and the speculator in the market. The investor can be said to be interested in a good rate of return on a consistent basis over a relatively longer duration. For this purpose the investor computes the real worth of the security before investing in it. The speculator seeks very large returns from the market quickly. For a speculator, market expectations and price movements are the main factors influencing a buy or sell decision. Speculation, thus, is more risky than investment.

In any stock exchange, there are two main categories of speculators called the bulls and bears. A bull buys shares in the expectation of selling them at a higher price. When there is a bullish tendency in the market, share prices tend to go up since the demand for the shares is high. A bear sells shares in the expectation of a fall in price with the intention of buying the shares at a lower price at a future date. These bearish tendencies result in a fall in the price of shares.

A share market needs both investment and speculative activities.

Speculative activity adds to the market liquidity. A wider distribution of shareholders makes it necessary for a market to exist.

1.7 INVESTMENT VS GAMBLING

Investment can also to be distinguished from gambling. Examples of gambling are horse race, card games, lotteries, and so on. Gambling involves high risk not only for high returns but also for the associated excitement. Gambling is unplanned and unscientific, without the knowledge of the nature of the risk involved. It is surrounded by uncertainty and a gambling decision is taken on unfounded market tips and rumours. In gambling, artificial and unnecessary risks are created for increasing the returns.

Investment is an attempt to carefully plan, evaluate, and allocate funds to various investment outlets that offer safety of principal and expected returns over a long period of time. Hence, gambling is quite the opposite of investment even though the stock market has been euphemistically referred to as a “gambling den”.

1.8 MEANING OF SECURITY ANALYSIS

Investment is commitment of funds in the expectation of some positive rate of return. These funds are to be used by another party, user of fund, for productive activity. It can be giving an advance or loan or contributing to the equity (ownership capital) or debt capital of a corporate or non-corporate business unit. In other words, investment means conversion of cash or money into a monetary asset or a claim on future money for a higher return in long term. This return is for saving, parting with saving or liquidity and lastly for taking a risk involving the uncertainty about the actual return, time of waiting and cost of getting back funds, safety of funds, and risk of the variability of the return.

Investment in capital market is made in various financial instruments, which are all claims on money. These instruments may be of various categories with different characteristics. These are all called securities in

the market parlance. In a legal sense also, the Securities Contracts Regulation Act, (1956) has defined the security as inclusive of shares, scrips, stocks, bonds, debentures or any other marketable securities of a like nature or of any debentures of a company or body corporate, the Government and semi-Government body etc. It includes all rights and interests in them including warrants, and loyalty coupons etc., issued by any of the bodies, organisations or the Government. The ***derivatives*** of securities and ***Security Index*** are also included as securities in the above definition in 1998.

Derivative: Derivative is the security which derives its value from the underlying asset.

Security Index: A security index is a means to measure the growth of value of a set of securities.

In the strict sense of the word, a security is an instrument of promissory note or a method of borrowing or lending or a source of contributing to the funds needed by a corporate body or non-corporate body. Private security for example is also a security as it is a promissory note of an individual or firm and gives rise to a claim on money. But such private securities or even securities of private companies or promissory notes of individuals, partnerships or firms to the extent that their marketability is poor or nil, are not part of the capital market and do not constitute part of the security analysis. In nutshell, securities are financial instruments that have been created to represent a legal obligation to pay a sum in future in return for the current receipt of value. Securities thus represent the cash equivalent received from another person.

Definition of Security Analysis: For making proper investment involving both risk and return, the investor has to make a study of the alternative avenues of investment– their risk and return characteristics and make proper projection or expectation of the risk and return of the alternative investments under consideration. He has to tune the expectations to his preferences of the risk and return for making a proper investment choice. The process of analysing the individual securities and the market as a whole and estimating the risk and return expected from each of the investments with a view to identifying undervalued securities for buying and overvalued securities for selling is both an art and a science and this is what is called security analysis.

Security Analysis in both traditional sense and modern sense involves

the projection of future dividend, or earnings flows, forecast of the share price in the future and estimating the ***intrinsic value*** of a security based on the forecast of earnings or dividends. Thus, security analysis in traditional sense is essentially an analysis of the fundamental value of a share and its forecast for the future through the calculation of its intrinsic worth of the share.

Modern security analysis relies on the fundamental analysis of the security, leading to its intrinsic worth and also risk-return analysis depending on the variability of the returns, ***covariance***, safety of funds and the projections of the future returns. If the security analysis is based on fundamental factors of the company, then the forecast of the share price has to take into account inevitably the trends and the scenario in the economy, in the industry to which the company belongs and finally the strengths and weaknesses of the company itself- its management, promoters' track record, financial results, projections of expansion, diversification, tax planning etc. all these studies are only a part of the total security analysis that the investor should aim at.

Intrinsic Value: Intrinsic value is the perceived or calculated value of a company, including tangible and intangible factors, using fundamental analysis.

Covariance: Covariance is a measure of the directional relationship between the returns on two risky assets.

1.9 MEANING OF PORTFOLIO MANAGEMENT

A combination of such securities with different risk-return characteristics will constitute the portfolio of the investor. Thus, a portfolio is a combination of various assets and/or instruments of investments. The combination may have different features of risk and return, separate from those of the components. The portfolio is also built up out of the wealth or income of the investor over a period of time, with a view to suit his risk or return preferences to that of the portfolio that he holds. The portfolio analysis is thus an analysis of the risk-return characteristics of individual securities in the portfolio and changes that may take place in combination with other securities due to interaction among themselves and impact of each one of them on others.

As referred earlier, portfolios are combinations of assets held by the investors. These combinations may be of various asset classes like equity

and debt and of different issuers like Government bonds and corporate debt or of various instruments like ***discount bonds, warrants, debentures*** and ***Blue chip equity*** or scrip of emerging blue chip companies.

The traditional Portfolio Theory aims at the selection of such securities that would fit in well with the asset preferences, needs and choices of the investor. Thus, a retired executive invests in fixed income securities for a regular and fixed return. A business executive or a young aggressive investor on the other hand invests in new and growing companies and in risky ventures.

In risk return analysis, the attitudes and preferences of investors are taken into account as also their risk-return trade off stemming from the analysis of individual securities. The return on portfolio is a weighted average of returns of the individual stocks; and the weights are proportional to each stock's percentage in the total portfolio. Besides the stocks when put together in a basket may not give a total risk which is the mathematical equivalent of total of risks of all the individual stocks, due to the simple reason that the risks of some stocks may be compensated by the risks of other stocks or vice versa. The risks of some stocks can also be accentuated by those of others in the portfolio. The modern portfolio theory states that the combined risk of a portfolio may be greater or lesser than the sum of the risks of the components of individual securities.

Portfolio analysis includes selection of securities, portfolio construction, revision of portfolio, evaluation and monitoring of the performance of the portfolio.

Discount Bonds: A discount bond is a bond that is issued for less than its par (or face) value, or a bond currently trading for less than its par value in the secondary market.

Warrants: a warrant is a security that entitles the holder to buy the underlying stock of the issuing company at a fixed price called exercise price until the expiry date.

Debentures: A debenture is a type of debt instrument that is not secured by physical assets or collateral.

Blue Chip Equity Fund: A Blue chip fund is a term used to indicate well-established and financially sound companies.

1.10 FINANCIAL ASSETS

Conducive economic environment attracts investment, which in turn influences the development of the economy. One of the essential criteria for the assessment of economic development is the quality and quantity of assets in a nation at a specific time. There are two broad types of assets: (1) real assets, (2) financial assets. Real assets comprise the physical and intangible items available to a society. Physical assets are used to generate

activity and result in positive or negative contribution to the owner of the asset. Intangible assets also result in a positive or negative contribution to the owner, but are different in that they do not have a physical shape or form. Besides real assets, the economy is supported by another group of assets called financial assets. The major component of the financial assets is cash, also called money. Financial assets help the physical assets to generate activity. Some examples of financial assets besides cash are deposits, debt instruments, shares, and foreign currency reserves.

Assets in any economy can thus be broadly grouped into physical, financial, and tangible assets, based on their distinct characteristics. Physical assets can be classified into fixed assets and working capital assets, based on the length of their life. Fixed assets, such as land, building, machinery and other infrastructure facilities, are utilised by the society over a long period of time when compared with working capital assets. Movable/circulating capital assets are produced and consumed by the society within a financial year. Examples of movable/ circulating capital assets include materials, merchandise, durable goods, jewellery (gold), and similar items. Intangible assets are goodwill, patents, copyrights, and royalties.

In a macro sense, financial assets are regulated by the government of a country. Financial assets smoothen the trade and transaction of an economy and give the society a standard measure of valuation. Money or cash is the basic financial asset created by the government of an economy. The extent of flow of this financial asset has to be regulated in a country for the demand for and supply of funds to match the macro level, financial assets also represent the current/ future value of physical and intangible assets. The current/future value of financial assets depends on the current/ future return expectations from these financial instruments. All the financial assets in an economy represent a real asset either in the present context or in the context of the future. Their dependence on real assets requires the financial assets to be valued differently. The distinctive value determination of financial instruments also requires a specific market to patronise them.

Financial assets have specific properties that distinguish them from

physical and intangible assets. These properties are monetary value, divisibility, convertibility, reversibility, liquidity, and cash flow.



CHECK YOUR PROGRESS

Q4: Define Security Analysis

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Q5: Define Portfolio Analysis

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1.11 LET US SUM UP

Investment is commitment of funds in the expectation of some positive rate of return. Investment in capital market is made in various financial instruments, which are all claims on money. These instruments may be of various categories with different characteristics. These are all called securities in the market parlance. Modern security analysis relies on the fundamental analysis of the security, leading to its intrinsic worth and also risk-return analysis depending on the variability of the returns, covariance, safety of funds and the projections of the future returns.

A financial market is a place/system where the exchange of financial instruments takes place. Financial markets are broadly classified into money market and capital market. Capital market deals with both debt and equity instruments through the primary and secondary market segments. Money market, on the other hand, deals mostly in debt instruments of shorter duration. Another market existing in the financial structure of an economy is the forex market. This market enables the exchange of foreign currency.



1.12 FURTHER READING

- M. Ranganathan and R. Madhumathi(2011); *Investment Analysis and Portfolio Management*, Pearson Education, New Delhi.
- Punithavathy Pandian(2016) *Security Analysis and Portfolio Management,* Vikas Publishing House Pvt. Ltd., New Delhi.
- Bharti V. Phathak(2014; *Indian Financial System,* Pearson Education, Delhi.
- Donald E. Fischer and Ronald J. Jordon(2011); *Security Analysis and Portfolio Management,* PHI.
- Prasanna Chandra(2010);*Investment Analysis and Portfolio Management,* TMH, Delhi.



1.13 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No.1: Investment may be defined as an activity that commits funds in any financial/physical form in the present with an expectation of receiving additional return in the future.

Ans to Q No.2: The term variable-income security refers to investments that provide their owners with a rate of return that is dynamic and determined by market forces.

Ans to Q No.3:A mutual fund is an investment security that enables investors to pool their money together into one professionally managed investment. Mutual funds can invest in stocks, bonds, cash or a combination of those assets.

Ans to Q No.4: Security Analysis in both traditional sense and modern sense involves the projection of future dividend, or earnings flows, forecast of the share price in the future and estimating the intrinsic value of a security based on the forecast of earnings or dividends.

Ans to Q No.5: The portfolio analysis is thus an analysis of the risk-return

characteristics of individual securities in the portfolio and changes that may take place in combination with other securities due to interaction among themselves and impact of each one of them on others.



1.14 MODEL QUESTIONS

Q 1: What do you understand by the term 'security analysis'? What is its objective?

Q 2: Define investment. What are the characteristics of investment?

Q 3: What are the motives/objectives for investment?

Q 4: Distinguish between investment and speculation.

Q 5: Distinguish between investment and gambling.

Q 6: What do you understand by the term Portfolio Management?

Q 7: How can you distinguish the different types of investors based on the risk bearing capacity of the investors?

Q 8: Classify the different categories of Financial Assets.

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UNIT 2 : THE INVESTMENT ENVIRONMENT

UNIT STRUCTURE

2.1 Learning Objectives

2.2 Introduction

2.3 Introduction to the Financial Markets

2.4 Securities Markets

2.5 National Markets

2.6 International Markets

2.7 Money Markets

2.8 Capital Markets

2.9 Debt Market

2.10 Equity Markets

2.11 Primary Markets

2.12 Secondary Markets

2.13 Spot Market

2.14 Derivative Markets

2.15 Let Us Sum Up

2.16 Further Reading

2.17 Answers to Check Your Progress

2.18 Model Questions

2.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- discuss about Financial Markets
- describe the different types of Financial Markets like Securities Markets,National Markets, International Markets,Money Markets, Capital Markets,Debt Market,Equity Markets, Primary Markets, Secondary Markets,spot Market and Derivative Markets

2.2 INTRODUCTION

In the previous unit we discussed about the meaning of investment,its

types and characteristics.In this unit we will get a fair idea about financial markets, its meaning and its various types.

A financial market is a place/system where financial instruments are exchanged. Such markets enhance the unique characteristics of the financial instruments.

2.3 INTRODUCTION TO THE FINANCIAL MARKETS

Financial markets can be classified on the basis of the nature of instruments exchanged in the economy. The instruments can be broadly divided into claim instruments and currency instruments. Claim instruments are subdivided into those that are fixed claims and those instruments that get a residual or equity claim. Fixed claim markets that have very short durations, that is, less than a year are traded in the money market while the fixed claims that have a maturity of more than a year and equity claim instruments are traded in the capital markets. 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. The trading of currency instruments among different countries is conducted through the foreign exchange market. The subdivisions of the major markets are shown in the Figure below.

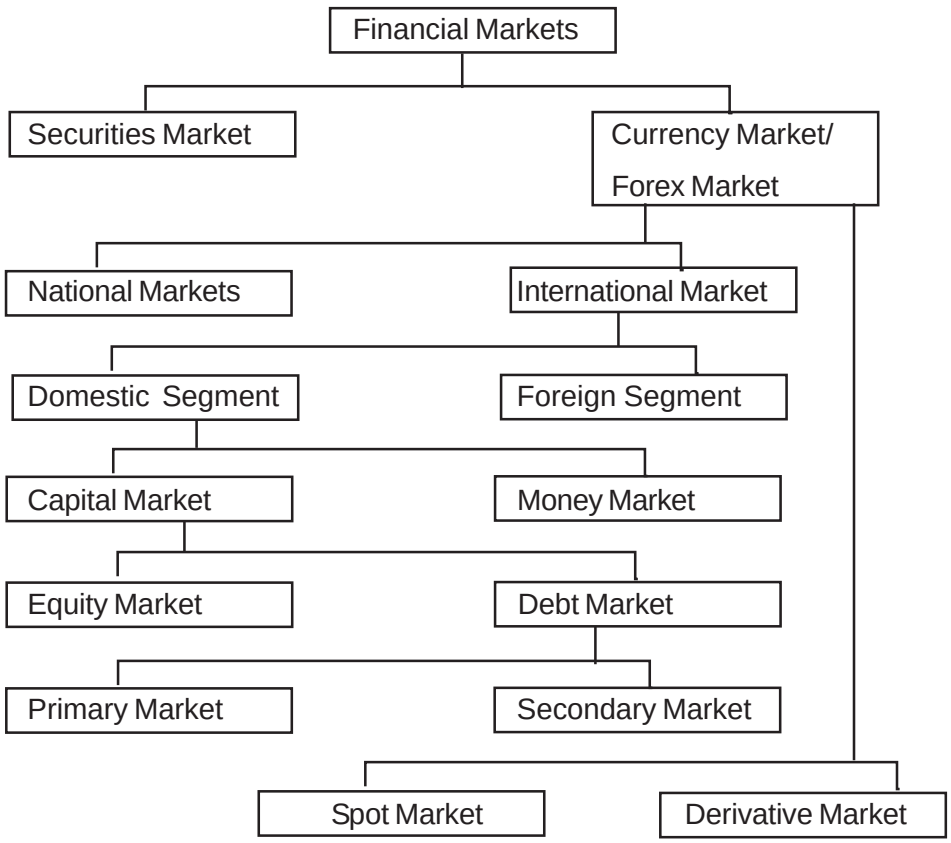


Figure 2.1. Financial Markets

2.4 SECURITIES MARKET

Securities are financial instruments that have been created to represent a legal obligation to pay a sum in future in return for the current receipt of value. Securities thus represent the cash or cash equivalent received from another person. The creation of a security is situation and need specific, and many innovative instruments have been floated in the market. The existence of such financial instruments is, however, within the legal regulations governing the market in which they are floated. The securities market, hence, is place-sensitive. The immediate classification of the securities market can be in terms of national boundaries due to the legal environment. The securities market can be subdivided into national and international markets. However, with technological innovations, international agreements and standards, the line distinguishing a national from an international market is fast disappearing.

2.5 NATIONAL MARKET

National markets are markets within the boundary of a nation. National markets cater to the financial requirements of the local players. Players from foreign countries are permitted to bring their financial instruments into the national market, subject to their following the rules and regulations imposed by the nation. There are vast differences in the rules and regulations of the securities market among nations. Each nation has a regulatory authority under whose scrutiny financial instruments are exchanged in that country. The regulatory authority imposes the overall procedure and guidelines to be followed by the players in the national market. National markets sometimes make a difference between pure domestic players and the participation of international players. Hence, there can be a further subdivision of the national market into a domestic segment and a foreign segment.

2.6 INTERNATIONAL MARKET

International markets are usually referred to as offshore markets. Certain national markets, due to their policy regulations, do not discriminate between the securities issued in its country vis-à-vis other countries. A precise example of an international market is the Euromarket, where the representation of several countries is viewed together. A firm in any one member nation in the European subcontinent could list its securities simultaneously in other countries of the European Union. For example, firm with its headquarters in France, could simultaneously trade its securities in France, Spain, and Germany. This concept of opening the national market to other group countries came to be known as international market.

Domestic Segment

The domestic market caters exclusively to firms registered in a country. The country's regulatory authority controls the domestic market. In India, the Reserve Bank of India along with the Securities Exchange Board of India (SEBI) regulates the functioning of the money market and the capital market, the two types of markets within the umbrella of the domestic market. Based on the economic performance of the country, the domestic markets

are also called advanced markets and emerging markets. Advanced markets are usually markets in nations that are economically sound and have also progressed technologically. The US and UK markets are termed as advanced markets. Emerging markets are those in developing nations whose economic progress is forward looking. The Indian market is termed as an emerging market. The domestic markets can be further subdivided into money market and capital market.



CHECK YOUR PROGRESS

Q1: Define Securities

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Q2: Define Domestic Market

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2.7 MONEY MARKET

Short-term debt markets are known as money markets. Debt is a fixed income security and represents the borrowing of a market player. Money markets are mostly wholesale markets for financial instruments. Small values are not exchanged in the money market. The large quantum of trade essentially limits the players in the money market to institutional investors such as banks, other financial institutions, government, and large business firms. Here, the players exchange surplus funds at the prevailing interest rates (call rates) for a short duration. The duration could be a day, a week, a month, six months, or a year. This duration indicates the maturity of the instrument. At the time of the issue of the money market instrument as well as at the time of maturity of the instrument, the account transfer of the initial amount along with the interest charges takes place between the players in the money market.

Money market has accommodated within its fold several types of trades. Accordingly, the money market can be differentiated into the call

market, treasury bill market, inter-bank market, certificate of deposit market, repo market, commercial paper market, inter-corporate deposit market, and commercial bills market.

Let us now discuss some of the types of Money market Instruments.

Types Of Money Market Instruments

1. **Treasury Bills (T-Bills):** Issued by the Central Government, Treasury Bills are known to be one of the safest money market instruments available. However, treasury bills carry zero risk. I.e. are zero risk instruments. Therefore, the returns one gets on them are not attractive. Treasury bills come with different maturity periods like 3-month, 6-month and 1 year and are circulated by primary and secondary markets.
2. **Certificate of Deposits (CDs):** A Certificate of Deposit or CD, functions as a deposit receipt for money which is deposited with a financial organization or bank. However, a Certificate of Deposit is different from a Fixed Deposit Receipt in two aspects. The first aspect of difference is that a CD is only issued for a larger sum of money. Secondly, a Certificate of Deposit is freely negotiable.
3. **Commercial Papers (CPs):**Commercial Papers are can be compared to an unsecured short-term promissory note which is issued by highly rated companies with the purpose of raising capital to meet requirements directly from the market.
4. **Repurchase Agreements (Repo):** Repurchase Agreements, also known as Reverse Repo or simply as Repo, loans of a short duration which are agreed upon by buyers and sellers for the purpose of selling and repurchasing. These transactions can only be carried out between RBI approved parties Repo / Reverse Repo transactions can be done only between the parties approved by RBI. Transactions are only permitted between securities approved by the RBI like treasury bills, central or state government securities, corporate bonds and PSU bonds.
5. **Banker's Acceptance (BA):** Banker's Acceptance or BA is basically a document promising future payment which is guaranteed by a

commercial bank. Similar to a treasury bill, Banker's Acceptance is often used in money market funds and specifies the details of the repayment like the amount to be repaid, date of repayment and the details of the individual to which the repayment is due. Banker's Acceptance features maturity periods ranging between 30 days up to 180 days.

2.8 CAPITAL MARKETS

Capital markets exchange both long-term fixed claim securities and residual/equity claim securities. The main economic role of a capital market is to match players who have excess funds to players who are in need of funds. Capital markets also provide liquidity to financial instruments. In this exchange process, there is a valuation of the instruments done by the market for the specific risk assumed by the investors.

Risk is prevalent in the capital market since the market valuation process is subject to change. For example, deviation in return is one type of risk prevalent in the instruments traded in the capital market. Besides, the instruments could also have economic risk, liquidity risk, default risk, trading risk, and so on. There are two forms of returns from instruments. One is the claim on the instrument; the other form of return is due to trade. The claim on the instrument could be fixed or residual. The return through claim is either nil or positive. While fixed claim instruments hardly show any variation in returns, residual claim instruments display fluctuating returns thus exposing the holders to greater risk.

The capital gain/loss in buying/selling the security is the trade return from the security. Given the risk-return characteristic of the capital market, the expectations of the market participants play a major role in the market price determination of the securities traded. This risk-return characteristic of the instruments necessitates a subdivision of the capital market into debt market and equity market.

Structure of Indian Capital Market with Diagram

The capital market is classified into two categories. They are the

Primary market (New Issues Market) and the Secondary market (Old (Existing) Issues Market). This classification is done on the basis of the nature of the instrument brought in the market. However on the basis of the types of institutions involved in capital market, it can be classified into various categories such as the Government Securities market or Gilt-edged market, Industrial Securities market, Development Financial Institutions (DFIs) and Financial intermediaries.

The primary market helps to raise fresh capital in the market. In the secondary market, the buying and selling (trading) of capital market instruments takes place. The following chart will help us in understanding the organizational structure of the Indian Capital market.

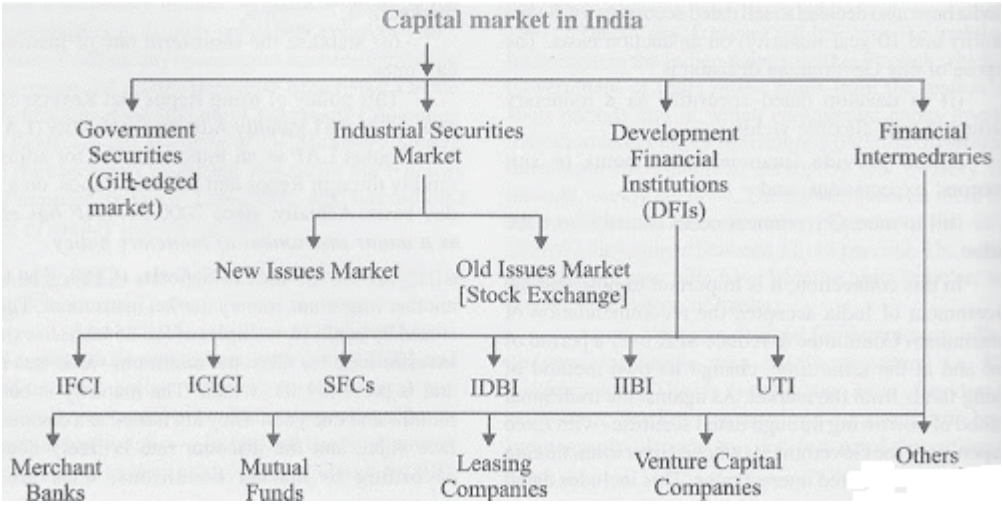


Fig 2.2 Structure of Indian capital Market

Source: http://kalyan-city.blogspot.com/2010/09

Let us now discuss the above types in the following ways:

- **Government Securities Market** : This is also known as the Gilt-edged market. This refers to the market for government and semi-government securities backed by the Reserve Bank of India (RBI).
- **Industrial Securities Market** : This is a market for industrial securities i.e. market for shares and debentures of the existing and new corporate firms. Buying and selling of such instruments take place

in this market. This market is further classified into two types such as the New Issues Market (Primary) and the Old (Existing) Issues Market (secondary). In primary market fresh capital is raised by companies by issuing new shares, bonds, units of mutual funds and debentures. However in the secondary market already existing i.e old shares and debentures are traded. This trading takes place through the registered stock exchanges. In India we have three prominent stock exchanges. They are the Bombay Stock Exchange (BSE), the National Stock Exchange (NSE) and Over The Counter Exchange of India (OTCEI).

- **Development Financial Institutions (DFIs)** : This is yet another important segment of Indian capital market. This comprises various financial institutions. These can be special purpose institutions like IFCI, ICICI, SFCs, IDBI, IIBI, UTI, etc. These financial institutions provide long term finance for those purposes for which they are set up.
- **Financial Intermediaries** : The fourth important segment of the Indian capital market is the financial intermediaries. This comprises various merchant banking institutions, mutual funds, leasing finance companies, venture capital companies and other financial institutions

2.9 DEBT MARKET

Financial instruments that have a fixed income claim and have a maturity of more than one year are traded in the debt market. Debentures or bonds are examples of debt instruments in the capital market.

Debt instruments may have several distinguishing features. They can be secured or unsecured debt. A secured debt has assets to fall back on while an unsecured debt is subject to more risk. Since an unsecured debt does not have an asset backing, the repayment risk is more. Mortgaged debt refers to a mortgage lien on a group of assets or on a specific asset category. Such a debt is also a secured debt.

Debt can also be categorised as redeemable debt or irredeemable debt. Based on the redemption (repayment) characteristic, it will be stated at the time of issue itself whether the debt will be repaid at maturity. Unless

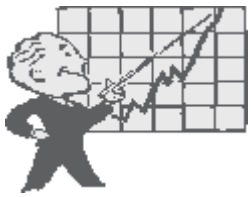
otherwise stated, all debt is usually redeemable debt. Irredeemable debt is a rollover debt, is renewed after maturity. Debt can also be classified as convertible debt or non-convertible debt. Convertible debt implies that the original debt instrument would be converted into another financial instrument at the time of maturity. A non-convertible debt is repaid at the end of the maturity period.

Based on the type of claim on the instrument, debt can be classified as regular interest debt, flexi debt, and zero coupon debt. A debt will bear a fixed claim, which is usually the interest payment made by the issuer to the debt holder. The nominal fixed percentage of interest is specified at the time of issue and the instruments. A flexi debt has the characteristic of changing its interest rate with the prevailing economic environment. The flexible debt is usually associated with inter-bank offer rates. For example, LIBOR (London Inter-bank Offer Rate) is a popular base rate for flexi debt instruments. A zero coupon debt, on the other hand, does not pay regular interest, but issues a document at an offer price and repays the document with value additions that compensates for the regular income through the duration of debt. The debt market distinguishes fresh issues from the subsequent trading of the securities and hence can be further subdivided into primary and secondary markets.

2.10 EQUITY MARKETS

Equity instruments bestow ownership on the holder of the security. Equity hence implies ownership rights in the corporate entity that has issued the instruments to the public. The claim of the owners of these instruments is residual in nature, that is the owners will have a claim in the distribution of profits and not a fixed interest as in the case of debt instruments. The distribution of dividend out of the profits after payment to debt holders will be decided in the general body meeting of the corporate entity. Accordingly, the corporate will announce the dividend rates. Dividends can be annual or quarterly or extraordinary. Sometimes equity owners also claim additional returns from the firm in the form of bonus shares. Dividend can be distributed either in the form of cash or as new shares.

Equity instruments can also be of several types. The most distinguishable types of equity are preference equity and common/ or ordinary equity. Preference equity has a preferential claim over dividend payment and/or payment of face value at the time of liquidation (closure) of a corporate. Sometimes a preferential equity may also have a claim for a minimum percentage of dividends when the corporate declares dividend. Common equity instruments do not have such preferential rights. The equity market is also subdivided into the primary market and secondary market.



CHECK YOUR PROGRESS

Q3: Define Capital Markets

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Q4: Define Government Securities Market

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Q5: Define Financial Intermediaries

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2.11 PRIMARY MARKETS

The primary market is the doorway for corporate enterprises to enter the capital market. The issues of new securities are offered to the public through the primary market. The issue is thus an open public offer to sell the securities. The sale is made at a value predetermined by the firm issuing the security. Sometimes a road show is conducted to feel the pulse of the public in fixing the value for a security. The securities have a face value, which is the denomination in which it is divided. For instance, an instrument could have a face value of Re 1, Rs. 5, Rs. 10, or Rs. 100 in India. This denomination determines the number of units of the security that are offered to the public. The price at which the security is offered to the public is the offer price of the instrument. This price could be equal to or greater or lesser than the face value. When the offer price is greater than the face value, the

offer is said to be at a premium. When the offer price is less than the face value, the offer is at a discount. When the two prices are equal, the offer is at par.

Several intermediaries have sprung up to help corporate entities to offer their debt and equity instruments to the public. Merchant bankers and underwriters are the major intermediaries who help to match the fund requirement of corporate entities with the surplus fund position of public. The public is represented by both individual investors and institutional investors. Sometimes, when the market is dominated by institutions, the market is said to be institutionalised. Once the offer process of the securities to the public is complete, the securities are listed in the markets. The corporate then has to comply with the specific regulations of each local market in which its securities are listed.

2.12 SECONDARY MARKETS

The secondary market refers to the exchange of securities that have been listed through the primary market. The price at which it is traded in the capital market is the market price of the instrument. It is the secondary market that offers tradability to the financial instruments. The number of financial instruments participating in the secondary market hence, cannot exceed the number of financial instruments recorded through the primary market. The secondary market also comes under the regulatory authorities of the market and the main role of the regulator in the secondary market is to safeguard the interest of players in the market. Both individuals and institutions can take part in the secondary market. Brokers and depositories are the main intermediaries in this market, who transact business on behalf of the investors. The brokers can appoint a network of sub-brokers to mobilise investors participation in the market. Depositories help in scripless trading by holding investor accounts in electronic media.

Over a period of time, the secondary market has grown in size and in terms of efficiency. The secondary market may be further sub-divided into the spot market and derivative market.

2.13 THE SPOT MARKET

Spot market denotes the current trading price of financial instruments. In the context of time, the spot market may range between one day, two days, or a week. The transactions in the spot market are settled immediately, that is, on the immediate settlement date. Each market specifies the type of settlement to be made— a rolling settlement or a fixed day settlement. The rolling settlement, according to the specific exchange, will be T+1, T+3, or T+5. A T+1 rolling settlement indicates that trading entered on day T will be settled for cash on day T + 1. On the other hand, the fixed day settlement will be on a specific day of a week, say the working Thursday or Friday of a week.

2.14 DERIVATIVE MARKET

Unlike the spot market, the derivative market is a futures market. Trade takes place here with the intention to settle it at a later date. The derivative market has forward, futures, options, or other derivative instruments trading. Forward trade helps in the exchange of instruments in the future at prices or rates determined in the present. Forward contracts involve an obligation and are legally binding on the parties who have entered into a forward agreement. However, forward contracts have the disadvantage of inflexibility of timing. They are conducted on a one-to-one basis between parties who initially entered into the agreement. A forward contact cannot be surrendered or liquidated as easily as the other derivative instruments.

A future contract is an agreement by one participant to either buy or sell a financial instrument at a predetermined date in the future at a predetermined price. The basic function of the futures trade is to enable the market participants to hedge against the risk of adverse price movement/ volatility in the market. A contract to buy, say, 100 shares of Ranbaxy Laboratories three months later, at Rs. 859.97 per share is a futures contract. The price at which the financial instrument is transferred at a later date (in this case, Rs. 859.97) is called the futures price. The time stated in the

contract in which the contract will be enforced (three months hence) is called the delivery date/expiry date. Futures contacts are derivatives since they are based on financial instruments that are traded in the capital market.

Options are the other forms of derivatives that give the holder of the contract the choice to buy or sell a financial asset. Options can take the form of equity options or index options. Equity options such as Infosys call options may have a strike price of Rs. 700 at a premium of Rs. 15 with the expiry date of one month. The premium is the amount that is given to the writer of the contract for giving the buyer the right to sell the Infosys share at the future date for the agreed price.

Derivative instruments are called so because these financial instruments derive their value from the price of the underlying asset. These instruments are traded in a physical stock exchange through brokers. Derivative instruments are used to a large extent to reduce the risk in the underlying asset price.



CHECK YOUR PROGRESS

Q6: Define Secondary Markets

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Q7: Define Spot Market

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2.15 LET US SUM UP

Financial markets can be classified on the basis of the nature of instruments exchanged in the economy. The instruments can be broadly divided into claim instruments and currency instruments. Claim instruments are subdivided into those that are fixed claims and those instruments that get a residual or equity claim.

In addition to knowing the basic principles of investments, an investor

is also required to know the operations of securities market. Different types of securities are traded in the market and they are broadly classified into debt and equity instruments. They are bought and sold through a set of intermediaries, which include brokers, stock exchanges, etc. All stock market intermediaries are regulated by the SEBI to ensure orderly functioning of the market.

Securities markets can be seen as primary and secondary. The primary market or the new issues market is an informal forum with national and even international boundaries. Anybody who has funds and the inclination to invest in securities would be considered a part of this market. Individuals, trusts, banks, mutual funds, financial institutions, pension funds, and for that matter any entity can participate in such markets. Companies enter this market with initial and subsequent issues of capital. They are required to follow the guideline prescribed by the regulating agencies like SEBI from time to time unless they are expressly exempted from doing so.



2.16 FURTHER READING

- M. Ranganathan and R. Madhumathi(2005); *Investment Analysis and Portfolio Management,* Pearson Education, New Delhi.
- Punithavathy Pandian(2012); *Security Analysis and Portfolio Management,* Vikas Publishing House Pvt. Ltd., New Delhi.
- Bharti V. Phathak (2014); *Indian Financial System,* Pearson Education, Delhi.
- Donald E. Fischer and Ronald J. Jordon (2002): *Security Analysis and Portfolio Management*, Pearson Education India.
- Prasanna Chandra(2017); *Investment Analysis and Portfolio Management,* McGraw Hill Education, Delhi.



2.17 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No.1: Securities are financial instruments that have been created to represent a legal obligation to pay a sum in future in return for the current receipt of value.

Ans to Q No.2: The domestic market caters exclusively to firms registered in a country. The country's regulatory authority controls the domestic market.

Ans to Q No.3: Capital markets exchange both long-term fixed claim securities and residual/equity claim securities. The main economic role of a capital market is to match players who have excess funds to players who are in need of funds.

Ans to Q No.4: Government Securities Market is also known as the Gilt-edged market. This refers to the market for government and semi-government securities backed by the Reserve Bank of India (RBI).

Ans to Q No.5: Financial Intermediaries comprises various merchant banking institutions, mutual funds, leasing finance companies, venture capital companies and other financial institutions

Ans to Q No.6: The secondary market refers to the exchange of securities that have been listed through the primary market.It is the secondary market that offers tradability to the financial instruments.

Ans to Q No.7: Spot market denotes the current trading price of financial instruments.



2.18 MODEL QUESTIONS

Q 1: Discuss the structure and function of the Financial Markets.

Q 2: Describe the characteristics of the securities market.

Q 3: Distinguish between the National and the International Markets.

Q 4: Distinguish between the Money Market and the Capital Markets.

Q 5: Distinguish between the Debt Market and the Equity Market.

Q 6: Distinguish between the Primary Market and the Secondary Market.

Q 7: Distinguish between the Spot Market and the Derivative Market.

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UNIT 3: RISK AND RETURN

UNIT STRUCTURE

3.1 Learning Objectives

3.2 Introduction

3.3 Concept of Investment Risk

3.4 Evolution of Risk Connotations

3.5 Types of Investment Risk

3.6 Returns on financial assets

- 3.6.1 Components of return
- 3.6.2 Calculation of average returns

3.7 Risk in holding securities

- 3.7.1 Systematic risk
- 3.7.2 Unsystematic Risk

3.8 Risk measurement

3.9 Let Us Sum Up

3.10 Further Reading

3.11 Answers to Check Your Progress

3.12 Model Questions

3.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- explain the concept of risk and genesis of total investment risk
- outline the distinction between 'systematic' and 'unsystematic' risk
- identify the factors that specially affect risk in investment in equity shares.
- Describe meaning, components and computation of return and risk.

3.2 INTRODUCTION

In this Unit, the concept of risk is discussed in detail because no investment decision can be taken without understanding the risk associated with the investment. In this unit we will discuss on the investment risks and its various types. The concept of investment risk describes the likelihood of

potential losses when you're making an investment. Risk is the general likelihood of losing the original investment, and investments are exposed to various types of risks throughout the lifecycle of the investment. Some of the most common types of investment risks are market risk, liquidity risk, credit risk, and inflation risk. At the end of this unit , we will get a fair idea about returns on financial assets,Components of return, Calculation of average returns, Risk in holding securities, Systematic risk,Unsystematic Risk and Risk measurement

3.3 CONCEPT OF INVESTMENT RISK

The importance of risk in investment decision can be appreciated if we ask the investors why they invest one part of their savings in bonds and the other part in equity. If risk is not a relevant factor in investment decision, investor should bet all their savings only in equity stocks, which offer on average higher return than debt instruments. Investors not only like return but they also dislike risk. Many investors may be willing to take some amount of risk since it is the only way to earn higher return but they need compensation for taking such additional risk. Thus, investment decision not only requires an estimation of return but also an assessment of risk to find whether the return from a risky asset is adequate for the risk assumed by the investors.

Investment risk can be defined as the probability or likelihood of occurrence of losses relative to the expected return on any particular investment.

The word ‘risk’ is common vocabulary and is widely used in the world of investments. In normal life, the term risk often means a negative outcome. If you say that it is risky to drive vehicle in a particular road, you actually mean that driving in that road may cause an accident. However, the term risk in investments has a different meaning. It not only refers to a scope of negative occurrence but also implies the chance of positive return. For example, we mentioned in Unit 1 that investment in stocks is riskier than investments in bond.

Investment is employing money in different instruments or assets in the present, with the expectation of a positive rate of return in the future. In other words investment is the sacrifice in the present in the expectation of a future gain. The future returns are expected to compensate the time the investors hold the asset, expected rate of inflation and uncertainty of the future. The emphasis has been given mostly on the financial assets and it is also extended to physical and real assets. Investment management is the process of administering the employment of money in financial and other instruments in the present, with the expectation of a positive rate of return in the future.

It doesn't mean that investments in stocks will yield a negative return or it will be lower than bond return. It simply means that investments in stocks may offer a high return or also a huge loss. Risk captures variation in expected return and such uncertainty of return is invest in risky investments, the expected return needs to be higher. When such higher expected return is used for discounting the future cash flows, the security value moves downward. This way you can see a link between risk and return. We will discuss more on this relationship as we move further on this topic.

Since investment decisions are made based on the expected future outcome, we can broadly classify our understanding and knowledge on future into *four categories.* At one extreme, we have certain knowledge. If an investor invests in government security, it is almost certain that the government pays interest and principal on the due date. Only in extreme conditions, the government may fail to honour the commitment. At the other extreme, we have no idea on the future and we can call this as our ignorance. Suppose a company comes out with a public issue stating that they will take up a research to develop a process that will *convert* iron into gold. Many of us may not be able to judge the outcome because we may not have any idea on the feasibility. No rational investment decision is feasible when we are ignorant of possible outcome.

The third one is a situation where we know the possible outcomes and its range. Suppose we are able to estimate that India Cement's earning will grow by 30% if the economy does well and will decline by 10% if the

economy fails. If we don't know anything beyond that, then the situation is called as uncertain. It is again difficult to take a rational investment decision in a situation of uncertainty. If we are able to know the probability of the economy doing well or failing, then the situation is called risky. In other words, a situation pertaining to future is considered as risky If we know the range of outcome and its probability distribution. For example, in the above India Cement's case, if we know the probability of economy doing well next year is 70% and the probability of economy failing is 30%, then we can estimate the India Cement's earnings in a better way. Under this condition, the earnings of India Cements will increase by 30% with 70% probability and decline by 10% with 30% probability.

Two elements in the concept of risk as applied to the world of investment and finance deserve attention. **One,** risk in the investment sense is associated with return. A person buys a financial asset with expectations of a return. The investment decision would be premised on an 'expected return', which may or may not actually be realized. The chance of an `unexpected' or 'adverse' return would be the risk carried by an investment decision. For example, you buy a share at Rs.370 expecting a dividend of Rs. 6 per share in the coming year and expecting the price to rise to Rs.450 in a year's time. You are basing your decision to buy on a return of

$$\frac{(450-370)+6.0}{370} = 23.2\ percent.$$

Now, the price may rise only to Rs. 380 in which case the actual return downs to a mere 4.2 percent, if the company comes out with a dividend of Rs. 6 per share on a Rs. 10 equity share. Should the dividend be pruned to Rs. 4 per share, the return would further fall to 3.3 per cent. The **other** point to be stressed about investment risk is that it is generally considered synonymous with uncertainty. The investor is most of the time dealing with uncertainty and yet figuring out his subjective probabilities for the expected return.

3.4 EVOLUTION OF RISK CONNOTATIONS

In the early years of the present century, analysts used financial statement data for evaluating the risk of securities of a company. The broad indicators used by them were the amount of debt employed by the firm. Their rule was: 'the higher the amount of debt the greater the riskiness of security and Graham, Dodd and Cottle, who are considered pioneers of 'security analysis' as a discipline laid emphasis on 'margin of safety' as a measure of risk in the 1962 edition of their monumental work titled 'Security Analysis'. They were of the view that security analysis must calculate the 'intrinsic value' of a security independent of its market price. According to them, 'intrinsic value of a security would be a security analyst's own judgement based on its earning power and financial characteristics and without reference to its market price. The difference between 'intrinsic value' and 'market price' was called the 'margin of safety' and the rule used for assessment of risk was 'the higher the margin of safety, the lower the risk.'

Graham and Dodd not only concentrated on the individual security but also recognized the importance of its contribution to the risk of a well-diversified portfolio. It must, however, be mentioned that what brought the concepts of risk for a portfolio and a security under a clearer focus was the work of Markowitz and the later development of the capital asset pricing model (CAPM). You will know more about these developments in the area of investment risk in units later on.

Several measures, other than the standard deviation discussed in the preceding section, have been used to measure risk viz., range, semi-variance, and mean absolute deviation. But standard deviation has been accepted in general because its knowledge permits probability statements for most types of distributions. William Sharpe observes as follows in support of the measure: "The standard deviation of a portfolio's return can be determined from (among other things) the standard deviations of the returns of its component securities, no matter what the distribution is. No other relationship of comparable simplicity exists for most other variability measures." (See: W. Sharpe, Investments, IInd ed. 1981, p.121). You may

note that the risk of a portfolio is not just the mathematical addition of the risk of each of the individual securities that comprise. You may further note that where the portfolio is well diversified, portfolio risk would be less than this mathematical total.

You would have also come across a statement in this unit that the standard deviation measures the total risk of an investment. The later developments, in the theory of investment risk decompose this 'total' into several of its components. And this can be done in two ways. One, dividing total risk into systematic and unsystematic risk and two, dividing total risk into parts such that each of which has an origin in some causal force. Obviously, the first part of the decomposition exercise is broad and has relation to the market. The second part of the exercise relates to the factors or causes which produce risk in investments.

The division of total risk into 'systematic' and 'unsystematic' or 'non -systematic' owes its origin to developments in the area of portfolio theory. Sources of risk that cause variability of returns may be perceived as belonging to two general classes-those that are pervasive and affect all securities though in varying degrees e.g., inflation, interest rates, market sentiment, etc., and those that are specific to a particular security e.g., financial risk and business risk. When variability of returns moves with the market, it is recognized as 'systematic'. Firms cannot eliminate such a risk and they are of major concern to the investor. For example, when prices rise, all firms would be affected in terms of their costs and realizations, which in turn would affect variability of returns. This will be a market phenomenon and would tend to stay for all. The investor would demand compensation for this risk component in figuring out his expected rate of return. On the other hand, when variability of returns occurs because of firm-specific factors like the failure to obtain a prestigious overseas contract, or a higher exposure to the risk of default in payment of interest charges and debt obligations, the risk is termed 'non-systematic'. Since this part of risk can be reduced through a diversified portfolio, it is not considered while computing the expected or required rate of return.

The two components of total risk are additive and hence total risk is equal to Systematic risk *plus* Non-systematic risk. Systematic risk is normally measured by comparing the stock's performance vis-a-vis market's performance under different conditions. For example, in a good period, if the stock appreciates more than other stocks in the market and in a bad period, it depreciates more than other stocks in the market, the systematic risk of the stock is more than the market risk. The systematic risk of the market (normally widespread market index like BSE-100 or NSE -50 index) is equal to 1 and systematic risk of all stocks is expressed in terms of systematic risk of market index. This is done by measuring a value called 'beta'. The beta of the stock is equal to beta of the regression coefficient when stock's of returns are regressed on return of market - index. If the beta of stock is 1.50, then the stock is expected to show a price increase of 1.5 times of stock returns in a good period. At the same time, if the market declines by some percentage in a bad period, the stock is. expected to decline 1.5 times more than market's negative return.

For illustrative purpose, the weekly price and return data BSE-100 index, Hindustan Lever, Infosys and Reliance Industries are given in Appendix-1 of this Unit for a period of six months (July, 2000 to June, 2001). Using the return data and regression, the beta values of the three individual stocks are computed. As expected Hindustan Lever's beta shows the lowest value and is 0.49. The stock is less volatile during the period. The market as a whole (measured through BSE-100 index) has reported a net loss of 32% during the six months period, whereas HLL has suffered a net loss of 27.60% during the same period. A week-to-week comparison shows that HLL suffered less or posted profit when the market was reporting loss during the week. On the other hand, Reliance Industries reported a gain of 8.30% against the market loss of 32%. Again a week to week comparison shows the Reliance Industries weekly return are closely moving in line with BSE -100 and hence got a beta value of 0.96, which is close to market's beta of 1. Infosys showed wide variation during the period. Against a market loss of 32%, Infosys reported a net loss of 54.79% and also showed *high* volatility in the returns. The beta of 1.82 reflected the volatility. Thus, the systematic risk of HLL is the lowest

and Infosys is highest whereas Reliance Industries has shown a moderate systematic risk. The unsystematic risk of the stock is equal to total risk less systematic risk. It is computed as follows:

Unsystematic Risk = Variance of the stock - [Beta^2 x Variance of the Market Index]

Sometime, the unsystematic risk is expressed as a standard deviation. For the three illustrative stocks, the systematic and unsystematic measures are as follows:

	BSE-100	HLL	Infosys	Reliance
Total Risk (variance)	0.0024	0.0029	0.0111	0.0037
Beta	1.0000	-0.0444	-0.8528	-0.1588
Systematic Risk (variance)	0.00024	0.0011	0.0043	0.0023
Unsystematic Risk (variance)	0	0.0017	0.0069	0.0014
Unsystematic Risk (SD)	0	4.13%	8.28%	3.73%

3.5 TYPES OF INVESTMENT RISK

Investment risks can be divided into two broad categories, namely systematic and unsystematic risks.

Systematic Risk: Systematic risk is the type of risk that is not under your control and affects a large number of assets. Any new law that the government passes or any new regulatory announcement that affects your investments falls under systematic risk.

Unsystematic Risk: On the other hand, unsystematic risk affects a very small category of assets. It is also called "specific risk". For example, the price of a specific stock may get affected due to a fire at the company's manufacturing plant.

Let us look at some of the other types of risks associated with investments.

1. Interest Rate Risk: Often government through RBI uses interest rates to push the economy forward or cool down the heated economy. Interest rate risk arises from variations in such rates, which cause changes in market prices. It can be seen that a rise in market interest rates causes a decline in market prices of securities and vice versa. There are different ways through

which the interest rate affects the securities return. It affects the expected or required rate of return because investors always compare risk-free return with the expected return of an investment. An increase in interest rate will cause an increase in expected or required rate of return of other investments.



Example 3.1

Assume a 14% secured non-convertible debenture of Rs. 200 for five years. As long as the market interest rate remains at 14%, the value of debenture will be equal to Rs. 200. Suppose the interest rate in the market increases to 20%, it affects the prices of debenture because an investor, who is willing to buy the debenture would expect a return of 20% and hence discount the cash flows at 20%.

Solution

Year-end	Cash Flow (Rs.)	Present Value at 20%
1	28	23.33
2	28	19.44
3	28	16.20
4	28	13.50
5	228	91.63
	Total	164.11

The debenture price will decline from Rs. 200 to 164.11.

Interest rate risk affects largely the securities with longer duration. For instance, if there is another non- convertible debenture with 10 year maturity, its price would decline to Rs. 149.69 from Rs. 200 if the interest rate increases from 14% to 20%. The workings are as follows:

Year-end	Cash Flow (Rs.)	Present Value at 20%
1	28	23.33
2	28	19.44
3	28	16.20
4	28	13.50
5	28	11.25
6	28	9.38

7	28	7.81
8	28	6.51
9	28	5.43
10	228	36.82
	Total	149.69

Now let us know, how the interest rate risk affects stock price? Since stocks have no maturity, the interest rate changes affect the stock prices more than bonds. Secondly, increase in interest rates also reduces the profit of the companies and hence securities prices are negatively affected. It can now be stated that the market prices (or present values) of securities would be inversely related both to market interest rates (or yield to maturity) and duration. You will recognize that the interest rate risk is the price fluctuation risk, which the investor is likely to face when interest rates change.

With a view to avoid the interest rate and duration risk, the investor, may like to invest in short-term securities. Rather than buying a 5-year debenture, he may buy a one-year security every time the earlier one-year security matures. This strategy, though successful in reducing the interest rate or the price fluctuation, would possibly expose the investor to another risk. Even the coupon rates in successive short-term securities may vary and the range of variation may be wide too. For instance, during the last few years, interest rates are constantly coming down and bank and financial institutions like IDBI and IFCI have reduced their interest rates. What the investor would now encounter is the 'coupon rate risk'. It will be the constant endeavour of investor to weigh between the interest rate risk and the coupon rate risk while keeping funds invested over his holding period.

You would have noticed in our discussion of financial instruments in Unit 1 that interest payments on bonds and debentures are contractual payments and the company can be sued for default. Cumulative preference dividends must also be paid to avoid trouble from preference shareholders. Equity dividends can always be skipped if the company is in deep financial trouble and a dividend payment would hasten insolvency. In such a situation the cash dividend yield will be much more risky than the coupon yield on debentures.

2. Market Risk: We have observed that the market moves upward at some point of time and then moves downward at some other point of time. Such movements may happen despite the good or bad performance of the companies. Often, company management and its employees will be puzzled why the market is behaving like this. Finance Ministers and economic advisors have gone on record stating that they don't understand the behavior of the market when it takes a beating after the presentation of budget. Irrespective of our understanding, the reality is the market move in one of the two directions (upward or downward) and once such trend starts, it exists for a time. There are several reasons behind such movements. Changes in economy or expectation about the future of the economy may cause such widespread movement. Company specific news may also cause such movement and if the company is a major one like Reliance or Infosys or Hindustan Lever, a positive or negative development may generally affect several other stocks in the market. Similarly, a shock in the U.S. market will have an impact on domestic stock prices.

Investors' psychology will also often contribute to the market risk. For instance, negative news may create a panic in the market and everyone would like to sell the stock without any buyer in the market. In this process, the market will decline more than the desired level. Market risk is demonstrated by the increased variability of investor returns due to alternating bouts to bull and bear phases. Efforts to minimize this component of total investment risk require a fair anticipation of a particular phase. This needs an understanding of the basic cause for the two market phases.

It has been found that business cycles are a major determinant of the timing and extent of the bull and bear market phases. This would suggest that the ups and downs in securities markets would follow the cycle of expansion and recession in the economy. A bear market triggers pessimism and price falls on an extensive scale. There is empirical evidence, which suggests that it is difficult for investors to avoid losing in bear markets. Of course, there could be exceptions.

The question of protection against market risk naturally arises. Investors can protect their portfolios by withdrawing invested funds before

the onset of the bear market. A simple rule to follow would be: 'buy just before the security prices rise in a bull market and sell just before the onset of the bear market', that is, buy low and sell high. This is called **good investment timing** but often difficult to practice.

Market risk as pointed out earlier is also classified as systematic and non-systematic. When combinations of systematic forces cause the majority of shares to rise during a bull market and fall during a bear market, a situation called systematic market risk is created. As already noted, a minority of securities would be negatively correlated to the prevailing market trend. These unsystematic securities face diversifiable market risk. For example, firms granted a valuable patent of obtaining a profitable additional market share might find its share prices rising even when overall gloom prevails in the market. Such unsystematic price fluctuations are diversifiable and the securities facing them can be combined with some other shares so that the resulting diversified portfolio offsets the non-systematic losses by gains from other -systematic securities.

3. Inflation Risk: Inflation risk is the variability in the total purchasing power of an asset. It arises from the rising general price level. The interest rate on bonds and debentures and dividend rates on equity and preference shares are stated in money terms and if the general price level rises during some future period, the buying power of the cash interest/dividend income is likely to be received for that period would decline. And if the rate of inflation is equal to the money rate of return, the investor does not add anything to his existing wealth since he obtains a zero rate of return.

Many investors believe that if the market prices of their financial assets increase, they are financially better off in spite of inflation. Their argument is 'after all money is increasing'. This is nothing but 'money illusion'. Consider, for instance, a situation when the market price of a security you are holding, doubles and the general price level increases four-fold. Would you say that you are richer simply because your **command over money** doubles by selling the security? True, you get more money than what you had earlier but you can buy less with that money. You can't dismiss the fact that your **command over goods and services** (which is the eventual objective of all

investment decisions) has declined due to a four-fold rise in prices in general.

The money illusion is partly rectified by obtaining real rates of return (interest/dividend cash income + capital gains) that is equivalent to the inflation-adjusted monetary or nominal rates of return. If the real rate of return is denoted by R_r, inflation rate by q, coupon rate by 'r' and nominal rate of return by R, then:

–1

For example, a Rs.500 debenture earns a coupon rate of 15% per annum. Inflation rate expected in the coming one-year period is 12%. Then the real rate of return would be :

$$R_r = 1.121.15 - 1 = 1.027 - 1 = .02.7 \, or \, 2.7\%$$

You may notice the drastic fall in the real rate of return to 2.27% from the coupon rate of 15% due to inflation rate of 12%.

Again, an equity share of Rs. 10 promises a dividend of 20% and you expect the price of the share to rise from the current level of Rs.60 to Rs. 80 in a year's time. Inflation during the next year is estimated at 14%. The real rate of return would be :

$$\text{Nominal rate } \{R\} = \frac{(Rs.80 - Rs.60) + 2.0}{Rs.60} = 36.7\%$$

$$= \frac{1 + .367}{1 + 1.4} - 1 = \frac{1.367}{1.14} - 1$$

Real rate of Return (R_r) = 1.199 - 1 = .199 or 19.9%

The above examples clearly highlight the effects of purchasing power risk on the wealth and returns of an investor.

A question is sometimes asked about negative real rates of returns, that is, a situation where the inflation rate exceeds the nominal rate. Should an investor stop investing in such situations? The answer would depend on what other alternatives the investor would have in the event of not investing. If the money withheld from investment is kept as idle cash with zero nominal return then investing even with negative real returns, may be advisable because, as shown in the example below, non-investment would yield a larger negative real return than investing. And even though normal investment

objectives would be to earn positive real rates, in abnormal situations like the one stated above, the objective would be to reduce the negative real rate of return.

Assume that a security is expected to yield a nominal rate of return of 12% and the rate of inflation is expected to be 15%. We have now to work out the choices of the investor, further assuming that if he does not invest, his cash will have to remain idle.

Now, if our hypothetical investor decides to invest his real rate of return would be :

$$R_r = \frac{1+r}{1+q} - 1 = \frac{1.12}{1.15} - 1 = .974 - 1.0 = -0.026$$

It works out to a negative 2.6% return. Should the investor decide to keep idle cash, the real rate of return would be :

$$R_r = \frac{1+0.0}{1+15\%} - 1 = \frac{1.0}{1.15} - 1$$

=.869 - 1.0 = - 0.131

It would be better to have a negative return of 2.6 than to end with a negative return of 13.1% by keeping cash idle.

You have seen that the purchasing power risk arises even if the market prices of assets rise. Likewise, this risk may emerge even if the asset prices do not fluctuate. The reason for these relationships is that the purchasing power risk arises from fluctuations in the purchasing power of real income and/or real price of assets and not from fluctuations in buying power of their nominal income and/or nominal prices.

It has already been stated that investment assets are real assets like land, real estate, gold, diamonds and financial or monetary assets like shares, bonds, and debentures. It has been observed that prices of real assets move with inflation and are positively correlated with it. In contrast, prices of monetary assets are relatively rigid and are negatively correlated with inflation. In consequence, real assets do not lose purchasing power, as do the monetary assets in periods of inflation. In other words, real assets are good inflation hedges but monetary assets are not. Hence, monetary assets cannot form part of a portfolio, which already has got a high degree

of purchasing power risk. Such a portfolio can be diversified with real assets.

4. Default Risk: The default risk arises from a deterioration of financial strength of the company that issues securities. Holders of such securities have to experience greater variability of returns when financial strength begins to worsen. Since the basic parameter is 'financial health', default risk is also known as financial risk.

If not handled properly, the default episodes of a firm may as well finally end up in bankruptcy. This would, however, not be quite a swift process and one may notice warning signals before the final disaster strikes. For example, a company may begin stopping payment of its bills, accumulate arrears of cumulative preference dividends and accrued interest on loans, default on debenture interest, incur persistent losses, slash the equity dividend, and finally skip it, and so on. In more objective terms, adverse movements in financial ratios like the current ratio, the acid- test ratio, the cash to operating expense ratio, the net-worth to total assets ratio and so on can be put on the watch. The point is that bankruptcy will not be a bolt from the blue except when an act of nature destroys all assets, which are not insured.

Firms operating in the financial services sector like CRISIL, CARE and ICRA undertake an ongoing exercise to provide quality-ratings to the debt instruments of issuing companies. They are at present being solicited in India by companies who want to raise funds from the capital market. In Western countries, the rating programme is a voluntary and continual exercise performed by eminent firms like Standard & Poor and Merin Lynch etc. Ratings as given by these agencies are a significant aid to the investor in estimating the probabilities of default in a particular debt issue.

When the first sign of a weakening financial health of a firm is noticed, market price of its security react and take a deep dip. The price decline will be equal to the estimated loss when the company goes into bankruptcy. The immediate target groups would be lenders and loan creditors but ultimately even shareholders would suffer. In fact, if the worst happens, losses of equity holders could be total and they may end up with share prices nearly dropping to zero. Also, even at such abysmally low levels,

there may not be any takers.

As with other risk factors, there may be diversifiable and non-diversifiable components of default risk. Thus, tight credit conditions created by Reserve Bank of India would push up interest rates and financially weak companies may not be able to borrow. Similarly, a recession may curtail order position of the firms and firms that are already weak may start defaulting when their sales and income decline. These are examples of systematic forces that affect all firms simultaneously and systematically push them towards default. You should note that these are extraordinary circumstances and would push up the normal default rate of firms. The systematic element in default risk is more harmful to the investor than the diversifiable risk. The latter can be anticipated and managed. For example, a government security can be added to the portfolio unless securities exposed to normal default risk themselves are yielding an average return that is very much in excess of the default-free securities.

5. Business Risk: Firms operate in an environment, which often changes and such changes causes variation in expected income. For example, a change in government policy on fertilizer subsidy may affect a group of companies in the fertilizer industry. Similarly, an action by a competitor, domestic or from outside may also affect other companies. While the above changes in the environment are caused by certain entities, there are several factors, which change the operating environment but can't be attributed to anyone. For instance, many firms are exposed to business cycle and the income of such firms significantly differs from period to period. Companies in steel, auto and shipping industries are exposed to such business cycles. It is difficult to assess whether the business risk is systematic or non-systematic. A diversified portfolio consisting of securities of several industries can diversify such business risk to a great extent. On the other hand, portfolios with few stocks or stock drawn from select industries would be exposed to such business risk if all sectors of the portfolio were affected by changes in the environment.

6. Financial Risk: Financial risk arises when the firm uses debt in its capital structure. Debt brings fixed liability and hence increases the variability

of income available to the equity shareholders. Use of debt is not always bad. It will increase the profitability when the company performs well and equity holders get a return more than what is available otherwise. Debt creates problem in bad times because of the fixed liability. If the company fails to meet the debt obligation, the managers need to spend a lot of time in convincing the lenders to accept delayed payment and in meanwhile loose valuable managerial time. Default easily spread bad words about the company and the company faces problem from several fronts. It may not be able to get credit from suppliers and some of the good workers may leave the company. Customers will also prefer companies with sound financials to avoid uncertainty in supply.

The impact of financial risk upto a limit is restricted only to the equity holders. But too much of debt creates problems even to existing debt security holders unless the debt is fully secured. Even in such cases, it is difficult to take charge of the assets and sell it to meet their liability in view of lengthy legal process.

7. Management Risk: Management risk is that part of total variability of return which is caused by managerial decisions in firms where owners are not managers. However qualified and capable the management team, there are chances for judgmental errors and wrong decisions. Owners-investors are rightly aggrieved when executives are paid high salaries and perks and are allowed ego-bolstering non-income consumption like luxury cars, lavishly furnished offices and yet they plunge the firm in severe difficulties by their inept decisions.

Management errors are the main reasons, which give rise to management risk component of total investor risk. The errors are so numerous that it is difficult to either list them or even to classify them. Nevertheless, some potential areas of management errors can be highlighted. The one great blunder that management might commit is to ignore product obsolescence. In fact, adequate expenditure must be made on R & D and alternative products are promoted before the life cycle of existing ones comes to an end. Single product firms will be more exposed to this risk than firms with diversified product lines. Another risk is the

dependence of a firm on a single large customer. Management must adequately diversify customer groups. Many firms supplying military equipment have been found caught up in deep financial distress when the Government announces cuts in military spending. Many software companies are also facing this problem and making effort to diversify customers as well as country exposure. Yet one more area of management errors could be the wrong handling of a correct decision when it is subjected to unfair criticism and is even fought out in a court. For example, an automobile manufacturer develops a fuel-efficient small car much ahead of times. Some ardent consumer protection group brings a lawsuit on the grounds of user-safety being threatened. The firm then announces abandonment of the product, forcing investors to bear the loss of investments and lost revenues in future. You should note that these cases are only illustrative and the list may go to an infinite number of factors.

8. Liquidity Risk: Liquidity risk of securities results from the inability of a seller to dispose them off except by offering price discounts and commissions. It is easy to rank assets according to liquidity. The currency unit of a country is immediately saleable at par and no discount, etc., need be given. Government securities and blue chip shares are the next highly liquid group of assets. Debt securities and equity shares of some small and less known companies are less liquid or even illiquid. Lack of liquidity forces investors to sell the securities at a price below to the existing price, particularly when the quantity to be sold is large. Investors must consider the liquidity risk factor while selecting securities.



CHECK YOUR PROGRESS

Q1: Define Investment Risk

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Q2: Define Systematic Risk

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Q3: Define Unsystematic Risk

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Q4: Define Inlation Risk

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3.6 RETURNS ON FINANCIAL ASSETS

People want to maximize expected returns subject to their tolerance for risk. Return is the principal reward in the investment process, and it provides the basis to investors in comparing alternative investments. Measuring historical returns allows investors to assess how well they have done, and it plays a part in the estimation of future, unknown returns.

We often use two terms regarding return from investments, realized return and expected return. *Realized return* is after the fact return-return that was earned (or could have been earned). Realized return is history. For example, a deposit of Rs. 5,00,000 in the Punjab National Bank on January 1 in a certificate of deposit at a stated annual interest rate of 5 percent will be worth Rs. 525000 one year later. The realized return for the year is Rs. 25000 or 5 percent.

Expected return is the return from an asset that investors anticipate they will earn over some future period. It is a predicted return, and it may or may not occur.

3.6.1 Components of Return

Return on a financial asset, generally, consists of two components. The principal component of return is the periodic income on the investment, either in the form of interest or dividends. The second component is the change in the price of the asset—commonly called the capital gain or loss. This element of return is the difference between the purchase price and the price at which the asset can be or is sold. The price change may bring a gain or a loss as it may be in any side.

The income from an investment consists of one or more cash payments made at specified intervals of time. Interest payments on most bonds are paid either semi-annually or yearly, whereas dividends on common stocks are usually paid on yearly basis. The distinguishing feature of these payments is that they are paid in cash by the issuer to the holder of the asset.

We often use the term yield to express return. Yield refers to the income component in relation to some price for a security. For our purposes, the price that is relevant is the purchase price of the security. The yield on a Rs. 1,000 par value, 6 per cent coupon bond purchased for Rs. 950 is 6.31 per cent (Rs. 1,000 par value, 6 percent coupon bond purchased for Rs. 950 is 6.31 percent (Rs. 60/Rs. 950). However, we need to remember that yield is not, for most purposes, the proper measure of return from a security. The capital gain or loss must also be considered.

Equation 2.1 is a conceptual statement for total return.

Total return = Income + Price change (+/-) …(3.1)

Note that either component of return can be zero for a given security over any given time period. A bond purchased for Rs. 800 and held to maturity provides both type of income: interest payments and a price change. The purchase of a non-dividend-paying stock that is sold four months later produces either a capital gain or a capital loss, but no income.

Thus, a measure of return must consider both dividend/ interest income and price change. Returns over time or from different securities can be measured and compared using the total return concept. The total return for a given holding period relates all the cash flows received by an investor during any designated time period to the amount of money invested in the asset. Total return is defined as

$$\text{Total return} = \frac{\text{Cash payments received} + \text{Price change over the period}}{\text{Purchase price of the asset}} \times 100$$

$$r = \frac{(P_{t-1} - P_{t-1}) + D}{P_{t-1}}$$

where, r = total return, P_t = price of an asset at time (t), P_{t-1} = price of an asset at time (t-1), D = dividend or interest income in simple terms.

Example: Jindal Steels share's price on June 10, 2004 is Rs. 900 (P_{t-1}) and the price on June 9, 2005 (P_t), is Rs. 950. Dividend received is Rs. 76 (D). Determine the rate of return.

Solution :

$$r = \frac{(P_{t-1} - P_{t-1}) + D}{P_{t-1}} \times 100$$

$$= \frac{(950 - 900) + 76}{900} \times 100$$

$$= \frac{50 + 76}{900} \times 100$$

$$= \frac{126}{900} \times 100$$

= 14%

3.6.2 Calculation of Average Returns

The total return is an acceptable measure of return for a specified period of time. But we also need statistics to describe a series of returns. For example, investing in a particular stock for ten years or a different stock in each of ten years could result in 10 total returns, which must be described mathematically.

There are two generally used methods of calculating the average return, namely, the arithmetic average and geometric average. The statistics familiar to most people is the arithmetic average. The arithmetic average, customarily designated by the symbol $\overline{X} = \frac{\sum X}{n}$ or the sum of each of the values being considered divided by the total number of values.

For example, the return of stock A for four quarters is as follows: Quarter-I = 10%; Quarter-II = 8%; Quarter-III = -4%; and Quarter IV = 20%. The average return is

$$= \frac{10 + 8 + (-4) + 20}{4} = 8.5\%$$

The arithmetic average return is appropriate as a measure of the central tendency of a number of returns calculated for a particular time, such as a year. However, when percentage changes in value over time are involved, the arithmetic mean of these changes can be misleading. For example, suppose an investor purchased a stock in Year 1 for Rs. 50 and it rose to Rs. 100 by year-end. This is a 100 percent return [(100-50)/50]. Then the stock went from Rs. 100 at the start of Year 2 to Rs. 50 at the end of that year. The return for year 2 is –50 percent [(50-100)/100)]. The arithmetic average return is 25 percent [(+100–50)/2)]. But, realistically, if an investor bought a stock for Rs. 50 and held it two years and it was still at Rs. 50, clearly there is no return at all.

From the above it is obvious that an analyst should use a different average to describe accurately the true rate of return over multiple periods. The geometric average return measures compound, cumulative returns over time. It is used in investments to reflect the realized change in wealth over multiple periods.

The geometric average is defined as the nth root of the product resulting from multiplying a series of returns together, as in Equation 3.2.

$$G = [(1+r_1)(1+r_2).....(1+r_n)]^{1/n} - 1 \ldots \quad (3.2)$$

where, r = total return, n = number of periods.

Return relative: On adding 1.0 to each return (r), we shall get a return relative. If the return for a period is 10 percent (.10), then the return relative is 1.10. The investor has received Rs. 1.10 relative to each Rs. 1 invested. If the return for a period is –15 percent (-.15) then the return relative is .85 (1-.15). Return relatives are used in

calculating geometric average returns because negative total returns cannot be used in the math.

For our stock that started at Rs. 50, rose to Rs. 100, and then dropped to Rs. 50 over a two-year period, the geometric return would be calculated as follows:

Return relative, Year 1 = 1.00 + 1.00 = 2.00

Year 2 = -.50 + 1.00 = .50

Geometric average (G) =

Here, we also need to note that the geometric average rate of return would be lower than the arithmetic average rate of return because it reflects compounding rather than simple averaging.

3.7 RISK IN HOLDING SECURITIES

Risk is generally associated with the possibility that realized returns of securities will be less than the returns that were expected. The source of such risk is the failure of dividends (interest) and/or the security's price to materialize as expected.

There are numerous forces that contribute to variations in return—price or dividend (interest). These forces are termed as elements of risk. Some factors are external to the firm and cannot be controlled. These factors affect large numbers of securities. *In investments, those forces that are uncontrollable, external, and broad in their effect are called sources of systematic risk.* Other forces are internal to the firm and are controllable to a large degree. The controllable, internal factors somewhat peculiar to industries and/or firms are referred to as sources of *unsystematic risk*.

That portion of total variability in return caused by factors affecting the prices of all securities is known as systematic risk. Economic, political, and sociological changes are sources of systematic risk. Their effect is to cause prices of nearly all individual common stocks and/or all individual bonds to move together in the same manner. For example, if the economy is moving toward inflation and corporate profits shift upward, stock prices

may rise across a broad front. Nearly all stocks listed on the National Stock Exchange (NSE) move in the same direction as the S & *P* Nifty index of NSE. Studies have shown that on the average, 50 percent of the variation in a stock's price can be explained by variation in the market index.

Conversely, the portion of total risk that is unique to a firm or industry is called unsystematic risk. Factors such as management capability, consumer preferences, and labour strikes cause unsystematic variability of returns in a firm. Unsystematic factors are largely independent of factors affecting securities markets in general. Because these factors affect one firm, they must be examined for each firm.

3.7.1 Systematic Risk

As discussed, the main constituents of systematic risk include- market risk, interest rate risk and purchasing power risk.

Market Risk: The price of a stock may fluctuate widely within a short span of time even though earnings remain unchanged. The causes of this phenomenon are varied, but it is mainly due to a change in investors' attitudes towards equities in general, or toward certain types or groups of securities in particular. Variability in return on most common stocks that is due to basic sweeping changes in investor expectations is referred to as market risk.

The reaction of investors to tangible as well as intangible events causes market risk. Expectations of lower corporate profits in general may cause the larger body of common stocks to fall in price. Investors are expressing their judgement that too much is being paid for earnings in the light of anticipated events. The basis for the reaction is a set of real, tangible events– political, social, or economic.

Intangible events are related to market psychology. Market risk is usually touched off by a reaction to real events, but the emotional unstability of investors acting collectively leads to a snowballing overreaction. The initial decline in the market can cause

the fear ofloss to grip investors, and a kind of herd instinct builds as all investors make for the exit. These reactions to reactions frequently culminate in excessive selling, pushing prices down far out of line with fundamental value. With a trigger mechanism such as the threat of war, or an oil shortage, virtually all stocks are adversely affected.

Interest-rate risk: The risk of variations in future market values and the size of income, caused by fluctuations in the general level of interest rates is referred to as interest-rate risk. The basic cause of interest-rate risk lies in the fact that, as the rate of interest paid on Indian government securities rises or falls, the rates of return demanded on alternative investment vehicles, such as stocks and bonds issued in the private sector, rise or fall. In other words, as the cost of money changes for risk-free securities, the cost of money to risk-prone issuers will also change.

People normally regard government securities like treasury bills risk-free. The interest rates demanded on these securities are thought to approximate the “pure” rate of interest, or the cost of hiring money at no risk. Interest rates on gilts shift with changes in the supply and demand for government securities. For example, a large operating deficit experienced by the Indian government will require financing. Issuance of added amounts of Indian government securities will increase the available supply. Potential buyers of this new supply may be induced to buy only if interest rates are somewhat higher than those currently prevailing on outstanding issues. If rates on gilts advance from, say, 8 percent to 8¼ percent, investors holding outstanding issues that yield 8 percent will notice a decline in the price of their securities. Because the 8 percent rate is fixed by contract on these “old” gilts, a potential buyer would be able to realize the competitive 8¼ percent rate only if the current holder “marked down” the price. As the rate on guilts advances, they become relatively more attractive and other securities become less attractive. Consequently, bond purchasers will buy governments instead of

corporates. This will cause the price of corporates to fall and the rate on corporates to rise. Rising corporate bond rates will eventually cause preferred and inturn common stock prices to adjust downward as the chain reaction is felt throughout the system of security yields. Thus the direct effect of increases in the level of interest rates is to cause security prices to fall across a wide span of investment vehicles.

Also there are indirect effects on common stocks. First, lower or higher interest rates make the purchase of stocks on margin (using borrowed funds) more or less attractive. Higher interest rates, for example, may lead to lower stock prices because of a diminished demand for equities by speculators who use margin. Second, many firms, such as public utilities finance their operations quite heavily with borrowed funds. Others, such as financial institutions, are principally in the business of lending money. Advancing interest rates can bring higher earnings to lending institutions whose principal revenue source is interest received on loans. For these firms, higher earnings could lead to increased dividends and stock prices.

Purchasing-power risk: Purchasing-power risk refers to the uncertainty of the purchasing power of the money to be received. In simple terms, purchasing-power risk is the impact of inflation or deflation on an investment. When we think of investment as the postponement of consumption, we can see that when a person purchases a stock, he has foregone the opportunity to buy some goods or service for as long as he owns the stock. If, during the holding period, prices on desired goods and services rise, the investor actually loses purchasing power. Rising prices on goods and services are normally associated with what is referred to as inflation. Falling prices on goods and services are termed deflation. Both inflation and deflation are covered in the all-encompassing term purchasing-power risk. Generally, purchasing-power risk has come to be identified with inflation (rising prices); the incidence of declining

prices in most countries has been slight. The anticipated purchasing power changes manifest themselves on both bond and stocks.

3.7.2 Unsystematic Risk

Market, purchasing-power, and interest-rate risks are the principal sources of systematic risk in securities; but we should also consider another important category of security risks— unsystematic risks. The portion of total risk that is unique or peculiar to a firm or an industry, above and beyond that affecting securities markets in general is called unsystematic risk. Factors such as management capability, consumer preferences, and labour strikes can cause unsystematic variability of returns for a company's stock.

Examples of unsystematic risks

Business risk: Business risk relates to the variability of the sales, income, profits etc., which in turn depend on the market conditions for the product mix, input supplies, strength of competitors, etc. The business risk is sometimes external to the company due to changes in government policy or strategies of competitors or unforeseen market conditions. They may be internal due to fall in production, labour problems, raw material problems or inadequate supply of electricity etc. The internal business risk leads to fall in revenues and in profit of the company, but can be corrected by certain changes in the company's policies.

Financial Risk: This relates to the method of financing, adopted by the company; high leverage leading to larger debt servicing problems or short-term liquidity problems due to bad debts, delayed receivables and fall in current assets or rise in current liabilities. These problems could no doubt be solved, but they may lead to fluctuations in earnings, profits and dividends to share holders. Sometimes, if the company runs into losses or reduced profits, these may lead to fall in returns to investors or negative returns. Proper financial planning and other financial adjustments can be used to

correct this risk and as such it is controllable.

Default or insolvency risk: The borrower or issuer of securities may become insolvent or may default, or delay the payments due, such as interest instalments or principal repayments. The borrower's credit rating might have fallen suddenly and he became default prone and in its extreme form it may lead to insolvency or bankruptcies. In such cases, the investor may get no return or negative returns. An investment in a healthy company's share might turn out to be a waste paper, if within a short span, by the deliberate mistakes of Management or acts of God, the company became sick and its share price tumbled below its face value.

Other Risks

Besides the above described risks, there are many more risks, which can be listed, but in actual practice, they may vary in form, size and effect.

Some of such identifiable risks are the Political Risks, Management Risks and Liquidity Risks etc. Political risk may occur due to the changes in the government, or its policy shown in fiscal or budgetary aspects, changes in tax rates, imposition of controls or administrative regulations etc. Management risks arise due to errors or inefficiencies of management, causing losses to the company. Marketability liquidity risks involve loss of liquidity or loss of value in conversions from one asset to another say, from stocks to bonds, or vice versa. Such risks may arise due to some features of securities, such as callability; or lack of sinking fund or Debenture Redemption Reserve fund, for repayment of principal or due to conversion terms, attached to the security, which may go adverse to the investor.

All the above types of risks are of varying degrees, resulting in uncertainty or variability of return, loss of income, and capital losses, or erosion of real value of income and wealth of the investor. Normally the higher the risk taken, the higher is the return.

3.8 RISK MEASUREMENT

Understanding the nature and types of risk is not adequate unless the investor or analyst is capable of measuring it in some quantitative terms. The quantitative expression of the risk of a stock would make it comparable with other stocks. However, the risk measurements cannot be considered fully accurate as it is caused by multiplicity of factors such as social, political, economic and managerial aspects.

Risk is measured by the variability of returns. The statistical tool often used to measure risk is the standard deviation. We know, standard deviation is a measure of the values of the variables around its mean or it is the square root of the sum of the squared deviations from the mean divided by the number of observations. This can be illustrated with an example.



Example 3.2

The following information is given about two companies Rani Limited and Raja Limited. Compute standard deviation of the returns of their shares

Rani Limited			Raja Limited		
Returns (r_i)	**Probabilities** (P_i)	**$P_i r_i$**	**Returns** (r_i)	**Probabilities** (P_i)	**$P_i r_i$**
5	0.10	0.50	5	0.05	0.25
7	0.20	1.40	7	0.15	1.05
9	0.30	2.70	9	0.20	1.80
11	0.25	2.75	10	0.40	4.00
13	0.15	1.95	11	0.20	2.20
$\sum$ (r) = 9.30			**(r) = 9.30**		

We may note from the above information the expected returns (means) are same in case of both the companies. The return of the Rani Ltd. ranges between 5 percent and 13 percent while that of Raja Ltd. ranges between 5 percent and 11 percent. The standard deviation and variance may be calculated as follows:

$$Variance(\sigma^2) = \sum_{i=1}^{n} P\{r_i - E(r)\}^2$$

Rani Limited			Raja Limited		
$r_i - E(r)$	$[r_i - E(r)]^2$	$P[r_i - E(r)]^2$	$r_i - E(r)$	$[r_i - E(r)]^2$	$P[r_i - E(r)]^2$
-4.3	18.49	1.849	-4.3	18.49	0.925
-2.3	5.29	1.058	-2.3	5.29	0.794
-0.3	0.09	0.027	-0.3	0.09	0.018
1.7	2.89	0.723	0.7	0.49	0.196
3.7	13.69	2.054	1.7	2.89	0.578
		5.7105			2.51

For Rani Ltd.

$$S.D.(\sigma) = \sqrt{\sum_{i=1}^{n} P\{r_i - E(r)\}^2}$$

$$\sqrt{\sum_{i=1}^{n} P[r_i - E(r)]^2}$$

σ = 5.7105

= 2.39

For Raja Ltd.

=

= 2.51

= 1.58

The expected returns for both the companies under consideration are same (i.e. 9.3%). But the variations in expected returns are different. The returns of Raja Ltd. are more stable than that of Rani Ltd. Hence, the share of the former is safer than the latter company.

The standard deviation is an absolute measure, which can be applied when the mean is the same. But the *coefficient of variation* is the relative measure of the degree of uncertainty.



Example 3.3

Torrent and company estimates the probability and the expected returns as returns for the five observations as follows:

Probability	0.1	0.2	0.4	0.2	0.1
Possible return	10%	5%	20%	35%	50%

(a) What are the expected values of return and standard deviation?

Ans. Expected return equation is:

$$= \sum_{i=1}^{n} R_i P_i$$

=.10 × 0.1 + 0.05 × 0.2 +*R* 0.2 × 0.4 + 0.35 × 0.2 + 0.5 × 0.1

= 0.01 + 0.01 + 0.08 + 0.07 + 0.05

= 22%

$$\sigma = \sqrt{\sum_{i=1}^{N} P(R_i - R)^2 P_i}$$

where = 22 from the above

= [(.10 - .22)$_2$ × 0.1 + (0.05 - .22)$_2$ × 0.2 + (.20 - .22)$_2$ × 0.4 + (.35 - .22)2 × 0.2 + (.50 - .22)2 × 0.1

=.00144 + .00578 + .00016 + .00338 + .00784 = .01860

σ

The concepts of variance, standard deviation, covariance and beta coefficients etc., are also used to explain the measure of risk. In the context of portfolio of assets, or investment in any assets risk is inherent in all such dealings. This risk primarily arises first out of parting of your funds or loss of liquidity. Money lent or parted is always having an element of risk. This element is the same as the concept of total risk.



CHECK YOUR PROGRESS

Q5: Define Financial Risk

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Q6: How Risk is measured

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3.9 LET US SUM UP

Considerations of risk are vital for investments. A potential investor looks at some expected return, which occurs in future. And what is certain about future is its uncertainty. A decision today for a tomorrow, which is uncertain, is the kind of to pography on which an investor has to walk. The path is rugged and the journey full of risk. An intelligent investor would want to make his journey as smooth as possible. He would attempt to anticipate the kind of risks she is likely to face and also the vast number of factors that probably produce these risks. Even though she understands that he task is highly subjective, she makes her best efforts to remain anchored to cannons of rationality.

The two -step procedure that an investor follows in accomplishment of the objective is to get some specific insights into the total investment risk and then to familiarize with , various elements and factors that sum up to such total risk. For estimating the total risk, the investor uses past experience and modifies it appropriately for the expected changes, in the future and then develops a subjective probability distribution of possible returns from the proposed investment. This probability distribution is then employed to estimate the expected value of the return and its variability. The 'mean' gives the expected value and 'variance' or 'standard deviation' gives the variability or the measure of risk. The widely used procedure for assessing risk is known as the mean-variance approach.

The 'variance' or 'standard deviation' provides an overview of risk. It measures 'total risk'. In actual practice, various factors produce this total risk. A decomposition of total risk would be necessary to gain knowledge of the influence of these factors individually. Recognizing some recent

developments in the theory of risk measurement, especially the portfolio aspects, a first step in reaching out to the components of total risk is to divide it into systematic or market-related risk and non-systematic or diversifiable risk.

When it comes to specifying the factors influencing total risk, one may group them into two broad classes, viz., factors, which produce non-diversifiable or systematic risk and factors which cause non-systematic or diversifiable risk. The former category comprises causes like interest rate variations, inflation, or market sentiment (or bull-bear market) which would affect all firms and their measurement will be useful in estimating required rate of return. The latter category would, on the other hand, include causes like business environment, financial leverage, management quality, liquidity, and chance of default. They affect some firms but no others. These sources of risk are expected to have minimum impact on a diversified portfolio and hence one need not be concerned with them too much.



3.10 FURTHER READING

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5) Donald E. Fischer and Ronald J. Jordon (2018), *Security Analysis and Portfolio Management,* PHI.
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3.11 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No.1: Investment risk can be defined as the probability or likelihood of occurrence of losses relative to the expected return on any particular investment.

Ans to Q No.2: Systematic risk is the type of risk that is not under your control and affects a large number of assets. Any new law that the government passes or any new regulatory announcement that affects your investments falls under systematic risk.

Ans to Q NO.3: Unsystematic risk affects a very small category of assets. It is also called "specific risk". For example, the price of a specific stock may get affected due to a fire at the company's manufacturing plant.

Ans to Q No.4: Inflation risk is the variability in the total purchasing power of an asset. It arises from the rising general price level. The interest rate on bonds and debentures and dividend rates on equity and preference shares are stated in money terms and if the general price level rises during some future period, the buying power of the cash interest/dividend income is likely to be received for that period would decline.

Ans to Qno.5: Financial Risk relates to the method of financing, adopted by the company; high leverage leading to larger debt servicing problems or short-term liquidity problems due to bad debts, delayed receivables and fall in current assets or rise in current liabilities.

Ans to QNo.6: Risk is measured by the variability of returns. The statistical tool often used to measure risk is the standard deviation.



3.12 MODEL QUESTIONS

Q 1: How would you assess the return of financial assets? Explain with illustrations.

Q 2: Which average-Arithmetic mean or Geometric mean should be used for calculating average return on securities?

Q 3: Define risk and distinguish between systematic and unsystematic risk.

Q 4: Of those risks normally associated with the holding of securities,

(a) What three risks are commonly classified as systematic in nature?

(b) What risks are most prevalent in holding common stocks?

Q 5: What are the statistical tools used to measure the risk of the securities return? Explain.

Q 6: Discuss the principal sources of systematic and unsystematic risk.

Q 7: Give an example using probabilities where two securities have equal expected returns but unequal variances or risk in returns.

Q 8: Cite recent examples of political, social, or economic events (market risk) that have excited

(a) The stock market, and

(b) Stocks in a specific industry, to surge ahead or plummet sharply.

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UNIT 4 : FUNDAMENTAL ANALYSIS - I

UNIT STRUCTURE

4.1 Learning Objectives

4.2 Introduction

4.3 Economic Analysis

4.3.1 Macro Economic Factors

4.4 Industry Analysis

4.4.1 Industry Life Cycle Analysis

4.4.2 Classification of Industry

4.4.3 Characteristics of an Industry Analysis

4.4.4 Profit Potential of Industries: Porter Model

4.5 Techniques for Evaluating Relevant Industry Factors

4.6 Let Us Sum Up

4.7 Further Reading

4.8 Answer to Check Your Progress

4.9 Model Questions

4.1 LEARNING OBJECTIVES

After going through this unit, you will be to:

- discuss about economic analysis
- explain the Industry Analysis
- outline the Classification of Industry
- discuss the characteristics of an Industry Analysis
- explain abouit profit Potential of Industries: Porter Model
- discuss the techniques for evaluating relevant industry factors

4.2 INTRODUCTION

The objective of this unit is to make learners to learn about the fundamental aspects affecting stock's values such as economic out-look and market conditions. Security analysis is the basis for rational investment decisions. If a security's estimated value is above its market price, the

security analyst will recommend buying the stock. If the estimated value is below the market price, the security should be sold before its price drops. However, the values of the securities are continuously changing as news about the securities becomes known. The search for the security pricing involves the use of fundamental analysis. Under fundamental analysis, the security analysts studies the fundamental facts affecting a stock's values, such as company's earnings, their management, the economic outlook, the firm's competition, market conditions etc.

Fundamental analysis is primarily concerned with determining the intrinsic value or the true value of a security. For determining the security's intrinsic value the details of all major factors (GNP, industry sales, firm sales and expense etc) is collected or an estimates of earnings per share may be multiplied by a justified or normal prices earnings ratio. After making this determination, the intrinsic value is compared with the security's current market price. If the market price is substantially greater than the intrinsic value the security is said to be overpriced. If the market price is substantially less than the intrinsic value, the security is said to be under priced. However, fundamental analysis comprises:

1. Economic Analysis
2. Industry Analysis
3. Company Analysis

Here, in this lesson Economic and Industry analysis are explained in detail and the company analysis is discussed in the next lesson.

4.3 ECONOMIC ANALYSIS

For the security analyst or investor, the anticipated economic environment, and therefore the economic forecast, is important for making decisions concerning both the timings of an investment and the relative investment desirability among the various industries in the economy. The key for the analyst is that overall economic activities manifest itself in the behaviour of the stocks in general. That is, the success of the economy will ultimately include the success of the overall market. For studying the

Economic Analysis, the Macro Economic Factors and the Forecasting Techniques are studied in following paragraphs.

4.3.1 Macro Economic Factors

The macro economy is the study of all the firms that operates in economic environment. The key variables to describe the state of economy are explained as below:

- ***Growth rate of Gross Domestic Product (GDP):*** GDP is a measure of the total production of final goods and services in the economy during a year. It is indicator of economic growth. It consists of personal consumption expenditure, gross private domestic investment, government expenditure on goods and services and net export of goods and services. The firm estimates of GDP growth rate are available with a time lag of one or two years. The expected rate of growth of GDP will be 7.3 percent in year 2015-16. Generally, GDP growth rate ranges from 6-8 percent. The growth rate of economy points out the prospects for the industrial sector and the returns investors can expect from investment in shares. The higher the growth rate of GDP, other things being equal, the more favorable it is for stock market.
- ***Savings and investment:*** Growth of an economy requires proper amount of investments which in turn is dependent upon amount of domestic savings. The amount of savings is favorably related to investment in a country. The level of investment in the economy and the proportion of investment in capital market is major area of concern for investment analysts. The level of investment in the economy is equal to: Domestic savings + inflow of foreign capital - investment made abroad.

  The Stock Market is an important channel to mobilize savings, from the individuals who have excess of it, to the individual or corporate, who have deficit of it. Savings are

distributed over various assets like equity shares, bonds, small savings schemes, bank deposits, mutual fund units, real estates, bullion etc. The demand for corporate securities has an important bearing on stock prices movements. Greater the allocation of equity in investment, favorable impact it have on stock prices.

- ***Industry Growth rate:*** The GDP growth rate represents the average of the growth rate of agricultural sector, industrial sector and the service sector. The contribution of industry sector in GDP in the year 2014-15 is 6.75 percent approximately. Publicly listed company play a major role in the industrial sector. The stock market analysts focus on the overall growth of different industries contributing in economic development. The higher the growth rate of the industrial sector, other things being equal, the more favourable it is for the stock market.
- ***Price level and Inflation:*** If the inflation rate increases, then the growth rate would be very little. The increasingly inflation rate significantly affect the demand of consumer product industry. The inflation rate in the Indian economy has been around 7 percent till 1990s. In recent years, the inflation rate ranges from 4-5 percent (2015). The industry which have a weak market and come under the purview of price control policy of the government may lose the market, like sugar industry. On the other hand the industry which enjoy a strong market for their product and which do not come under purview of price control may benefit from inflation. If there is a mild level of inflation, it is good to the stock market but high rate of inflation is harmful to the stock market.
- ***Agriculture and monsoons:*** Agriculture is directly and indirectly linked with the industries. Hence increase or decrease in agricultural production has a significant impact on the industrial production and corporate performance. Companies using agricultural raw materials as inputs or supplying inputs

to agriculture are directly affected by change in agriculture production. For example- Sugar, Cotton, Textile and Food processing industries depend upon agriculture for raw material. Fertilizer and insecticides industries are supplying inputs to agriculture. A good monsoon leads to higher demand for inputs and results in bumper crops. This would lead to buoyancy in stock market. If the monsoon is bad, agriculture production suffers and cast a shadow on the share market.

- ***Interest Rate:*** Interest rates vary with maturity, default risk, inflation rate, productivity of capital etc. The interest rate on money market instruments like Treasury Bills are low, long term government securities carry slightly higher interest rate and interest rate on corporate debenture is still higher. With the deregulation interest rates are softened, which were quite high in regulated environment. Interest rate affects the cost of financing to the firms. A decrease in interest rate implies lower cost of finance for firms and more profitability and it finally leads to decline in discount rate applied by the equity investors, both of which have a favourable impact on stock prices. At lower interest rates, more money at cheap cost is available to the persons who do business with borrowed money, this leads to speculation and rise in price of share.
- ***Government budget and deficit:*** Government plays an important role in the growth of any economy. The government prepares a central budget which provides complete information on revenue, expenditure and deficit of the government for a given period. Government revenue come from various direct and indirect taxes and government made expenditure on various developmental activities. The excess of expenditure over revenue leads to budget deficit. For financing the deficit the government goes for external and internal borrowings. Thus, the deficit budget may lead to high rate of inflation and adversely affects the cost of production and surplus budget may results

in deflation. Hence, balanced budget is highly favourable to the stock market.

- ***The tax structure:*** The business community eagerly awaits the government announcements regarding the tax policy in March every year. The type of tax exemption has impact on the profitability of the industries. Concession and incentives given to certain industry encourages investment in that industry and have favourable impact on stock market.
- ***Balance of payment, forex reserves and exchange rate:*** Balance of payment is the record of all the receipts and payment of a country with the rest of the world. This difference in receipt and payment may be surplus or deficit. Balance of payment is a measure of strength of rupee on external account. The surplus balance of payment augments forex reserves of the country and has a favourable impact on the exchange rates; on the other hand if deficit increases, the forex reserve depletes and has an adverse impact on the exchange rates. The industries involved in export and import are considerably affected by changes in foreign exchange rates. The volatility in foreign exchange rates affects the investment of foreign institutional investors in Indian Stock Market. Thus, favourable balance of payment renders favourable impact on stock market.
- ***Infrastructural facilities and arrangements:*** Infrastructure facilities and arrangements play an important role in growth of industry and agriculture sector. A wide network of communication system, regular supply or power, a well developed transportation system (railways, transportation, road network, inland waterways, port facilities, air links and telecommunication system) boost the industrial production and improves the growth of the economy. Banking and financial sector should be sound enough to provide adequate support to industry and agriculture. The government has liberalized its

policy regarding the communication, transport and power sector for foreign investment. Thus, good infrastructure facilities affect the stock market favourable.

- ***Demographic factors:*** The demographic data details about the population by age, occupation, literacy and geographic location. These factors are studied to forecast the demand for the consumer goods. The data related to population indicates the availability of work force. The cheap labour force in India has encouraged many multinationals to start their ventures. Population, by providing labour and demand for products, affects the industry and stock market.
- ***Sentiments:*** The sentiments of consumers and business can have an important bearing on economic performance. Higher consumer confidence leads to higher expenditure and higher business confidence leads to greater business investments. All this ultimately leads to economic growth. Thus, sentiments influence consumption and investment decisions and have a bearing on the aggregate demand for goods and services.



CHECK YOUR PROGRESS

Q1: Write any three key variables to describe the state of economy

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Q2: Define Balance of Payments

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4.4 INDUSTRY ANALYSIS

The mediocre firm in the growth industry usually out performs the best stocks in a stagnant industry. Therefore, it is worthwhile for a security analyst to pinpoint growth industry, which has good investment prospects.

The past performance of an industry is not a good predictor of the future- if one look very far into the future. Therefore, it is important to study industry analysis. For an industry analyst- industry life cycle analysis, characteristics and classification of industry is important. All these aspects are enlightened in following sections:

4.4.1 Industry Life Cycle Analysis

Many industrial economists believe that the development of almost every industry may be analyzed in terms of following stages (Figure 4.1):

1. ***Pioneering stage*:** During this stage, the technology and product is relatively new. The prospective demand for the product is promising in this industry. The demand for the product attracts many producers to produce the particular product. This lead to severe competition and only fittest companies survive in this stage. The producers try to develop brand name, differentiate the product and create a product image. This would lead to non-price competition too. The severe competition often leads to change of position of the firms in terms of market share and profit.
2. ***Rapid growth stage*:** This stage starts with the appearance of surviving firms from the pioneering stage. The companies that beat the competition grow strongly in sales, market share and financial performance. The improved technology of production leads to low cost and good quality of products. Companies with rapid growth in this stage, declare dividends during this stage. It is always adisable to invest in these companies.
3. ***Maturity and stabilization stage:*** After enjoying above-average growth, the industry now enters in maturity and stabilization stage. The symptoms of technology obsolescence may appear. To keep going, technological innovation in the

production process should be introduced. A close monitoring at industries events are necessary at this stage.

4. ***Decline stage*:** The industry enters the growth stage with satiation of demand, encroachment of new products, and change in consumer preferences. At this stage the earnings of the industry are started declining. In this stage the growth of industry is low even in boom period and decline at a higher rate during recession. It is always advisable not to invest in the share of low growth industry.

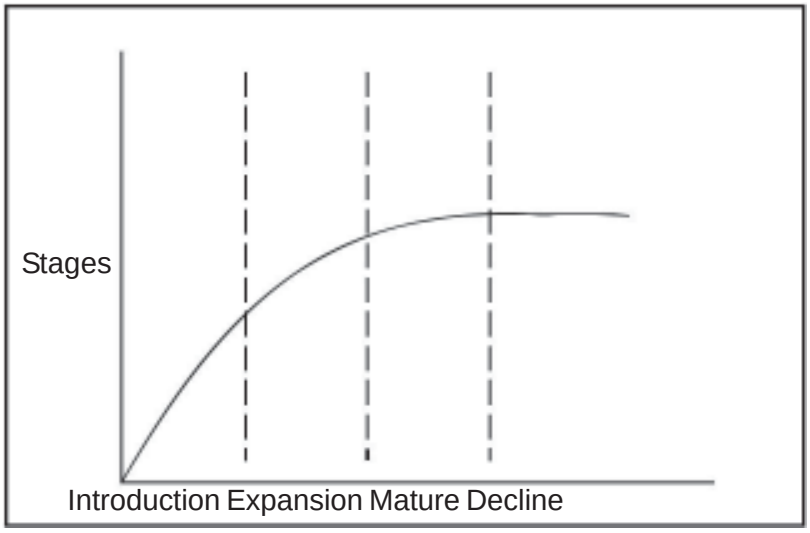


Figure: 4.1 Industry Life Cycle

4.4.2 Classification of Industry

Industry means a group of productive or profit making enterprises or organizations that have a similar technically substitute goods, services or source of income. Besides Standard Industry Classification (SIC), industries can be classified on the basis of products and business cycle i.e. classified according to their reactions to the different phases of the business cycle. These are classified as follows:

4. ***Growth Industries:*** These industries have special features of high rate of earnings and growth in expansion, independent

of the business cycle. The expansion of the industry mainly depends on the technological change or an innovative way of doing or selling something. For example-in present scenario the information technology sector have higher growth rate. There is some growth in electronics, computers, cellular phones, engineering, petro-chemicals, telecommunication, energy etc.

5. ***Cyclical Industries:*** The growth and profitability of the industry move along with the business cycle. These are those industries which are most likely to benefit from a period of economic prosperity and most likely to suffer from a period of economic recession. These especially include consumer goods and durables whose purchase can be postponed until persona; financial or general business conditions improve. For example- Fast Moving Consumer Goods (FMCG) commands a good market in the boom period and demand for them slackens during the recession.

6. ***Defensive Industries:*** Defensive industries are those, such as the food processing industry, which hurt least in the period of economic downswing. For example- the industries selling necessities of consumers withstands recession and depression. The stock of defensive industries can be held by the investor for income earning purpose. Consumer nondurable and services, which in large part are the items necessary for existence, such as food and shelter, are products of defensive industry.

7. ***Cyclical-growth Industries:*** These possess characteristics of both a cyclical industry and a growth industry. For example, the automobile industry experiences period of stagnation, decline but they grow tremendously. The change in technology and introduction of new models help the automobile industry to resume their growing path.

4.4.3 Characteristics of an Industry Analysis

In an industry analysis, the following key characteristics should be considered by the analyst. These are explained as below:

1. **Post sales and Earnings performance:** The two important factors which play an important role in the success of the security investment are sales and earnings. The historical performance of sales and earnings should be given due consideration, to know how the industry have reacted in the past. With the knowledge and understanding of the reasons of the past behaviour, the investor can assess the relative magnitude of performance in future. The cost structure of an industry is also an important factor to look into. The higher the cost component, the higher the sales volume necessary to achieve the firm's break-even point, and vice-versa.

2. Nature of Competition: The numbers of the firms in the industry and the market share of the top firms in the industry should be analyzed. One way to determine competitive conditions is to observe whether any barriers to entry exist. The demand of particular product, its profitability and price of concerned company scrip's also determine the nature of competition. The investor before investing in the scrip of a company should analyze the market share of the particular company's product and should compare it with other companies. If too many firms are present in the organized sector, the competition would be severe. This will lead to a decline in price of the product.

3. Raw Material and Inputs: Here, we have to look into the industries, which are dependent upon imports of scarce raw material, competition from other companies and industries, barriers to entry of a new company, protection from foreign competition, import and export restriction etc. An industry which has a limited supply of materials domestically and where imports are restricted will have dim growth prospects. Labour is also an input and industries with labour problems may have difficulties of growth.

4. Attitude of Government towards Industry: It is important for the analyst or prospective investor to consider the probable role government will play in industry. Will it provide financial support or otherwise? Or it will restrain the industry's development through restrictive legislation and legal enforcement? The government policy with regard to granting of clearance, installed capacity and reservation of the products for small industry etc. are also factors to be considered for industry analysis.

5. Management: An industry with many problems may be well managed, if the promoters and the management are efficient. The management likes Tatas, Birlas, Ambanies etc. who have a reputation, built up their companies on strong foundations. The management has to be assessed in terms of their capabilities, popularity, honesty and integrity. In case of new industries no track record is available and thus, investors have to carefully assess the project reports and the assessment of financial institutions in this regard. A good management also ensures that the future expansion plans are put on sound basis.

6. Labour Conditions and Other Industrial Problems: The labour scenario in a particular industry is of great importance. If we are dealing with a labour intensive production process or a very mechanized capital intensive process where labour performs crucial operations, the possibility of strike looms as an important factor to be reckoned with. Certain industries with problems of marketing like high storage costs, high transport costs etc leads to poor growth potential and investors have to careful in investing in such companies.

7. Nature of Product Line: The position of the industry in the life cycle of its growth- initial stage, high growth stage and maturing stage are to be noted. It is also necessary to know the industries with a high growth potential like computers, electronics, chemicals, diamonds etc., and whether the industry is in the priority sector of the key industry group or capital goods or consumer goods groups.

The importance attached by the government in their policy and of the Planning Commission in their assessment of these industries is to be studied.

8. Capacity Installed and Utilized: The demand for industrial products in the economy is estimated by the Planning Commission and the Government and the units are given licensed capacity on the basis of these estimates. If the demand is rising as expected and market is good for the products, the utilization of capacity will be higher, leading to bright prospects and higher profitability. If the quality of the product is poor, competition is high and there are other constraints to the availability of inputs and there are labour problems, then the capacity utilization will be low and profitability will be poor.

9. Industry Share Price Relative to Industry Earnings: While making investment the current price of securities in the industry, their risk and returns they promise is considered. If the price is very high relative to future earnings growth, the investment in these securities is not wise. Conversely, if future prospects are dim but prices are low relative to fairly level future patterns of earnings, the stocks in this industry might be an attractive investment.

10. Research and Development: For any industry to survive in the national and international markets, product and production process have to be technically competitive. This depends upon the research and development in the particular industry. Proper research and development activities help in obtaining economic of scale and new market for product. While making investment in any industry the percentage of expenditure made on research and development should also be considered.

11. Pollution Standards: These are very high and restricted in the industrial sector. These differ from industry to industry, for example, in leather, chemical and pharmaceutical industries the industrial effluents are more.

4.4.4 Profit Potential of Industries: Porter Model

Michael Porter has argued that the profit potential of an industry depends on the combined strength of the following five components as explained below. Figure:4.2 depicts the forces that drive competition and determine industry profit potential. These are:

i. **Threat of New Entrants:** New entrants add capacity, inflate costs, push prices down and reduce profitability. Hence, if an industry face threat of new entrants, its profit potential would be limited. The threat from new entrants is low if the entry barriers confer an advantage on existing firms and deter new entrants. Entry barriers are high when:

The new entrants have to invest substantial resources to enter the industry.

Economics of scale are enjoyed by the industry.

- The government policy limits or even prevents new entrants.
- Existing firms control the distribution channels, benefit from product differentiation in the form of brand image and customer loyalty, and enjoy some kind of proprietary experience curve.

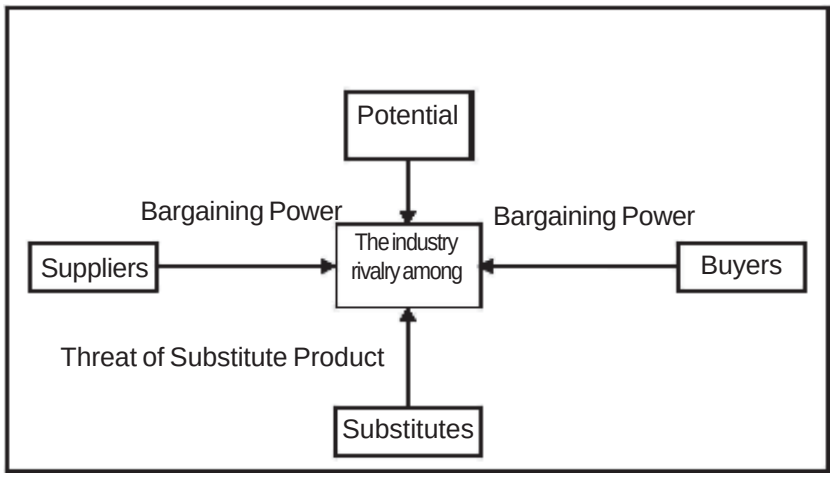


Figure: 4.2 Forces Driving Industry Competition

ii. **Rivalry among the Existing Firms:** Firms in an industry compete on the basis of price, quality, promotion service, warranties etc. If the rivalry between the firms in an industry is

strong, competitive moves and countermoves dampen the average profitability of the industry. The intensity of rivalry in an industry tends to be high when:

- The number of competitors in the industry is large.
- At least a few firms are relatively balanced and capable of engaging in a sustained competitive battle.
- The industry growth is sluggish, prodding firms to strive for a higher market share.
- The industry confronts high exit barriers.
- The industry's product is regarded as a commodity or near-commodity, stimulating strong price and service competition.

iii. **Pressure from Substitute Products:** All the firms in an industry face competition from industries producing substitute products. The substitute goods may limit the profit potential of the industry by imposing a ceiling on the prices that can be charged by the firms in the industry. The threat from substitute products is high when:

- The price-performance trade off offered by the substitute products is attractive.
- The switching costs for prospective buyers are minimal.
- The substitute products are being produced by industries earning superior profits.

iv. **Bargaining Power of Buyers:** Buyer is a competitive force. They can bargain for price cut, ask for superior quality and better services and induce rivalry among competitors. If they are powerful, they can depress the profitability of the supplier industry. The bargaining power of a buyer group is high when:

- Its purchases are large relative to the sales of the seller.
- Its switching costs are low.
- It poses a strong threat of backward integration.

v. **Bargaining Power of Suppliers:** Suppliers, like buyers, can exert a competitive force in an industry as they ca raise prices,

lower quality and curtail the range of free services they provide. Powerful suppliers can hurt the profitability of the buyer industry. Suppliers have strong bargaining power when:

- Few suppliers dominate and the supplier group is more concentrated than the buyer group.
- There are hardly any viable substitutes for the products supplied.
- The switching costs for the buyers are high.
- Suppliers do present a real threat of forward integration.

4.5 TECHNIQUES FOR EVALUATING RELEVANT INDUSTRY FACTORS

The techniques (long term and short term) for evaluating industry factors are explained in the following sections. These are:

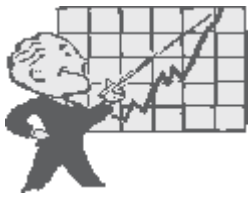
1. **End-Use and Regression Analysis:** End-use analysis for product demand analysis refers to a process whereby the analyst attempts to diagnose the factors that determine the demand for output of the industry. In a single product firm, units demanded multiplied by price will equal sales revenue. The analyst frequently forecast the factors like disposable income, per capita consumption, price elasticity of demand etc. that influence the demand of the product. For studying the relationship between various variables simple linear regression analysis and correlation analysis is used.

   Industry sales against time, industry sales against macro economic variables like gross national product, personal income disposable income and industry earnings over time may be regressed. When two or more independent variables are better able to explain variability in the dependent variables, the multiple regression analysis is used.

2. **Input-Output Analysis:** It is a way of getting inside demand analysis or end use analysis. It reflects the flow of goods and services through the economy including intermediate steps in

the production process as goods proceed from raw material stage to final consumption stage. Thus input-output analysis observes patterns of consumption at all stages in order to direct any changing patterns or trends that might indicate the growth or decline on industries. This technique is more appropriate for an intermediate or long term forecast than for short term forecast.

3. **Growth Rate:** The growth rate of different industry should be forecasted by considering historical data. Once the growth rate is estimated, future values of earnings or sales may be forecast. Since the growth rate is such an important factor in determining the stock prices, not only its size but its duration must be estimated. Sometimes, patents expire, competition with in an industry becomes more aggressive because foreign firms begin to compete, economically depressed periods occur or other factors cause growth rate to drop.



CHECK YOUR PROGRESS

Q3: Define the stages of industry life cycle

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Q4: Define Industry

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Q5: Define Defensive industries

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Q6: Write forces that drive competition and determine industry profit potential

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.....



4.6 LET US SUM UP

The earnings potential and riskiness of a firm are linked to the prospects of the industry to which it belongs. The prospects of various industries, in turn are largely influenced by the development of macro economy. The macro economy is the overall economic environment in which all firms operate. The key variables describe the state of macro economy are- GDP, savings and investments, industrial growth rate etc. Many economists believe that the development of almost every industry may be analyzed in terms of its life cycle. The systematic study of specific features and characteristics are also important for making the investment decisions.



4.7 FURTHER READING

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2) Prasanna Chandra(2017),*Security Analysis and Portfolio Management,*Tata McGraw-Hill.

3) Punithavathy Pandian(2012), *Security Analysis and Portfolio Management,* Vikas Publication.

4) V.A. Avadhani, *Security Analysis and Portfolio Management*, Himalyana Publication.



4.8 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No.1: The three key variables to describe the state of economy are:

a. Growth rate of Gross Domestic Product (GDP):

b. Savings and investment:

c. Industry Growth rate

Ans to Q No.2: Balance of payment is the record of all the receipts and payment of a country with the rest of the world.

Ans to Q No.3: The stages of industry life cycle are:Pioneering stage,Rapid growth stage, Maturity and stabilization stage and Decline stage.

Ans to Q No.4: Industry means a group of productive or profit making enterprises or organizations that have a similar technically substitute goods, services or source of income.

Ans to Q No.5: Defensive industries are those, such as the food processing industry, which hurt least in the period of economic downswing.

Ans to Q No.6: The forces that drive competition and determine industry profit potential are:Threat of New Entrants,Rivalry among the Existing Firms,Pressure from Substitute Products,Bargaining Power of Buyers and Bargaining Power of Sellers.



4.9 MODEL QUESTIONS

1. Define Fundamental Analysis. What is the importance of economic variables in such analysis?
2. Do you think that knowing the current status of economy is useful in analyzing stock market movements? Id so, explain.
3. Why industry analysis is is important in security valuation? Bring out the important considerations in industry analysis.
4. What are the important points to be considered in industry analysis?
5. Discuss the techniques of evaluating industry and economic factors.
6. What is industry life cycle? Bring out its relevance in security analysis.
7. How would you classify shares into growth, cyclical and defensive? Name some stock in each group and explain.

*** ***** ***

UNIT 5 : FUNDAMENTAL ANALYSIS: II

UNIT STRUCTURE

5.1 Learning Objectives

5.2 Introduction

5.3 Comapny Analysis: An Introduction

5.4 Methods of analysing companies

5.5 Company Analysis: The Study of Financials Statements

5.6 Let Us Sum Up

5.7 Further Reading

5.8 Answers to Check Your Progress

5.9 Model Questions

5.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- discuss methods of analysing companies
- explain the quantitative and qualitative methods
- discuss the financial statement
- describe fundamental aspects related to companies that affect stock's values.

5.2 INTRODUCTION

In the previous unit "Fundamental Analysis-I" we have discussed about Economic Analysis and Industry Analysis and now in this unit "Fundamental Analysis-II" light is thrown on company analysis.

We will discuss the methods of analysing companies,the quantitative and qualitative methods and describe fundamental aspects related to companies that affect stock's values.

5.3 COMPANY ANALYSIS: AN INTRODUCTION

In the company analysis the investment analyst collect all the information related to the company and evaluates the present and future value of the

stock. In this analysis, all the factors affecting the earnings of a particular company are considered. The risk and return associated with the purchase of a stock is analyzed to take a better investment decisions. The valuation process depends upon the investor ability to elicit information from the relationship and inter-relationship among the company related variables. Up-to-date information is required on the status and trends in the economy, particular industries and firms. Success in investing will be largely dependent on:

Discovering new and credible information rapidly and in more details then others do. This depends upon the analyst ability to develop a system that couples original thoughts and unique ways of forming expectations about the prospects for individual company. For this purpose various public and private sources of information are analyzed.

Applying superior judgement so as to ascertain the relevance of information to the decision at hand. Judgement depends upon one's knowledge and experiences. By applying various tools of analysis to the data, the investor formulates expectations and judgement about the alternatives available to him.

For company analysis, the internal and external information need to be studied. *Internal information* consists of data and events made public by firms concerning their operations. The principle information sources generated internally by a firm are its financial statements. *External sources* of information are those generated independently outside the company. They provide supplement to internal sources. A good analyst must train himself to understand the kind of flexibility permitted in accounting and the effect of this flexibility on his interpretation of what he sees. For company analysis, the factors that need to be considered and the methods of analyzing financial statement of the company are highlighted in following lines.

5.4 METHODS OF ANALYSING COMPANIES

Fundamental analysis is the method of analyzing companies based on factors that affect their intrinsic value. There are two sides to this method: the quantitative and the qualitative. The *quantitative side* involves looking at

factors that can be measured numerically, such as the company's assets, liabilities, cash flow, revenue and price-to-earnings ratio. The limitation of quantitative analysis, however, is that it does not capture the company's aspects or risks unmeasurable by a number - things like the value of an executive or the risks a company faces with legal issues. The analysis of these things is the other side of fundamental analysis: the *qualitative side or non-number side*. Although relatively more difficult to analyze, the qualitative factors are an important part of a company. Since they are not measured by a number, they more represent an either negative or positive force affecting the company.

But some of these qualitative factors will have more of an effect, and determining the extent of these effects is what is so challenging. To start, identify a set of qualitative factors and then decide which of these factors add value to the company, and which of these factors decrease value. Then determine their relative importance. The qualities one analyzes can be categorized as having a positive effect, negative effect or minimal effect. The best way to incorporate qualitative analysis into evaluation of a company is to do it once you have done the quantitative analysis. The conclusion come to on the qualitative side can put quantitative analysis into better perspective. If when looking at the company numbers one saw good reason to buy/invest in the company, but then found many negative qualities, he may want to think twice about buying/investing.

The conclusions of qualitative analysis either reconfirm or raise questions about the conclusions of quantitative analysis. Fundamental analysis is not as simple as looking at numbers and computing ratios; it is also important to look at influences and qualities that do not have a number value. The present and future values are affected by the following factors (Fig: 5.1).

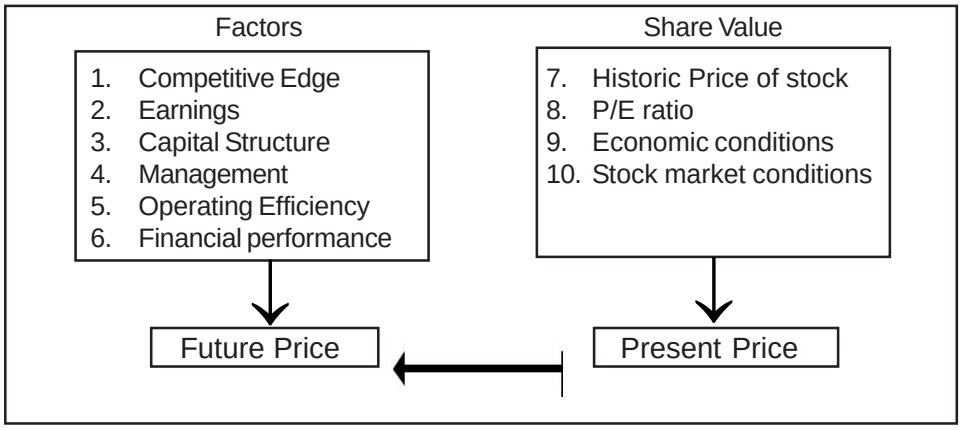


Fig: 5.1 Factors affecting present and future values of Stock

(A) Competitive Edge: Many industries in India are composed of hundreds of individuals companies. The large companies are successful in meeting the competition and some companies rise to the position of eminence and dominance. The companies who have obtain the leadership position; have proven his ability to withstand competition and to have a sizable share in the market. The competitiveness of the company can be studied with the help of:

a. *Market share*: The market share of the company helps to determine a company's relative position with in the industry. If the market share is high, the company would be able to meet the competition successfully. The size of the company should also be considered while analyzing the market share, because the smaller companies may find it difficult to survive in the future.

b. *Growth of annual sales*: Investor generally prefers to study the growth in sales because the larger size companies may be able to withstand the business cycle rather than the company of smaller size. The rapid growth keeps the investor in better position as growth in sales is followed by growth in profit. The growth in sales of the company is analyzed both in rupee terms and in physical terms.

c. *Stability of annual sales*: If a firm has stable sales revenue, other things being remaining constant, will have more stable earnings. Wide variation in sales leads to variation in capacity

utilization, financial planning and dividends. This affects the company's position and investor's decision to invest.

(B) Earnings: The earning of the company should also be analyzed along with the sales level. The income of the company is generated through the operating (in service industry like banks- interest on loans and investment) and non-operating income (ant company, rentals from lease, dividends from securities). The investor should analyze the sources of income properly. The investor should be well aware with the fact that the earnings of the company may vary due to following reasons:

a. Change in sales.

b. Change in costs.

c. Depreciation method adopted.

d. Inventory accounting method.

e. Wages, salaries and fringe benefits.

f. Income tax and other taxes.

(C) Capital Structure: Capital structure is combination of owned capital and debt capital which enables to maximize the value of the firm. Under this, we determine the proportion in which the capital should be raised from the different securities. The capital structure decisions are related with the mutual proportion of the long term sources of capital. The owned capital includes share capital

i. *Preference shares*: Preference shares are those shares which have preferential rights regarding the payment of dividend and repayment of capital over the equity shareholders. At present many companies resort to preference shares. The preference shares induct some degree of leverage in finance. The leverage effect of the preference shares is comparatively lesser than that the debt because the preference shares dividend are not tax deductible. If the portion of preference share in the capital is large, it tends to create instability in the earnings of equity shares when the earnings of the company fluctuate.

ii. *Debt*: It is an important source of finance as it has the specific benefit of low cost of capital because interest is tax deductible. The leverage effect of debt is highly advantageous to the equity shareholders. The limits of debt depend upon the firm's earning capacity and its fixed assets.

(D) Management: The basic objective of the company is to attain the stated objectives of the company for the good of the equity holders, the public and employees. If the objectives of the company are achieved, investor will have a profit. Good management results in high profit to investors. Management is responsible for planning, organizing, actuating and controlling the activities of the company. The good management depends upon the qualities of the manager.

(E) Operating Efficiency: The operating efficiency of the company directly affects the earnings capacity of a company. An expanding company that maintains high operating efficiency with a low break even point earns more than the company with high break even point. If a firm has stable operating ratio, the revenues also would be stable. Efficient use of fixed assets with raw materials, labour and management would lead to more income from sales. This leads to internal fund generation for the expansion of the firm.

(F) Financial Performance:

a. *Balance Sheet*: The level, trends, and stability of earnings are powerful forces in the determination of security prices. Balance sheet shows the assets, liabilities and owner's equity in a company. It is the analyst's primary source of information on the financial strength of a company. Accounting principles dictate the basis for assigning values to assets. Liability values are set by contracts. When assets are reduced by liabilities, the book value of share holder's equity can be ascertained. The book value differs from current value in the market place, since market value is dependent upon the earnings power of assets and not their cost of values in the accounts.

b. *Profit and Loss account*: It is also called as income statement. It

expresses the results of financial operations during an accounting year i.e. with the help of this statement we can find out how much profit or loss has taken place from the operation of the business during a period of time. It also helps to ascertain how the changes in the owner's interest in a given period has taken place due to business operations.

Last of all, for analyzing the financial position of any company following factors need to be considered for evaluating present situation and prospects of company. The questions that need to be answered for company analysis are:

- *Availability and Cost of Inputs*: Is the company well placed with respect to the availability of basic raw materials, power, fuel and other production inputs? What are the costs advantages/disadvantages of the company vis-à-vis its competitors?
- *Order Position*: What is the order position of the company? How many months or years of production does it represent? Is the order position improving or deteriorating?
- *Regulatory Framework*: What is the licensing policy applicable to the industry to which the firm belongs? Are there any price and/or distribution controls applicable to the company? If so, what are their implications for profitability?
- *Technological and Production Capabilities*: What is the technological competence of the firm? What is the state of its plant and machinery? Does the company have unutilized capacity to exploit favourable market developments?
- *Marketing and Distribution*: What is the image of the company in the marketplace? How strong is the loyalty of its customers/clients? What is the reach of the distribution network?
- *Finance and Accounting*: What are the internal accruals? How much access the companies have to external financing? What are the products in the portfolio of the company? How competitive is the position of the company in these products?
- *Human Resource and Personnel*: How competent and skilled is the

workplace of the company? Is the company over-staffed or under-staffed? What is the extent of employee turnover and absenteeism? What is the level of employee motivation and morale?

All information relating to these factors may be available from the annual reports and from the published sources also. The first hand information is also available from the official sources of the company.

5.5 COMPANY ANALYSIS : THE STUDY OF FINANCIAL STATEMENT

Financial statement means a statement or document which explains necessary financial information. Financial statements express the financial position of a business at the end of accounting period (Balance Sheet) and result of its operations performed during the year (Profit and Loss Account). In order to determine whether the financial or operational performance of company is satisfactory or not, the financial data are analyzed. Different methods are used for this purpose. The main techniques of financial analysis are:

1. Comparative Financial Statements
2. Trend Analysis
3. Common Size Statement
4. Fund Flow Statement
5. Cash Flow Statement
6. Ratio Analysis

Let us discuss these techniques of financial analysis in the following ways:

1. Comparative Financial Statements : In comparative financial statement, the financial statements of two periods are kept by side so that they can be compared. By preparing comparative statement the nature and quantum of change in different items can be calculated and it also helps in future estimates. By comparing with the data of the previous years it can be ascertained what type of changes in the different items of

current year have taken place and future trends of business can be estimated.

2. **Trend Analysis :** In order to compare the financial statements of various years trend percentages are significant. Trend analysis helps in future forecast of various items on the basis of the data of previous years. Under this method one year is taken as base year and on its basis the ratios in percentage for other years are calculated. From the study of these ratios the changes in that item are examined and trend is estimated. Sometimes sales may be increasing continuously and the inventories may also be rising. This would indicate the loss of market share of a particular company's product. Likewise sales may have an increasing trend but profit may remain the same. Here the investor has to look into the cost and management efficiency of the company.

3. **Common Size Statement :** Common size financial statements are such statements in which items of the financial statements are converted in percentage on the basis of common base. In common size Income Statement, net sales may be considered as 100 percent. Other items are converted as its proportion. Similarly, for the Balance sheet items total assets or total liabilities may be taken as 100 percent and proportion of other items to this total can be calculated in percentage.

4. **Fund Flow Statement :** Income Statement or Profit or Loss Account helps in ascertainment of profit or loss for a fixed period. Balance Sheet shows the financial position of business on a particular date at the close of year. Income statement does not fully explain funds from operations of business because various non-fund items are shown in Profit or Loss Account. Balance Sheet shows only static financial position of business and financial changes occurred during a year can't be known from the financial statement of a particular date.

Thus, Fund Flow Statement is prepared to find out financial changes between two dates. It is a technique of analyzing financial statements. With the help of this statement, the amount of change in the funds of a business between two dates and reasons thereof can be ascertained. The investor could see clearly the amount of funds generated or lost in operations. These reveal the real picture of the financial position of the company.

5. **Cash Flow Statement :** The investor is interested in knowing the cash inflow and outflow of the enterprise. The cash flow statement expresses the reasons of change in cash balances of company between two dates. It provides a summary of stocks of cash and uses of cash in the organization. It shows the cash inflows and outflows. Inflows (sources) of cash result from cash profit earned by the organization, issue of shares and debentures for cash, borrowings, sale of assets or investments, etc. The outflows (uses) of cash results from purchase of assets, investment redemption of debentures or preferences shares, repayment of loans, payment of tax, dividend, interest etc. With the help of cash flow statement the investor can review the cash movement over an operating cycle. The factors responsible for the reduction of cash balances in spite of increase in profits or vice versa can be found out.

6. **Ratio Analysis :** Ratio is a relationship between two figures expressed mathematically. It is quantitative relationship between two items for the purpose of comparison. Ratio analysis is a technique of analyzing financial statements. It helps in estimating financial soundness or weakness. Ratios present the relationships between items presented in profit and loss account and balance sheet. It summaries the data for easy understanding, comparison and interpretation. Normally, ratios are grouped into five categories. These ratios serve the

different purpose for different parties; like the trade creditors are interested in the liquidity ratios as these represent the company's liquidity position, whereas investors are interested to know the company's long term solvency, earnings growth and future profitability and these are represented by the leverage and profitability ratios. The four types of ratios are given below:

a. Liquidity ratios
b. Leverage ratios
c. Turnover ratios
d. Profitability ratios
e. Valuation ratios.

Let us discuss these ratios in the following ways:

a. Liquidity Ratios: Liquidity rations means ability of the company to pay the short term debts in time. These ratios are calculated to analyze the short term financial position and short term financial solvency of firm. Commercial banks and short term creditors are interested in such analysis. The important liquidity ratios are (a) Current Ratio, (b) Quick or acid-test ratio (c) Cash ratio, (d) Net Working Capital ratio.

i. Current ratio: It is calculated by dividing current assets by current liabilities. Current assets include cash, current investments, debtors, inventories (Stocks), loans, advances and pre-paid expenses. Current liabilities represent liabilities that are expected to mature in the next twelve months and comprise of (i) Loans, secured or unsecured and (ii) Current liabilities and provisions.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

ii. Quick ratio*:* In interpreting current ratio, the components of current assets are not taken into consideration. The quick ratio is found out by dividing quick assets by current liabilities.

$$\text{Quick Ratio} = \frac{\text{Current Assets - Inventories}}{\text{Current Liabilities}}$$

iii. Cash Ratio: It gives the amount of cash available in terms of liquidity. The ratio is calculated by dividing cash and marketable securities by current liabilities.

$$\text{Cash Ratio} = \frac{\text{Cash} + \text{Marketable Securities}}{\text{Current Liabilities}}$$

iv. Net Working Capital Ratio: The difference between current assets and current liabilities excluding short term bank borrowing is called net working capital.

$$\text{Net Working Capital Ratio} = \frac{\text{Net Working Capital}}{\text{Total Assets}}$$

b. Leverage ratios: A company has long-term creditors like debenture holders, financial institutions, who are interested to know the company's long-term financial strength. In general, everybody is concerned with long-term debts, because these commit the company to paying interest, and eventually the principal, over the long run. Moreover as creditors' claims must be satisfied before earnings can be distributed to shareholders, present and prospective shareholders pay close attention to the degree of indebtedness and ability to repay debts.

This long-term financial strength can be judged by using leverage ratios.There are mainly two types of leverage ratios: one measures the degree of indebtedness and the other measures the ability to service debts.The degree of indebtedness measures the amount of debt relative to other significant balance sheet amounts. This is commonly measured by the **Debt-Equity ratio** and **Debt ratio**.

The second type of debt measure, the ability to service debts, assesses a company's ability to make the contractual payments required on a scheduled basis over the life of a debt. The company's ability to pay certain fixed charges is measured using coverage ratios. The most common coverage ratio is the **Interest Coverage ratio**.

(i) Debt-Equity Ratio: This ratio can be calculated by dividing total

debt by net worth.

$$\text{Debt - Equity Ratio} = \frac{\text{Total Debt (TD)}}{\text{Net Worth (NW)}}$$

Total debt includes short-term as well as long-term debt. Net worth includes equity capital and reserves and surplus. A simple variant of the debt-equity ratio is calculated by the following formula:

$$\text{Debt - Equity Ratio (D/E)} = \frac{\text{Long Total Debt}}{\text{Equity Capital}}$$

(ii) Debt Ratio: This ratio is calculated by dividing total debt (TD) by capital employed (CE). Total debt includes short and long-term borrowings from financial institutions, debentures/bonds, bank borrowings, public deposits and any other interest-bearing loan. Capital employed includes Net fixed assets (NFA) and net current assets (NCA). Net current assets are current assets (CA) less current liabilities (CL) excluding interest-bearing short-term debt for working capital.

$$\text{Debt Ratio} = \frac{\text{Total Debt (TD)}}{\text{Capital employed (CE)}}$$

The debt-equity and debt ratio show how excellently debt financing has been used in the business. A high ratio for both the case means that claims of creditors are greater than those of owners. A high level of debt introduces inflexibility in the firm's operations due to the interferences from creditors. But a low debt-equity ratio implies a greater claim of owners than creditors. From the point of view of creditors, it represents a satisfactory situation since a high proportion of equity provides a larger margin of safety for them. Together with the level of indebtedness, the company's capacity to bear interest needs to be measured.

(iii) Interest Coverage Ratio: The interest coverage ratio, measures the company's ability to make contractual interest payments. The higher the value of this ratio, the better is the ability of the company to fulfil its interest obligations. It is

calculated by dividing Profit before Interest and Taxes by Interest amount.

$$\text{Interest Coverage Ratio} = \frac{\text{Profit before Interest and Taxes}}{\text{Interest}}$$

c. Turnover Ratio: Activity or turnover ratios measure the speed with which accounts are converted into sales or cash. These ratios are employed to evaluate the efficiency with which a company manages and utilises its assets. These ratios involve a relationship between sales and assets. The common Activity or Turnover ratios are :

(i) Inventory Turnover Ratio: This ratio shows how rapidly the inventory is turning into cash or receivables through sales. It measures the activity, or liquidity, of a firm's inventory. It is calculated by dividing the cost of goods sold by sales. If the cost of goods sold figure is not available to outside analyst then it is computed by taking sales figure instead of cost of goods sold.

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Inventory}}$$

Or

$$\text{Inventory turnover} = \frac{\text{Sales}}{\text{Inventory}}$$

Generally, a high inventory turnover is indicative of good inventory management i.e. products being manufactured are sold at a fast rate. A low inventory turnover implies excessive inventory levels than warranted by production and sales activities. This ratio needs to be compared with the current ratio to judge a company's liquidity position.

(ii) Debtors (Accounts Receivable) Turnover: A company sells goods for cash and credit. When the company extends credits to its customers, debtors (accounts receivables) are created

in the company's accounts. Debtors are convertible into cash over a short period, hence are included in current assets. This ratio has to be compared together with the other liquidity ratios to assess the liquidity position of the company. It is calculated by dividing credit sales by accounts receivables or debtors amount.

$$\text{Debtors turnover} = \frac{\text{Credit sales}}{\text{Debtors}}$$

This turnover ratio indicates the number of times receivables are turnover each year. The higher the value of this ratio, the more efficient is the management of credit.

(iii) Total Asset Turnover Ratio: This ratio indicates the efficiency with which the company uses its assets to generate sales. Generally, the higher a company's total assets turnover, the more efficiently its assets have been used. It is calculated by dividing sales by total assets. This measure is probably of greater interest to management as it indicates whether the company's operations have been financially efficient.

$$\text{Total assets turnover} = \frac{\text{Sales}}{\text{Total assets}}$$

Some analyst exclude intangible assets like goodwill, patents etc, while computing total assets turnover. Similarly, fictitious assets, accumulated losses or deferred expenditures may also be excluded for calculating total asset turnover ratio.

(iv) Fixed Asset Turnover Ratio: Sometimes, analyst wants to measure the efficiency only with respect to fixed assets. This ratio measures sales per rupee of investment in fixed assets. A high ratio indicates a high degree of efficiency in asset utilisation and a low ratio reflects inefficient use of assets. However, while interpreting this ratio, one has to examine the quality of the asset, as old and substantially depreciated fixed assets would tend to show a high turnover ratio.

$$\text{Fixed assets turnover} = \frac{\text{Sales}}{\text{Fixed assets}}$$

d. Profitability Ratios: Profitability ratios measure the capability of a company to survive and grow over a long period of time. As a group, these measures evaluate the company's earnings with respect to a given level of sales, a certain level of assets, the owners' investment, or share value. Management of the company, creditors, owners are all interested in the profitability of the company. Creditors are interested in getting back their interest and repayment of principal in time. Owners want to know the required rate of return on their investment. These can be evaluated by the profitability ratios. Usually two types of profitability ratios are calculated: (a) profitability in relation to sales and (b) profitability in relation to investment. The popular ratios of the first group are the **Gross profit margin**, **Net profit margin** and **Operating ratio**. The common ratios for the second group are **Return on Investment**, **Return on Equity**, **Earnings per share** and **Price-Earnings Ratio**.

(i) Gross Profit Margin: The gross profit margin measures the percentage of each sales remaining after the company has paid for its goods.

$$\text{Gross Profit Margin} = \frac{\text{Gross Profit}}{\text{Sales}}$$

(ii) Net Profit Margin: Net profit is obtained when operating expenses, interest and taxes are subtracted from the gross profit.

$$\text{Net Profit Margin} = \frac{\text{Profit after tax}}{\text{Sales}}$$

(iii) Operating Expense Ratio:The operating expense ratio explains the changes in the profit margin ratio.

$$\text{Operating expense ratio} = \frac{\text{Operating expense}}{\text{Sales}}$$

(iv) Return on Investment:The Return on Investment also called as Return on Asset, measures the company's overall effectiveness in generating profits with its available assets.

$$\text{Return on Investment} = \frac{\text{Profit after tax}}{\text{Total assets}}$$

(v) Return on Equity: The return on equity examines the profitability of owners' investment. This ratio measures the return earned on the owners' investment.

$$\text{Return on Equity} = \frac{\text{Profit after tax}}{\text{Net worth}}$$

Or

$$\text{Return on Equity} = \frac{\text{Profit after tax}}{\text{Equity capital}}$$

e. Valuation Ratio: A valuation ratio is a measure of how cheap or expensive a security (or business) is compared to some measure of profit or value.The following are some of the types of valuation ratio :

(i) Earnings per Share:The earnings per share represent the number of rupees earned on behalf of each outstanding equity share. It is computed by dividing the profit after taxes by the total number of equity shares.

$$\text{EPS} = \frac{\text{Profit after tax}}{\text{Number of share outstanding}}$$

(ii) Price/Earnings (P/E) ratio: The P/E ratio measures the amount investors are wiling to pay for each rupee of the company's earnings.This ratio indicates the degree of confidence that investors have in the company's future performance. The higher the P/E ratio, the greater is the investors' confidence. It is calculated by dividing market price by EPS.

$$\text{P/E} = \frac{\text{Market Price}}{\text{EPS}}$$



CHECK YOUR PROGRESS

Q 1: What do you mean by ratio analysis?

.....

.....

Q 2: Fill in the blanks with appropriate words:

a) Liquidity ratio represents the company's ..... position.

b) Earnings growth and future profitability are represented by the ..... and ..... ratios.

Q 3: What are the different types of ratios?

.....

.....

Q4: discuss these techniques of financial analysis

.....

.....



5.6 LET US SUM UP

- The competitive edge of the company could be measured with the help of company market share, growth and stability of its annual sales.
- The financial statement of the company reveals the needed information to the investor to make investment decision.
- Analysis of the financial statistics must be supplemented with an appraisal, mostly of a qualitative nature, of the company present situation and prospects.
- Ratio analysis is a widely used tool of financial analysis.
- It is defined as the systematic use of ratio to interpret the financial statements so that the strengths and weaknesses of a company, as well as its historical performance and current financial condition, can be determined.
- Ratios make the related information comparable as these are relative

figures reflecting the relationship between related variables.

- Ratios can be compared by using trend analysis, inter- company comparison and comparison with standards or industry average.
- Ratios are broadly categorised into four groups: liquidity ratios, leverage ratios, turnover ratios and profitability ratios.
- Liquidity ratios measure the company's ability to meet current obligations, whereas the leverage ratios measure the proportion of outsiders' capital in financing the company's assets.
- Activity ratios reflect the company's efficiency in utilising its assets in generating sales, whereas the profitability ratios measure the overall performance of the company by determining the effectiveness of the company in generating profit.



5.7 FURTHER READING

- Donald E. Fischer and Ronald J. Jordan(2016); *Security Analysis and Portfolio Management* , Prentice-Hall, Inc.
- Personna Chandra(2016); *Security Analysis and Portfolio Management*, Tata McGraw-Hill.
- Punithavathy Pandian(2013); *Security Analysis and Portfolio Management,* Vikas Publication.



5.8 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No 1: In financial analysis, a ratio is used as a benchmark for evaluating the financial position and performance of a firm. Ratios help to summarize large quantities of financial data and to make qualitative judgment about the firm's financial performance.

Ans to Q No 2: (I) Liquidity, (ii) leverage and profitability ratios.

Ans to Q No 3: Liquidity ratios, Leverage ratios, Turnover ratios, Profitability ratios

Ans to Q No 4: The main techniques of financial analysis are:

1. Comparative Financial Statements
2. Trend Analysis
3. Common Size Statement
4. Fund Flow Statement
5. Cash Flow Statement
6. Ratio Analysis



5.9 MODEL QUESTIONS

1. What is meant by company analysis.
2. What do you mean by ratio analysis? Explain with example.
3. What are different types of ratios? Explain them briefly.
4. What are the methods adopted to analyse the financial statements of a company?
5. Why is it important to understand competitive position of the product of the company in purchasing the shares of the company?
6. How is the competitive position of a company within an industry determined?
7. How does ratio analysis reflect the financial health of a company?

*** ***** ***

UNIT 6: TECHNICAL ANALYSIS

UNIT STRUCTURE

6.1 Learning Objectives

6.2 Introduction

6.3 Meaning of Technical Analysis

6.4 Tools of Technical Analysis

- 6.4.1 Dow Theory
- 6.4.2 Support and Resistance Level
- 6.4.3 Volume of Trade
- 6.4.4 Breadth of the market
- 6.4.5 Short Selling
- 6.4.6 Odd Lot Trading
- 6.4.7 Moving Average
- 6.4.8 Relative Strength Analysis
- 6.4.9 Charts

6.5 Technical Analysis and Fundamental Analysis

6.6 Evaluation of Technical Analysis

6.7 Let Us Sum Up

6.8 Further Reading

6.9 Answers to check your progress

6.10 Model Questions

6.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- define technical analysis to predict price behaviour of securities
- describe the techniques of technical analysis
- evaluate technical analysis.

6.2 INTRODUCTION

The technical approach is the oldest approach to equity investment dating back to the late 19th century. It continues to flourish in modern times as well. In the previous unit we discussed about the Fundamental Analysis,

i this unit we will discuss the aspects of Technical Analysis.Technical analysis is a methodology that makes buy and sell decisions using market statistics. It primarily involves studying charts showing the trading history and statistics for whatever security is being analyzed.

At the end of this unit we will get a fair idea about the various tools like Dow Theory, Volume of Trade,Support and Resistance Level, Breadth of the market, Short Selling, Odd Lot Trading, Moving Average, Relative Strength Analysis and Charts.Also we will discuss the evaluation of Technical Analysis.

6.3 MEANING OF TECHNICAL ANALYSIS

Technical analysis involves a study of market-generated data like prices and volumes to determine the future direction of price movement of securities.Technical analysis is a trading discipline employed to evaluate investments and identify trading opportunities by analyzing statistical trends gathered from trading activity, such as price movement and volume. Unlike fundamental analysts, who attempt to evaluate a security's intrinsic value, technical analysts focus on patterns of price movements, trading signals and various other analytical charting tools to evaluate a security's strength or weakness.

To perform technical analysis, investors start with charts that show the price and trading volume history of a particular security or index as well as host of other statistical measures such as moving averages, maximums and minimums, and percentage changes.The idea is to use the charts to identify trends and changes in those trends.

Thus, Technical analysis is applicable to stocks, indices, commodities, futures or any tradable instrument where the price is influenced by the forces of supply and demand. It is the forecasting of future financial price movements based on an examination of past price movements. Like weather forecasting, technical analysis does not result in absolute predictions about the future. Instead, technical analysis can help investors anticipate what is “likely” to happen to prices over time. Technical analysis uses a wide variety of charts that show price over time.

Technical analysis involves a study of market-generated data like prices

and volumes to determine the future direction of price movement. It is a process of identifying trend reversal at an earlier stage to formulate the buying and selling strategy. With the help of several indicators, the relationship between price – volume and supply-demand is analyzed for the overall market and individual stocks.

Assumptions

The basic premises, on which technical analysis is formulated, are as follows:

1. The market value of the scrip is determined by the interaction of demand and supply.
2. Supply and demand is governed by numerous factors, both rational and irrational. These factors include economic variables relied by the fundamental analysis as well as opinions, moods and guesses.
3. The market discounts everything. The price of the security quoted represents the hope, fears and inside information received by the market players. Insider information regarding the issuance of bonus shares and right issues may support the prices. The loss of earnings and information regarding the forthcoming labor problem may result in fall in price. These factors may cause a shift in demand and supply, changing the direction of trends.
4. The market always moves in the trends except for minor deviations.
5. It is known fact that history repeats itself. It is true to stock market also. In the rising market, investors' psychology has upbeats and they purchase the shares in great volumes driving the prices higher. At the same time in the down trend, they may be very eager to get out of the market by selling them and thus plunging the share price further. The market technicians assume that past prices predict the future.

   As the market always moves in trends, analysis of past market data can be used to predict future price behavior.

As an approach to investment analysis, technical analysis is radically different from fundamental analysis. The basic differences are –

1. While the fundamental analysis believes that the market is 90 percent logical and 10percent psychological, the technical analysis assumes

that the market is 90 percent psychological and 10 percent logical.

2. Like fundamental analysis, technical analysis does not evaluate the large number of fundamental factors relating to the company, the industry and the economy but in it, the internal market data is analyzed with the help of charts and graphs.
3. Technical analysis mainly seeks to predict short-term price movement appealing the short-term traders where fundamental analysis tries to establish long-term values. Hence, it appeals to long tern investors.
4. The technical analysis is based on the premise that the history repeats itself. Therefore, the technical analysis answers the question "What had happened in the market" while on the basis of potentialities of market fundamental analysis answers the question, "What will happen in the market".

6.4 TOOLS OF TECHNICAL ANALYSIS

Generally used technical tools to analyze the market data are as follows:

6.4.1 Dow Theory

Originally proposed in the late nineteenth century by Charles H Dow, the editor of Wall Street Journal, the Dow theory is perhaps the oldest and best-known theory of technical analysis. Dow developed this theory on the basis of certain hypothesis, which are as follows:

a) No single individual or buyer or buyer can influence the major trends in the market. However, an individual investor can affect the daily price movement by buying or selling huge quantum of particular scrip.

b) The market discounts everything. Even natural calamities such as earth quake, plague and fire also get quickly discounted in the market. The world trade center blast affected the share market for a short while and then the market returned back to normalcy.

c) The theory is not infallible and it is not a tool to beat the market but provides a way to understand the market.

Explanation of the Theory

Dow described stock prices as moving in trends analogous to the movement of water. He postulated three types of price movements over time: (1) major trends that are like tide in ocean, (2) intermediate trends that resemble waves, and (3) short run movements that are like ripples. Followers of the Dow theory hope to detect the direction of the major price trend (tide) known as primary trend, recognizing the intermediate movements (waves) or secondary trends that may occasionally move in the opposite direction. They recognize that a primary trend does not go straight up, but rather includes small price declines as some investors decide to take profits. It means share prices don't rise or fall in a straight t manner. Every rise or fall in price experiences a counter move. If a share price is increasing, the counter move will be a fall in price and vice-versa. The share prices move in a zigzag manner. The trend lines are straight lines drawn connecting either the top or bottoms of the share price movement. To draw a trend line, the analyst should have at least two tops or bottoms. The following figure shows the trend line.

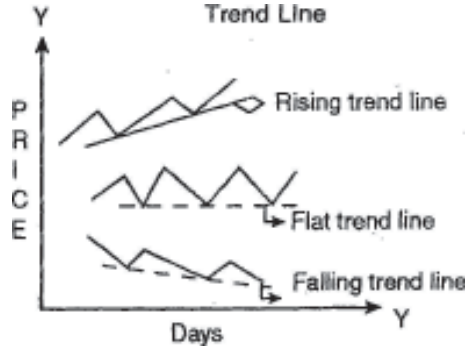


Fig 6.1

Primary Trend

The price trend may be either increasing or decreasing. When the market exhibits the increasing trend, it is called bull market. The bull market shows three clear-cut peaks. Each peak is higher than

the previous peak and this price rise is accompanied by heavy trading volume. Here, each profit taking reversal that is followed by an increased new peak has a trough above the prior trough, with relatively light trading volume during the reversals, indicating that there is limited interest in profit taking at these levels. And the phases leading to the three peaks are revival, improvement in corporate profit and speculation. The revival period encourages more and more investors to buy scrips, their expectations about the future being high. In the second phase, increased profits of corporate would result in further price rise. In the third phase, prices advance due to inflation and speculation. The figure 6.2 shows the three phases of bull market.

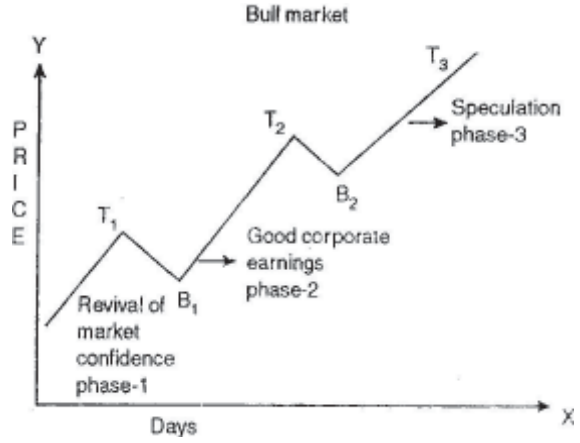


Fig 6.2

The reverse trend is true with the bear market. Here, first phase starts with the abandonment of hopes. The chances of prices moving back to the previous high level seemed to be low. This would result in the sale of shares. In the second phase, companies are reporting lower profits and dividends. This would lead to selling pressure. The final phase is characterized by the distress selling of shares. During the bear phase of 1996, in the Bombay Stock Exchange more than 2/3 of the stocks were inactive. Most of the scrips were sold below their par values. The figure 3 shows the phases of bear market where the tops and troughs are lower than previous ones.

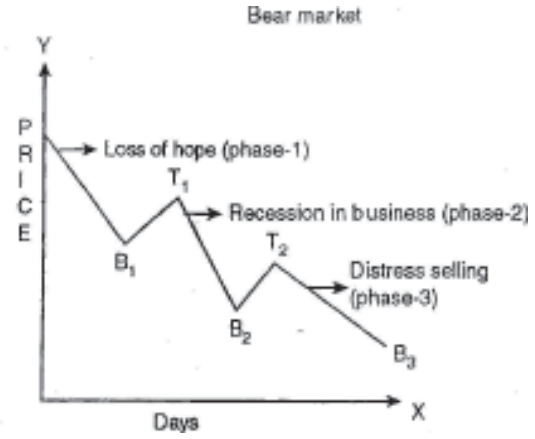


Fig 6.3

Secondary Trend

The secondary trend moves against the main trends and leads to the correction. In the bull market, the secondary trend would result in the fall of about 33-66 percent of the earlier rise. In the bear market, the secondary trend carries the price upward and corrects the main trend. Compared to the time taken for the primary trend, secondary trend is swift and quicker. The figure 6.4 shows the secondary trend.

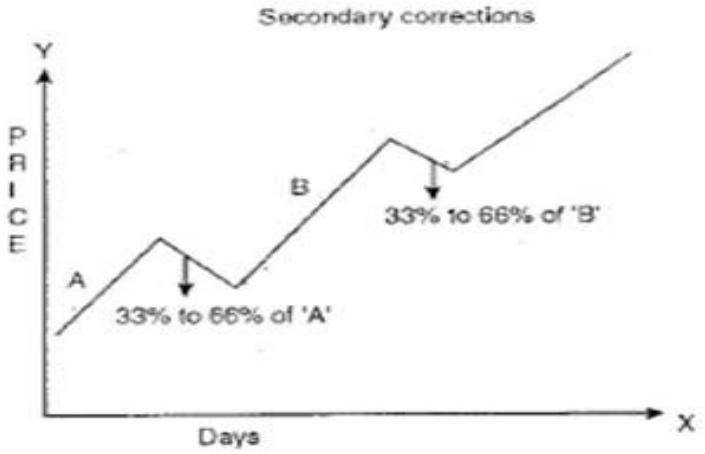


Fig 6.4

Minor Trends

Minor trends are just like the ripples in the market. They are simply the daily price fluctuations. Minor trend tries to correct the secondary price movement. It is better for the investor to concentrate on the primary or secondary trends than on the minor trends.

6.4.2 Support and Resistance Level

A support level is the price range at which technician would expect a substantial increase in the demand for a stock. Generally, a support level will develop after a stock has enjoyed a meaningful price increase and the stock has begun to experience profit taking. When the price reaches this support price, demand surges and price and volume begin to increase again. A resistance level is the price range at which the technician would expect an increase in the supply of stock and any price increase to reverse abruptly. A resistance level tends to develop after a stock has experienced a steady decline from a higher price level. It is reasoned that the decline in the price leads some investors who acquired the stock at a higher price to look for an opportunity to sell it near their break even points. Therefore, the supply of stocks owned by these investors is overhanging the market. When the price rebounds to the target price set by these investors, this overhanging supply of stock comes to the market and dramatically reverses the price increase on heavy volume.

This can be explained with an example. Suppose a scrip price hovers around Rs 100 for some weeks, and then it may rise and reach Rs 210. At this point, the price starts to fall. The scrip keeps on falling back to around its original price Rs 100 and then again starts to rise. In this case, Rs 100 is the support level. At this point, the scrip is cheap and investors buy it and demand makes the price move upward. Whereas Rs 210 becomes the resistance level, the price is high and there would be selling pressure resulting in the decline of the price. The support and resistance level is shown in the figure 6.5.

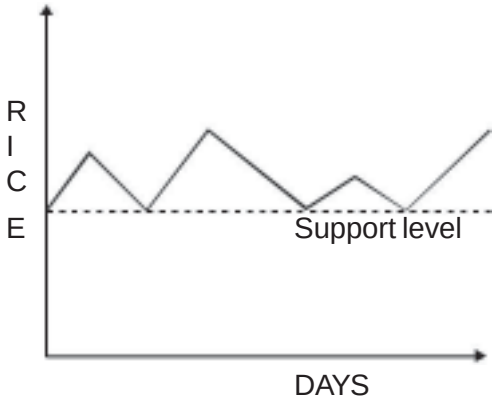


Figure 6.5

6.4.3 Volume of Trade

Dow gave special emphasis to volume. Technical analysts use volume as an excellent method of confirming the trend. Therefore, the analyst looks for a price increase on heavy volume relative to the stock's normal trading volume as an indication of bullish activity. Conversely, a price decline with heavy volume is bearish. A generally bullish pattern would be when price increase are accompanied by heavy volume and the small price increase reversals occur with the light trading volume, indicating limited interest in selling and taking profits and vice-versa.

6.4.4 Breadth of the market

The breadth of the market is the term often used to study the advances and declines that have occurred in the stock market. Advances mean the number of shares whose prices have increased from the previous day's trading. Decline indicates the number of shares whose prices have fallen from the previous day's trading. This is easy to plot and watch indicator because data are available in all business dailies. The net difference between the number of stocks advanced and declined during the same period is the breadth of market. A cumulative index of net differences measures the net breadth. An illustrative calculation of the breadth of the market is shown in Table below:

Table 6.1: Breadth of the Market

Day	Advances	Declines	Net Advances or declines	Breadth of the market
Tuesday	630	527	103	103
Wednesday	690	475	215	318
Thursday	746	424	322	640
Friday	492	630	-138	502
Monday	366	701	-335	167
Tuesday	404	698	-294	-127

To analyze the breadth of the market, it is compared with one or two market indices. Ordinarily, the breadth of the market is expected to move in tandem with market indices. However, if there is a divergence between the two, the technical analysts believe that it signals something. It means, if the market index is moving upwards whereas the breadth of the market is moving downwards, it indicates that the market is likely to turn bearish. Likewise, if the market index is moving downwards but the breadth of the market is moving upwards, then it signals that the market may turn bullish.

6.4.5 Short Selling

Short selling refers to the selling of shares that you don't have. The short sellers are those who sell now in the hope of purchasing at a lower price in the future to make a profit. A short seller behaves in this way because he feels that the price of the stock will fall. And it is must for short sellers to cover their positions, i.e. the purchase of shares. This buying activity increases the potential demand for the stock. Therefore, rising short sales foretell future demand for the security and increase the future prices.

Monthly short selling for the month can be compared with average daily volume for the preceding month. This ratio shows, how many days of trading it would take to use up total short sales. If the ratio is less than one, market is said to be weak or overbought

and a decline can be expected. The value between 1 and 1.5 shows neutral conditions of the market. Values above 1.5 indicate bullish trend and if it is above 2 the market is said to be oversold. At market tops, short selling is high and at market bottoms short selling is low.

6.4.6 Odd Lot Trading

Small investors quite often buy an odd lot (i.e. non tradable lot) and such buyers and sellers are known as odd lotters. If we relate odd lot purchases to odd lot sales, we get an odd lot index. The increase in odd lot purchase results in an increase in the index. Relatively more selling leads to fall in the index. It is generally considered that the professional investor is more informed and stronger than the odd lotters and they are less sensible to price change than retail investor. When the professional investors dominate the market, the stock market is technically strong. If the odd lotters dominate the market, the market is considered to be technically weak. The notion behind is that odd lot purchase is concentrated at the top of the market cycle and selling at the bottom. High odd lot purchase forecasts fall in the market price and low purchases/sales ratios are presumed to occur toward the end of bear market or at the beginning of bull market.

6.4.7 Moving Average

The market indices don't rise or fall in straight line. The upward and downward movements are interrupted by counter moves. The underlying trends can be studied by smoothening the data. To smooth the data, moving average is used. The word moving means the body of data moves ahead to include the recent observation. If it is the five-day moving average, on the six day the body of data moves to include the sixth day observation eliminating the first day observation. A five-day moving average of daily closing prices is calculated as follows:

Trading Day	Closing price	Sum of five most recent closing prices	Moving Average for 5 days
1	25		
2	26		
3	25.5		
4	24.5		
5	26	127	25.4
6	26	128	25.6
7	26.5	128.5	25.7
8	26.5	129.5	29.9
9	26	131	26
10	27	132	26.4

The moving averages are used to study the movement of the market as well as the individual security prices. These moving averages are used along with the price of a stock. The stock prices may intersect the moving average at a particular point and give the buy and sell signal.

The Moving Average Analysis recommends buying a stock when

a) Stock prices line rises through the moving average line when graph of the moving average line is flattening out.

b) Stock price line falls below the moving average line, which is rising.

c) Stock price line, which is above the moving average line, falls but begins to rise again before reaching the moving average line.

Moving Average Analysis recommends selling a stock when

a) Stock price lines falls through the moving average line when graph of the moving average line is flattening out.

b) Stock prices line rise above the moving average line, which is falling.

c) Stock price line, which is below the moving average line, rises but begins to fall again before reaching the moving average line.

The buy and sell signals initiated by a moving average trading system vary with the length of time over which the moving average is calculated.

Index and Stock Price Moving Average

Individual stock price is compared with the stock market indices. The moving average of the stock and the index are plotted in the same sheet and trends are compared. If NSE or BSE index is above stock's roving average line the particular stock has bullish trend. The price may increase above the market average. If the Sensex or Nifty is below the stock's moving average, the bearish market can be expected for the particular stock.

If the moving average of the stock penetrates the stock market index from above, it generates sell signal. Unfavorable market condition prevails for the particular scrip. If the stock line pushes up through the market average, it is a buy signal.

Stock Price And Stock Prices' Moving Average

Buy and sell signals are provided by the moving averages. Moving averages are used along with the price of the scrip. The stock price ma intersects the moving average at a particular point. Downward penetration of the rising average indicates the possibility of a further fall. Hence sell signal is generated in the figure Upward penetration of a falling average would indicate the possibility of the further rise and gives the buy signal. As the average indicates the underlying trend, its violation may signal trend reversal that is shown in Figure 6.6.



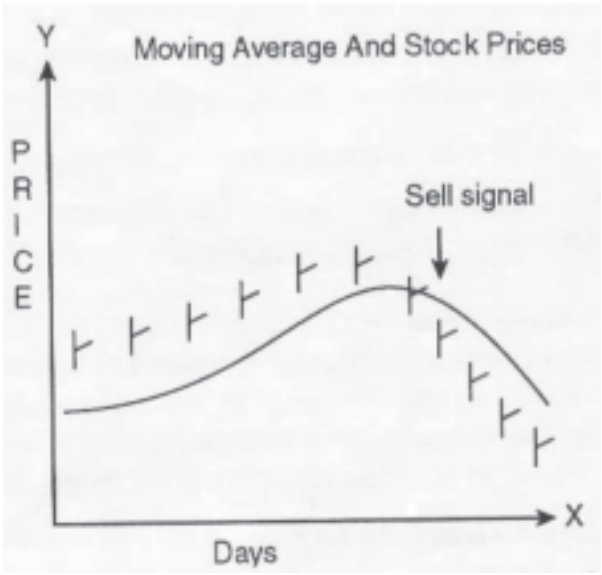


Fig: 6.6

Comparison of the Two Moving Averages

When long term and short term moving averages are drawn, the intersection of two moving averages generates buy or sell signal. When the scrip price is falling and if the short term average intersects the long term moving average from above and falls below it, the sell signal is generated.

If the scrip price is rising, the short term average would be above the long term average. The short term average intersects the long term average from below indicating a further rise in price, gives a buy signal. The sell and buy signals are given in figures 6.7.

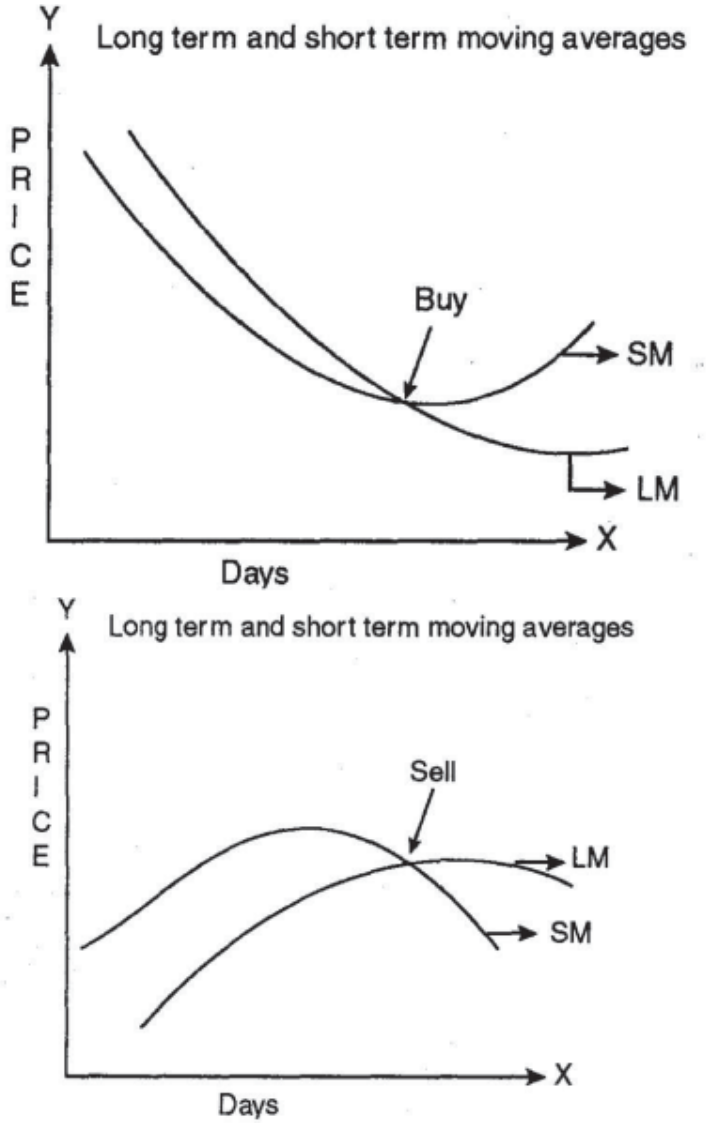


Fig: 6.7

But, if the short term average move above the long term average and the long term average is falling, investor should treat intersection with suspicion. The short term movement may not hold long.

Hence, the investor should wait for the long term average to turn up before buying the scrip. Similarly, if the short term average moves below the long term average before the long term average has flattened out or before it reverses its direction, the investor should wait for the fall in the long term average for reversal of direction before moving out of the scrip.

Oscillators

Oscillators indicate the market momentum or scrip momentum. Oscillator shows the share price movement across a reference point from one extreme to another. The momentum indicates:

a. Overbought and oversold conditions of the scrip or the market.

b. Signaling the possible trend reversal.

c. Rise or decline in the momentum.

Generally, oscillators are analyzed along with the price chart. Oscillators indicate trend reversals that have to be confirmed with the price movement of the scrip. Changes in the price should be correlated to changes in the momentum, and then only buy and sell signals can be generated. Actions have to be taken only when the price and momentum agree with each other. With the daily, weekly or monthly closing prices oscillators are built. For short term trading, daily price oscillators are useful.

Relative Strength Index (RSI)

Relative strength index (RSI) RSI was developed by Wells Wilder. It is an oscillator used to identify the inherent technical strength and weakness of a particular scrip or market. RSI can be calculated for scrip by adopting the following formula.

$$\text{RSI}=100-\frac{100}{\text{I}+RS}$$

The RSI can be calculated for any number of days depending on the wish of the technical analyst and the tune frame of trading adopted in a particular stock market. RSI is calculated for 5, 7, 9 and 14 days. If the time I period taken for calculation is more, the possibility of getting wrong signals is reduced. Reactionary or L1 rise or fall in the price of the scrip is foretold by the RSI.

The broad rule is, if the RSI crosses seventy there may be downturn and it is time to sell. If the RSI falls below thirty it is time to

pick up the scrip. The figure show the buy and sell signals of a RSI chart.

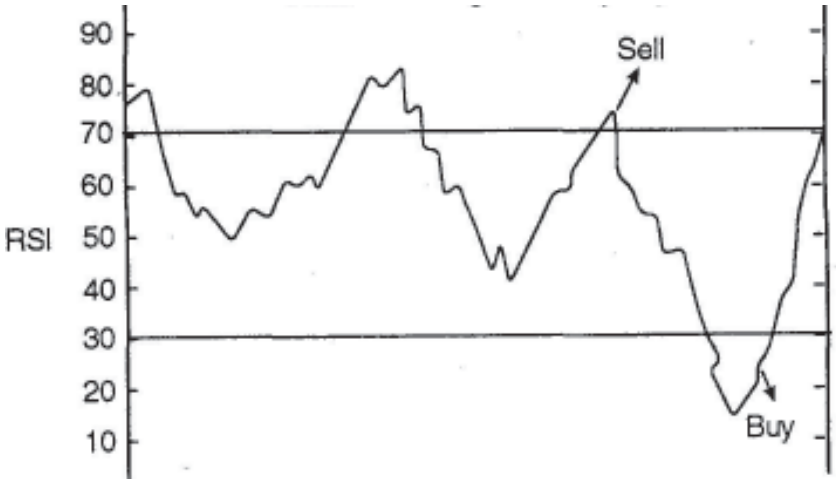


Fig 6.8

If the share price is falling and RSI is rising, a divergence is said to have occurred. Divergence indicates the turning point of the market. If the RSI is rising in the overbought zone, it would indicate the downfall of the price. If RSI falls in the overbought zone, it gives a clear signal of 'sell'. The term 'overbought' describes the price level at which momentum can no longer be maintained and the price has to go down. This condition occurs after a sharp rise in price during a period of heavy buying. When the RSI is in the oversold region, it generates the buy signal. The term oversold is used to describe a security or market that has declined to an unreasonably low level. This condition is characterized by an increase in sales and excess of net declines.

Rate of Change (ROC)

Rate of change indicator or the ROC measures the rate of change between the current price and the price 'n' number of days in the past. ROC helps to find out the overbought and oversold positions in a scrip. It is also useful in identifying the trend reversal. Closing prices are used to calculate the ROC. Daily closing prices are used for the daily ROC and weekly closing prices for weekly ROC. Calculation of ROC for 12 week or 12 month is most popular.

Procedure

Procedure ROC can be calculated by t methods. In the first method, current closing price is expressed as a percentage of the twelve days or weeks in past. Suppose the price of AB company's share is 12 and price twelve days ago was 10 then the ROC is obtained by using the equation: 12/10 x 100 120%. In the second method, the percentage variation between the current price and the price twelve days in the past is calculated. It is nothing but 12/10 x 100—100 = 20%. By this method both positive and negative values can be arrived.

Roc Graph

ROC graph ROC can be plotted in a graph, x-axis representing days or months and y-axis the values ofROC. If the first method is adopted, ROC oscillates across the hundred lines. If the second method is used, theROC oscillates around the zero line.

Calculation of 7 Day ROC for ACC

Date	Price	ROC – I Method (in per cent)	ROC – II Method (in per cent)
Aug 1999 20	235.20	-	-
21	232.8	-	-
24	236.65	-	-
25	234.20	-	-
26	231.70	-	-
27	244.75	-	-
28	257.95	-	-
31	254.90	108.38	8.38
Sep-1	249.85	107.30	7.30
2	244.60	103.36	3.36
3	234.05	99.94	-.06
4	234.25	101.10	1.10
7	235.80	96.34	-3.66
8	232.70	90.21	-9.79

$$ROC = \frac{\text{Today's Price}}{\text{Price 'n' days back} \times 100}$$

$$ROC = \frac{\text{Today's Price}}{\text{Price 'n' days back} \times 100 - 100}$$

The main advantage of ROC is the identification of overbought and oversold region. The historic high and low values of the ROC should be identified at first to locate the overbought and oversold region. If the scrip's values, the scrip is in the overbought region n4:fall in the value can be anticipated. Likewise, if the scrip's ROC reaches the historic low value, the scrip is m the oversold region, a rise in the scrip's price can be anticipated. Investor can sell the scrip in the overbought region and buy it in the orsold region. The figure 6.9 shows the overbought and the oversold region.

ROC-Overbought and Oversold Zones

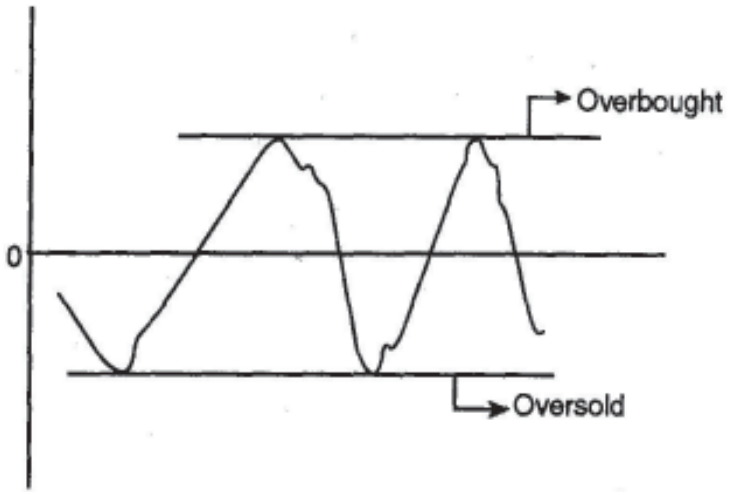


Fig: 6.9

6.4.8 Relative Strength Analysis

Relative Strength analysis is based on the assumption that prices of some securities rise rapidly during the bull phase but fall slowly during the bear phase in relation to the market as a whole..Relative Strength analysis is a oscillator used to identify the

inherent technical strength and weakness of a particular stock or market. It is based on the assumption that prices of some securities rise rapidly during the bull phase but fall slowly during the bear phase in relation to the market as a whole. Put differently, such securities possess greater relative strength and hence outperform the market.Investing in securities that have shown relative strength in past, an investor can earn higher returns because the relative strength of a security continues for some time.

Technical analysts measure relative strength in different ways. One way to measure Relative Strength is to calculate rates of return and classify those securities with historically high average return as securities with high relative strength. Another way, which is most frequently used, is to observe certain ratios to detect relative strength in a security or an industry. For example, consider the data for ABC corporation. A hypothetical growth firm in the electronic industry shown in the table below.

Relative Strength Data for ABC Corp.

Year	Price of A*	Price of IA**	Price of MA***	P_A/P_{IA}	P_A/P_{MA}	P_{IA}/P_{MA}
2011	30	17	210	1.78	.144	.081
2012	36	18	250	2	.144	.072
2013	72	20	285	3.6	.253	.070

***=Average price of ABC Corp., **= Industry Average Price, ***= Market Average Price**

From 2011 to 2012, ABC did slightly well than most of the firms in the industry as its price grew relatively more than the industry average (from 1.78 to 2). Moreover, from 2011to 2012, the electronic industry showed weakness relative to all industrial stock as the ratio declined from .081 to .072. From 2011 to 2012, ABC showed no increased strength relative to its market average as the ratio is constant at .144. But from 2012 to 2013, ABC showed considerable strength relative both to its industry and the market. Therefore, the

technical analyst would select certain industries and firms, which demonstrated relative strength to be the most promising investment opportunities.



CHECK YOUR PROGRESS

Q1: Define Technical analysis

.....

.....

Q2: Write the assumptions on which technical analysis is formulated

.....

.....

Q3: Define breadth of the market

.....

.....

Q4: Define Short selling

.....

.....

6.4.9 Charts

Charts are the valuable and easiest tools in the technical analysis. The graphic presentation of the data helps the investor to find out the trend of the price without any difficulty. A large number of charts are used to analyze the trend of the market.

The charts also have the following uses

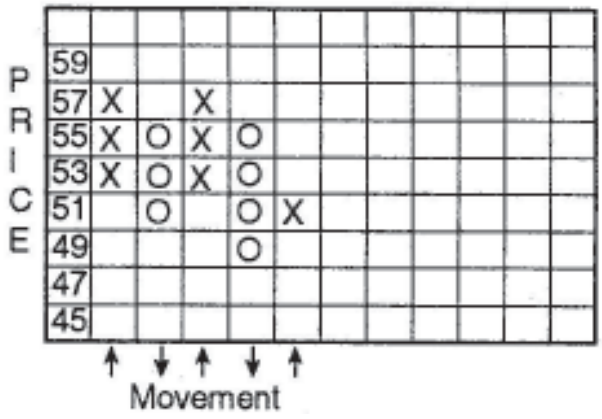
- Spots the current trend for buying and selling.
- Indicates the probable future action of the market by projection
- Shows the past historic movement
- Indicates the important areas of support and resistance.

The charts do not lie but interpretation differs from analyst to analyst according to their skills and experience. A leading technician, James Dines said, “Charts are like fire or electricity they are brilliant tools if intelligently controlled and handled but dangerous to a novice”.

Point and Figure Charts

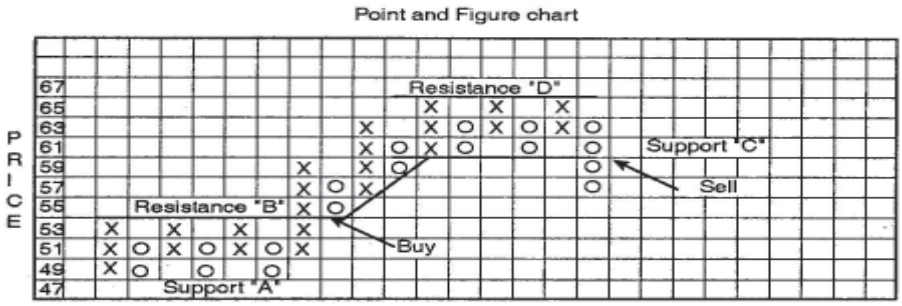
Technical analyst to predict the extent and direction of the price movement of a particular stock or the stock market indices uses point and figure charts. This PF charts are of one-dimensional and there is no indication of time or volume. The price changes in relation to previous prices are shown. The change of price direction can be interpreted. The charts are drawn in the ruled paper. The following figure shows the P and F chart.

Point and Figure chart



The prices are given in the left of the figure as shown. The numbers represent the price of the stock at 2 point interval. The interval of price changes can be 1,2,3,5 or 10 points.

It depends on the analyst's preference further; it depends upon the stock price movement. Higher points are chosen for high priced stocks and vice versa. Only whole number prices are entered. In figure, the initial price 53 was entered in column 1 a X. The next mark X will be made only if the stock moves up to 55. As long as the price moves up, the Xs a drawn in the vertical column. Here the stock price has moved to 57. When the stock price declines by two points or more the chartist records the change by placing the 'o' in the next column. Then the movements are interpreted. The trend reversals can be spotted easily. The figure shows the trend reversals in the point and figure chart.



As long as the price moves between points A and B, there is little indication of price rise. As the price raj.is 1an 4 evel, it generates a buy signal. The market may turn out to be bullish. Likewise, when the price pierces the down the support level C indicates that the stock should be sold and the market may turn out to be bearish.

In spite of the simplicity in thawing the PF charts, they have some inherent disadvantages also.

1. They do not show the intra- day price movement.
2. Whole numbers are only taken into consideration. This may result in the loss of information regarding U minor fluctuations.
3. Volum is not mentioned in the chart. Volume and trend of transactions are an important guide to make investment decision. In a bull market, price rise is accompanied by high volume of trading. The bear market is related to low volume of trading.

Bar Charts

The bar chart is the simplest and most commonly used tool of a technical analyst. To build a bar a dot is entered to represent the highest price at which the stock is traded on that day, week or month. Then another dot is entered to indicate the lowest price on that particular date.

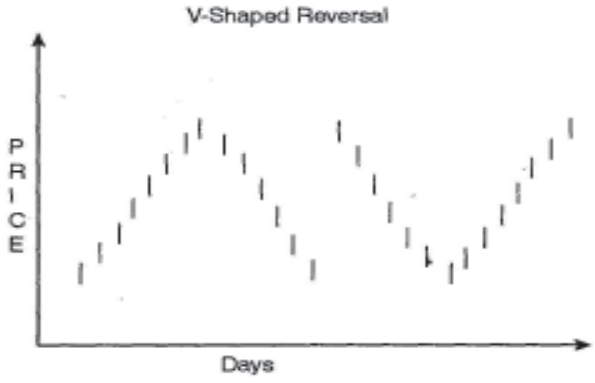
A line is drawn to connect both the points a horizontal nub is drawn to mark the closing price. Line charts are used to indicate the price movements. The line chart is a simplification of the bar chart. Here a line is drawn to connect the successive closing prices.

Chart Patterns

Charts reveal certain patterns that are of predictive value.

Chart patterns are used as a supplement to other information and confirmation of signals provided by trend lines. Some of the most widely used and easily recognizable chart patterns are discussed here.

V Formation The name itself indicates that in the 'V' formation there is a long sharp decline and a fast reversal. The 'V' pattern occurs mostly in popular stocks where the market interest changes quickly from hope to fear and vice-versa. In the case of inverted 'A' the rise occurs first and declines. There are extended 'V's.
In it, the bottom or top moves more slowly over a broader area.





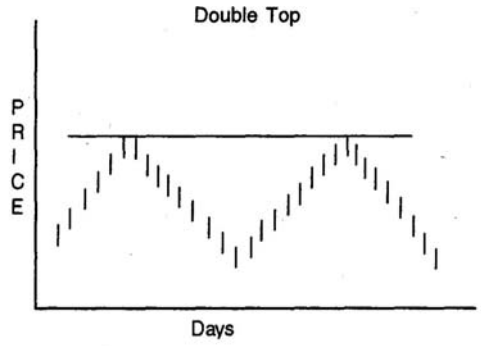
Tops and Bottoms

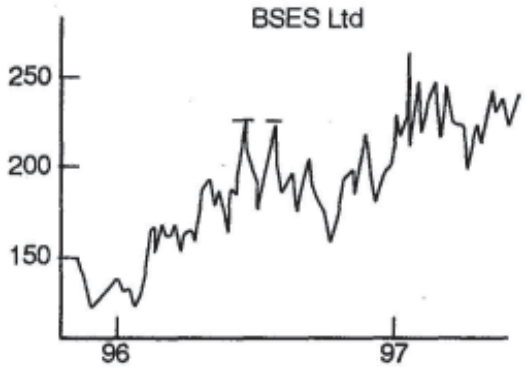
Top and bottom formation is interesting to watch but what is more important, is the middle portion of it. The investor has to buy after up trend has started and exit before the top is reached. Generally tops and bottoms are formed at the beginning or end of the new trends. The reversal from the tops and bottoms indicate sell and buy signals.

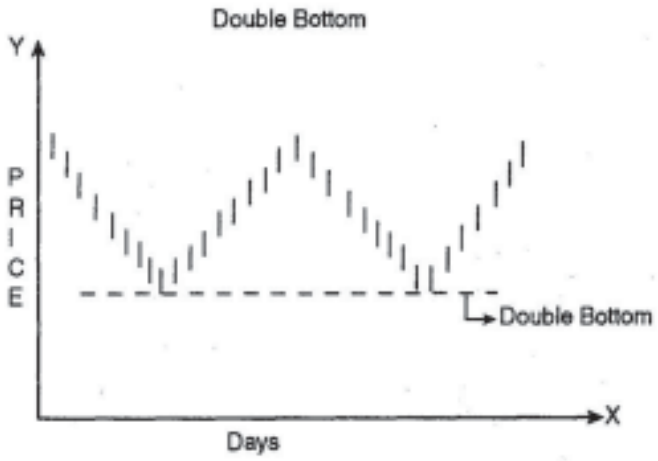
Double Top and Bottom

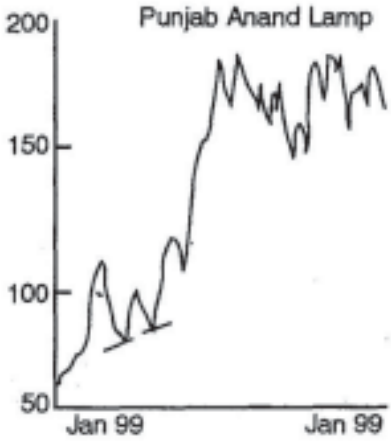
This type of formation signals the end of one trend and the beginning of another. If the double top is formed when a stock price rises to a certain level, falls rapidly, again rises to the same height or more, and turns down. Its pattern resembles the letter 'M'. The double top may indicate the onset of the bear market. But the results should be confirmed with volume and trend.

In a double bottom, the price of the stock falls to a certain level and increase with diminishing activity. Then it falls again to the same or to a lower price and turns up to a higher level. The double bottom resembles the letter 'W'. Technical analysts view double bottom as a sign for bull market. The double top and bottom figures are given below with illustrations.









Head and Shoulders

This pattern is easy to identify and the signal generated by this pattern is considered to be reliable. In the head and shoulder pattern there are three rallies resembling the left shoulder, a head and a right shoulder A neckline is drawn connecting the lows of the tops. When the stock price cuts the neckline from above, it signals the bear market.

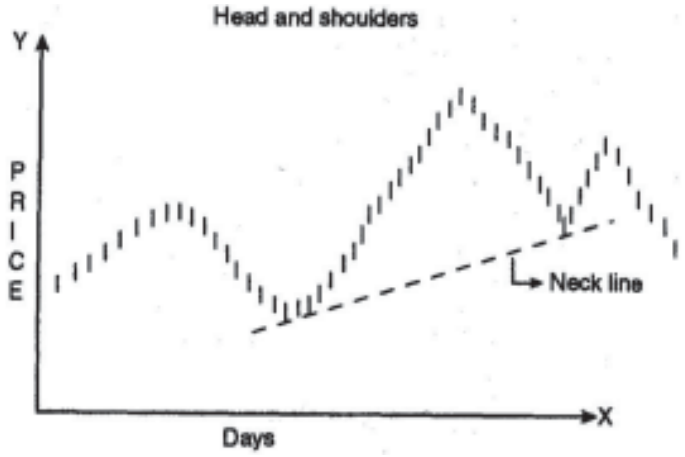
The upward movement of the price for some duration creates the left shoulder At the top of the left shoulder people who bought during the uptrend begin to sell resulting in a dip.

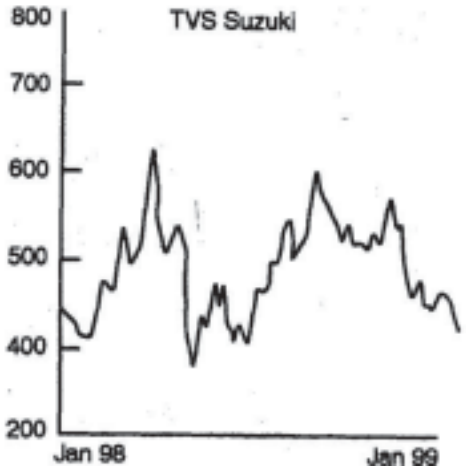
Near the bottom there would be reaction and people who have not bought in the first up trend start buying at relatively low

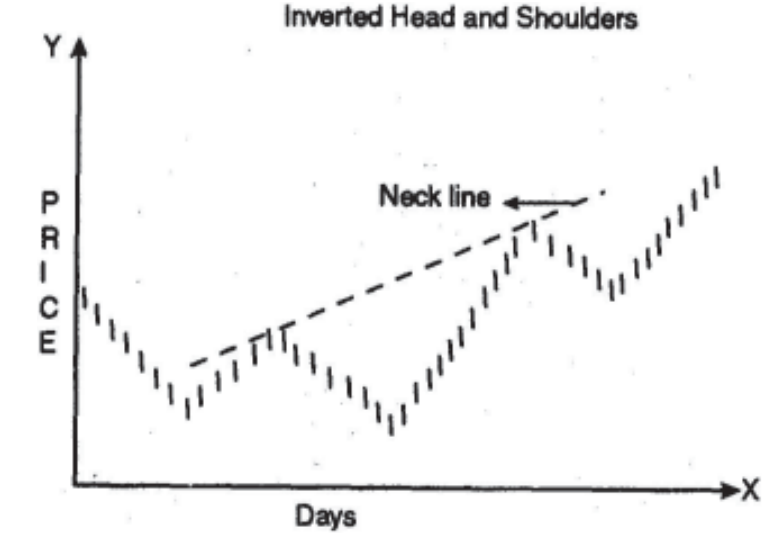
prices thus pushing the price upward. The alternating forces of demand and supply create new ups and lows. The following figures explain the head and shoulders pattern.

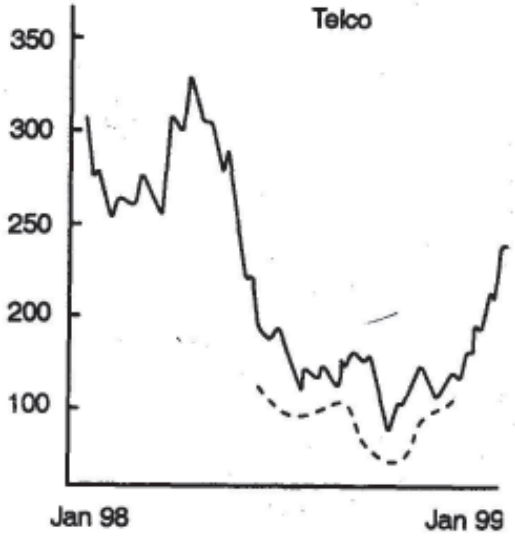
Inverted Head and Shoulders

Here the reverse of the previous pattern holds true. The price of stock's falls and rises that makes a inverted right shoulder. As the process of fall and rise in price continues the head and left shoulders are created. Connecting the tops of the inverted head and shoulders gives the neckline. When the price pierces the neckline from below it indicates the end of bear market and the beginning of the bull market. These patterns have to be confirmed with the volume and trend of the market.









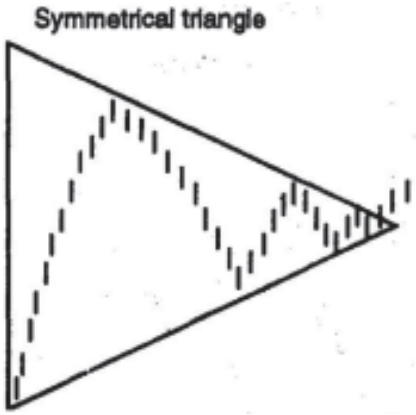
Triangles

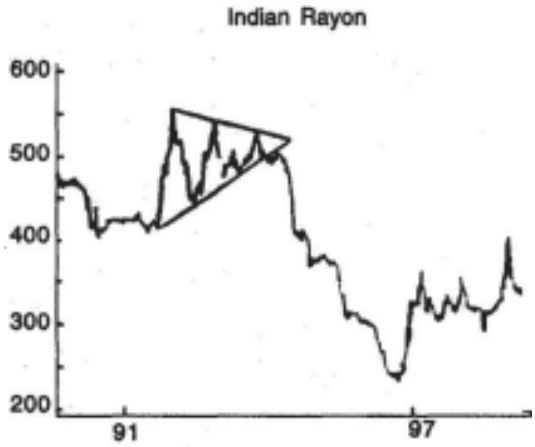
The triangle formation is easy to identify and popular in technical analysis. The triangles are of symmetrical, ascending, descending and inverted.

Symmetrical Triangle

This pattern is made up of series of fluctuations, each fluctuation smaller than the previous one. '1bps do not attain the height of the previous tops. Likewise bottoms are higher than the previous bottoms. Connecting the lower tops that are slanting downward forms a symmetrical triangle. Connecting the rising bottom, which is slanting upward, becomes the lower trend line. It is not

easy to predict the breakaway either way. The symmetrical triangle does not have any bias towards the bull and bear operators. It indicates the slow down or temporary halt in the direction of the original trend. A probability of the original trend to continue after the completion of the triangle is always there.

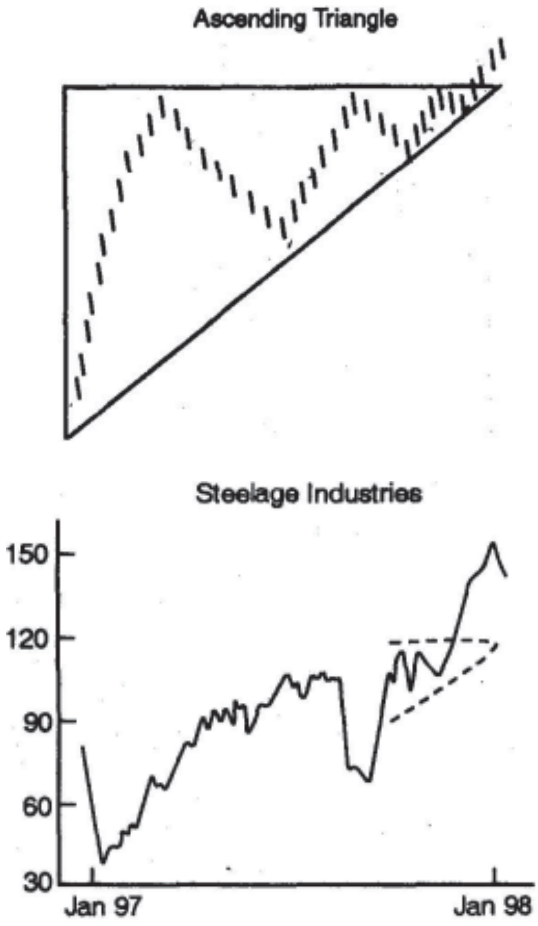




Ascending Triangle

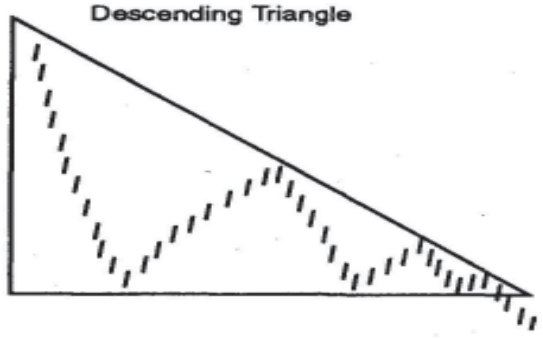
The upper trend line is almost a horizontal trend line connecting the tops arid the lower trend line is a rising trend line connecting the rising bottoms. When the demand for the scrip overcomes the supply for it, then there will be a break out.

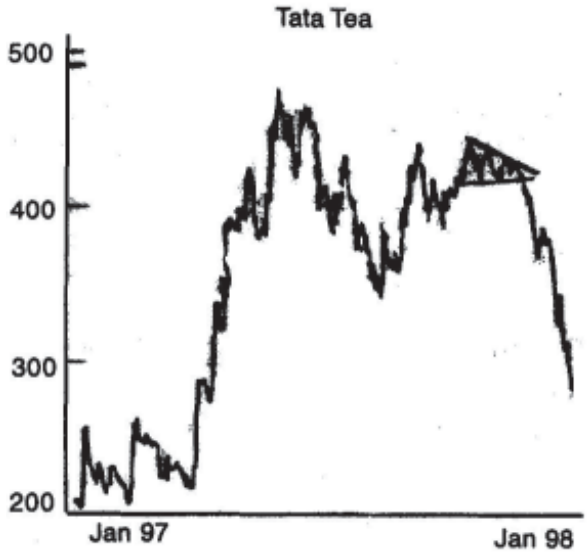
The break will be in favor of the bullish trend. This pattern is generally spotted during an up move and the probability of the upward move is high here.



Descending Triangle

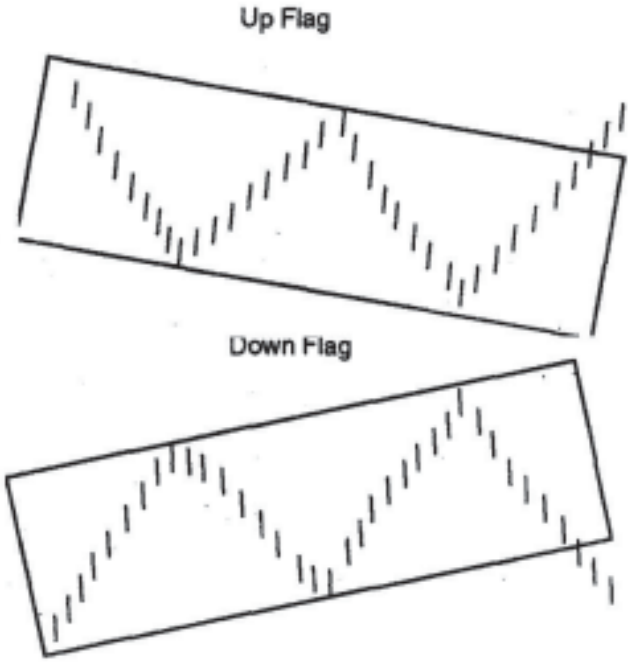
Connecting the lower tops forms the upper trend line. The upper trend line would be a falling one. The lower trend line would be almost horizontal connecting the bottoms. The lower line indicates the support level. The possibility for a downward breakout is high in this pattern. The pattern indicates that the bear operators are more powerful than the bull operators. This pattern is seen during the trend.



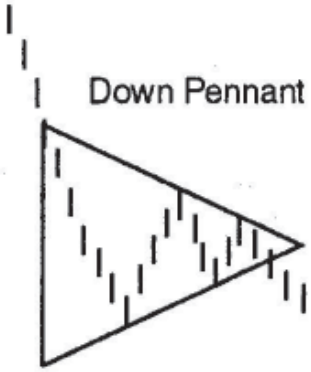


Flags

Flag pattern is commonly seen on the price charts. These patterns emerge either before a fall or rise in the value of the scrip These patterns show the market corrections of the over bought or oversold situations. The time taken to form these patterns is quick. Each rally and setback may last only three to four days. If the pattern is wider it may take three weeks to complete the pattern.

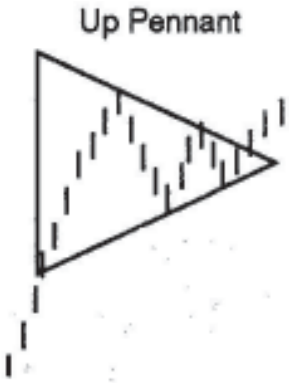


A flag resembles a parallelogram. A bullish flag is formed by two trend lines that stoop downwards. The break Out would occur on the upper side of the trend line. In a bearish flag both the trend lines would be stooping upwards. The breakout occurs in the downward trend line.



Pennant

Pennant looks like a symmetrical triangle. Here also there is bullish and bearish pennant. In the bullish pennant, the lower tops form the upper trend line. The lower trend line connects the rising bottoms. The bullish trend occurs when the value of scrip moves above the upward trend line. Likewise in the bearish pennant, upward trend line is falling and the lower trend line is rising.



6.5 TECHNICAL ANALYSIS AND FUNDAMENTAL ANALYSIS

1. Fundamental analysts' analyses the stock based on the specific goals of the investors. They study the financial strength of corporate, growth of sales, earnings and profitability. They also

take into account the general industry and economic conditions.

2. The technical analysts mainly focus the attention on the past history of prices. Generally technical analysts choose to study two basic market data-price and volume.
3. The fundamental analysts estimate the intrinsic value of the shares and purchase them when they are undervalued. They dispose the shares when they are overpriced and earn profits. They try to find out the long term value of share Compared to fundamental analysts, technical analysts mainly predict the short term price movement rather than long term movement. They are not committed to buy and hold policy.
4. Fundamentalists are of the opinion that supply and demand for stocks depend on the underlying factors. The forecasts of supply and demand depend on various factors.

   Technicians opine that they can forecast supply and demand by studying the prices and volume of trading.

   In both the approaches supply and demand factors are considered to be critical. Business, economic, social and political concern affects the supply and demand for securities. These underlying factors in the form of supply and demand come together in the securities' market to determine security prices.

6.6 EVALUATION OF TECHNICAL ANALYSIS

Technical analysis appears to be a high controversial approach to security analysis. The analysts offer arguments as well as disarguments for this alternative of security analysis. Among them, few are as follows:

Arguments

1. Under the influence of crowd psychology, trends persist for quite some time. Tools of technical analysis that help in identifying these trends early are helpful in investment decision-making.
2. Shifts in demand and supply are gradual rather than instantaneous.

Technical analysis helps in detecting these shifts rather early and hence provides clues to future price movements,

3. Fundamental information about a company is absorbed and assimilated by the market over the period of time. Hence, the price movement tends to continue in more or less in the same direction till the information is fully assimilated in the market.
4. Charts provide a picture of what has happened in the past and hence give a sense of volatility that can be expected from the stock. Further, the information on trading volume, which is ordinarily provided at the bottom of a bar chart, gives a fair idea of the extent of public interest in the stock.

Disagreements

1. Most technical analysts are not able to offer convincing explanations for the tools employed by them.
2. Empirical evidence in support of the random walk hypothesis casts its shadow over the usefulness of technical analysis.
3. By the time an up trend or downtrend may have been signaled by the technical analysis, may already have taken place.
4. Ultimately, technical analysis must be a self-defeating proposition. As more and more people employ it, the value of such analysis tends to decline.
5. There is a great deal of ambiguity in the identification of configurations as well as trend lines and channels on the charts. The same chart can be interpreted differently.

Despite these limitations, technical analysis is very popular. It is only in the rational, efficient and well ordered market where technical analysis has no use. But given the imperfections, inefficiencies and irrationalities that characterize real markets, technical analysis can be helpful. Hence, it can be concluded that technical analysis may be used, albeit to a limited extent, in conjunction with fundamental analysis to guide investment decision-making, as it is supplementary to fundamental analysis rather than substitute for it.



6.7 LET US SUM UP

As an approach to investment analysis, technical analysis is radically different from fundamental analysis. Technical analysis doesn't evaluate a large number of factors relating to the company, the industry and the economy. Instead they analyzed market-generated data like prices and volumes to determine the direction of price movement. The basic premises of technical analysis are:

1. The market value of the scrip is determined by the interaction of demand and supply.
2. Supply and demand is governed by numerous factors, both rational and irrational.
3. The market discounts everything.
4. The market always moves in the trends except for minor deviations.
5. It is known fact that history repeats itself. It is true to stock market also and the market technicians assume that past prices predict the future.
6. As the market always moves in trends, analysis of past market data can be used to predict future price behavior.

Technical analysts use a variety of tools to predict the market. Among them, important are Dow Theory, charts, moving average, short selling, odd lot theory, Relative strength analysis, volume of trade, breadth of the market etc. technical analysis appears to be highly controversial approach to security analysis having severe critics. In a rational, well-ordered and efficient market, technical analysis is a worthless exercise. However, given the imperfections, inefficiencies and irrationalities that characterize the real world market, technical analysis can be helpful to earn abnormal return in the market.



6.8 FURTHER READING

1. Fischer and Jordon(1995), *Security Analysis and Portfolio Management,* PHI; 6 edition.
2. Fuller and Farrell(1987) *Modern Investments and Security Analysis* ,McGraw-Hill Education
3. Prasanna Chandra.(2017), *Investment Analysis and Portfolio Management* ,McGraw Hill Education; Fifth edition



6.9 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q1: Technical analysis is a trading discipline employed to evaluate investments and identify trading opportunities by analyzing statistical trends gathered from trading activity, such as price movement and volume.

Ans to Q2: Assumptions on which technical analysis is formulated, are as follows:

1. The market value of the scrip is determined by the interaction of demand and supply.
2. Supply and demand is governed by numerous factors, both rational and irrational. These factors include economic variables relied by the fundamental analysis as well as opinions, moods and guesses.

Ans to Q3: The breadth of the market is the term often used to study the advances and declines that have occurred in the stock market.

Ans to Q4: Short selling refers to the selling of shares that you don't have. The short sellers are those who sell now in the hope of purchasing at a lower price in the future to make a profit.



6.10 MODEL QUESTIONS

1. Technical analysts believe that one can use past price changes to predict future price changes. How do they justify this belief?
2. Discuss the Dow theory and its three components. Which component is most important?
3. Discuss the Various Charting Techniques under Technical Analysis.
4. Discuss the Moving Average , RoC and RSI
5. Write short notes on
   Short Selling
   Relative Strength Analysis
   Odd Lot Theory.

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UNIT 7 : EFFICIENT MARKET THEORY

UNIT STRUCTURE

7.1 Learning Objectives

7.2 Introduction

7.3 Concepts of Efficient Market Theory

7.4 Assumptions of Efficient Market Theory

7.5 Random Walk Theory

7.6 Forms of Efficient Market Theory

- 7.6.1 Weak form of EMH
- 7.6.2 Semistrong form of EMH
- 7.6.3 Strong form of EMH

7.7 Efficient market hypothesis and mutual fund performance

7.8 Let Us Sum Up

7.9 Further Reading

7.10 Answers to Check Your Progress

7.11 Model Questions

7.1 LEARNING OBJECTIVES

After going through this unit, you will be able to :

- discuss briefly fundamental analysis and technical analysis
- explain random walk model
- describe efficient market hypothesis.

7.2 INTRODUCTION

In this unit we are going to discuss the various aspects related to efficient market theory.We will discuss random walk theory, efficient market hypothesis and mutual fund performance. The efficient market theory states that fluctuations in price of a share are random and do not follow a regular pattern. Hence, the amount paid for a stock or security and the return when discounted based on the amount of risk it involves will give a Net Present value equal to Zero (NPV=0), i.e. there is no way to beat an effective market

consistently. This is because all current and relevant information is already reflected in the share price.

7.3 CONCEPTS OF EFFICIENT MARKET THEORY

Efficient Market Theory is also known as the Efficient Market Hypothesis.Let us discuss the following terms in connection with the thoery:

- **Market Efficiency:** An efficient market is a market that provides fair return to its investors.thi sis possible only when the market is able to quickly and accurately reflect the expectations of the investors in share prices.

  It can be divided into two types: *Operational Efficiency* and *Informational Efficiency*. Operational efficiency of a market is determined on the basis of time taken to execute an order and number of bad deliveries. Whereas, informational efficiency in market is determined on the basis of swiftness and accuracy of the market to adjust itself in reaction to new information like economic report, company analysis, political agendas, government policies etc.
- **Liquidity Traders:** Traders who do not buy or sell shares on the basis of research and analysis but on the basis of their individual fortune and liquidity traders.
- **Informational Traders:** Traders who buy and sell shares on the basis on through research and analysis of the market are informational traders. They usually invest on the basis of differences in intrinsic value and market value of a security.

7.4 ASSUMPTIONS OF EFFICIENT MARKET THEORY

The following are some of the assumptions of efficient market theory:

- There are large number of buyer and sellers for security.
- All the investors act rationally with the motive of making profit.
- New information arises randomly and is available to all market participants for free.
- Prices of securities respond quickly to newly available information and reflect all available information



CHECK YOUR PROGRESS

Q1: Who is a Liquidity Trader

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.....

Q2: Who is a Informational Traders

.....

.....

7.5 RANDOM WALK THEORY

Random walk theory poses a question- Can a series of historical stock prices or rates of return be an aid in predicting future stock prices or rates of return?

The empirical evidence in the random-walk literature existed before the theory was established. That is to say, empirical results were discovered first, and then an attempt was made to develop a theory that could possibly explain the results. After these initial occurrences, more results and more theory were uncovered. This has led then to a diversity of theories, which are generically called the random-walk theory (Eugene F. Fama, 1970). A good deal of confusion resulted from the diversity of the literature; and only recently has there been some clarification of the proliferation of empirical results and theories. Our purpose here is to discuss briefly the substantive differences among these theories.

Misconceptions of the Random Walk Model

Our generalisation of the random-walk model, then, says that previous price changes or changes in return are useless in predicting future price or return changes. That is, if we attempt to predict future prices in absolute terms using only historical price-change information, we will not be successful.

Note that random walk says nothing more than that successive price changes are independent. This independence implies that prices at any time will on the average reflect the intrinsic value of the security. (Often one

will find this intrinsic worth referred to as the present value of the stock's price, or its equilibrium value). Furthermore, if a stock's price deviates from its intrinsic value because, among other things, different investors evaluate the available information differently or have different insights into future prospects of the firm, professional investors and astute non-professionals will seize upon the short-term of random deviations from the intrinsic value, and through their active buying and selling of the stock in question will force the price back to its equilibrium position.

It is unfortunate that so many misconceptions of the random-walk model exist. It is, in point of fact, a very simple statement.

The random-walk model says nothing about relative price movements-that is, about selecting securities that may or may not perform better than other securities. It says nothing about decomposing price movements into such factors as market, industry, or firm factors. Certainly, it is entirely possible to detect trends in stock prices after one has removed the general market influences or other influences; however, this is no way would refute the random-walk model, for after these influences have been removed, we will in fact be dealing with relative prices and not with absolute prices, which lie at the heart of the random-walk hypothesis. Furthermore, these 'trends' provide no basis for forecasting the future.

In addition, it should be reemphasized that the empirical results came first, to be followed by theory to explain the results; therefore, discussions about a competitive market, or instantaneous adjustments to new information, or knowledgeable market participants, or easy access to markets, are all in reality not part of the random-walk model, but rather possible explanations of the results we find when performing our empirical investigations.

Also, there seems to be a misunderstanding by many to the effect that believing in random walk means that one must also believe that analyzing stocks, and consequently stock prices, is a useless exercise, for if indeed stock prices are random, there is no reason for them to go up or down over any period of time. This is very wrong. The random-walk hypothesis is entirely consistent with an upward or downward movement in

price, for as we shall see, the hypothesis supports fundamental analysis and certainly does not attack it.

7.6 FORMS OF EFFICIENT MARKET THEORY

In 1970, Fama classified efficient market hypothesis in three categories according to the level of information reflected in market prices.The EMH exists in various forms: weak, semi-strong and strong, which addresses the inclusion of non-public information in market prices.

This theory contends that since markets are efficient and current prices reflect all information, attempts to outperform the market are essentially a game of chance rather than one of skill. The weak form of EMH assumes that current stock prices fully reflect all currently available security market information. It contends that past price and volume data have no relationship with the future direction of security prices. It concludes that excess returns cannot be achieved using technical analysis. The semi-strong form of EMH assumes that current stock prices adjust rapidly to the release of all new public information. It contends that security prices have factored in available market and non-market public information. It concludes that excess returns cannot be achieved using fundamental analysis. The strong form of EMH assumes that current stock prices fully reflect all public and private information. It contends that market, non-market and inside information is all factored into security prices and that no one has monopolistic access to relevant information. It assumes a perfect market and concludes that excess returns are impossible to achieve consistently.

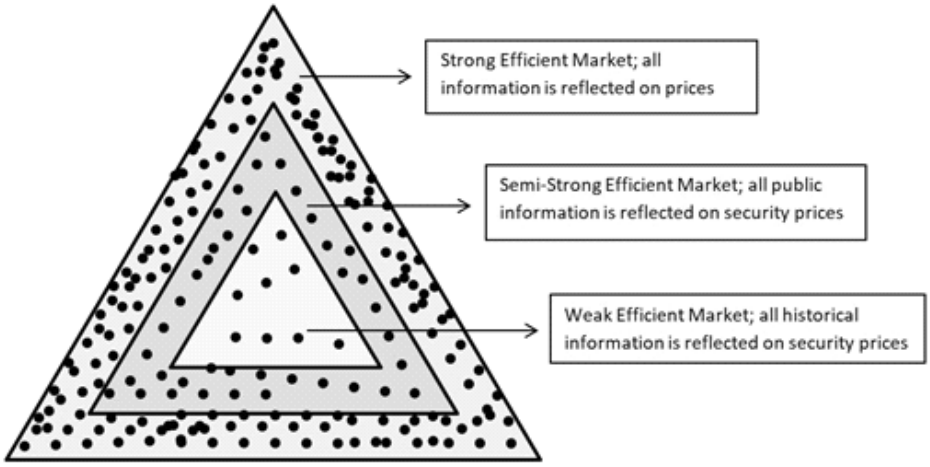


Fig 7.1: Forms of Efficient Market Hypothesis (EMH)
Source: http/bbamantra.com/efficient-market-theory-forms-concepts

Let us now discuss these forms in detail in the following subsections:

7.6.1 Weak form of EMH

The weak form efficiency is also popularly known as 'random-walk'. In weak form of market efficiency stock prices reflect by all available trading information which can be derived from the market data such as past price, trading volume etc, so nobody can use information related to past price to identify the undervalued security and make a big profit by them, It implies that no one should be able to outperform the market using something that "everybody else knows". If the markets are efficient in weak from, technical trading rules cannot be used to make profit on a consistent basis. This form of market efficiency is called weak-efficiency because the security prices are the most publicly and easily accessible pieces of information. Although number of empirical studies support weak form of efficient market but there are still numbers of financial researchers are studying the past stock price series and trading volume data in attempt to generate profit. In short weak form of efficient market implies that:

- Stock prices quickly incorporate all past price information which can be derived by trading data (i.e. past prices, volume, short interest).

- Everyone knows the past price movement of market, therefore nobody can outperform the market on a consistent basis using some trading strategy based on past price trends (as done by technical analysts).
- Prices follow a "random walk" or more precisely an 'exponential random walk'.

7.6.2 Semi-Strong Form of EMH

In semi-strong form all publicly available information are incorporated into current stock prices. Publicly available information includes past price information plus company's annual reports (such as financial reports, balance sheet and profit and loss account), company's announcement, macro economic factors such as (inflation, unemployment etc) and others. Some information (to the extent anticipated in advance) is discounted even before the event is announced and some before the event took place. Such matters like earnings reports, bonus, and rights affect the market even in anticipation before the formal announcements. Semi-strong form implied that share prices adjust to publicly available new information very rapidly and in an unbiased fashion, such that no one should be able to outperform the market using something that "everybody else knows". This indicates that a company's financial statements are of no help in forecasting future price movements and securing high investment returns. Evidences of empirical studies (most of them are based on event-study methodology) broadly support this form of efficiency. Implications of Semi-Strong form are as follow:

- Market prices incorporate all publicly available information.
- Publicly available information is easily reachable for everybody so no investor can use it to device the strategy which could outperform the market on a consistent basis.

- Share prices adjust to publicly available new information very rapidly and in an unbiased fashion, such that no excess returns can be earned by trading on that information.
- Neither technical analyst nor fundamental analyst will be able to help the investors to outperform in the market

However, the following factors can impede the market-efficiency in its strong form:

- Information may be relatively difficult and costly to obtain.
- Information may be asymmetrically distributed; some investors may have access to information but others may not have.
- It may be difficult to segregate the information from noise.
- It may be difficult to interpret and to understand the exact implication of information.

7.6.3 Strong Form of EMH

In strong form of efficiency stock prices quickly reflect all types of information which include public information plus companies inside or private information. Thus, it is the combination of public and private information that is incorporated into current prices. This form implies that even companies management can not make profit from inside information; they cannot take

advantage of inside affairs or important decision or strategies to beat the market. According to strong-form market efficiency, inside information is also already incorporated into stock prices, the common rational behind this is unbiased market anticipation that already react in to market before companies strategic decision. Strong form of efficiency is hard to believe in practice except where rules and regulations of law are fully ignored. Studies (Reilly & Brown, 2008) that examined the result of the corporate insiders and stock exchange specialists do not support the strong form of efficient market hypothesis. Empirical evidence has been mixed, but has generally not supported strong forms of the efficient-market hypothesis

Implications of strong form of efficiency is-

- Market prices incorporate all public and private information.
- Nobody can gain abnormal return even those who have inside information.
- This type of market is very hard to believe.



CHECK YOUR PROGRESS

Q1: What is Weak form of EMF

.....

.....

Q2: What id Strong form of EMF

.....

.....

7.7 THE EFFICIENT-MARKET HYPOTHESIS AND MUTUAL-FUND PERFORMANCE

It has often been said that large investors such as mutual funds perform better in the market than the small investor does because they have access to better information. Therefore, it would be interesting to observe if mutual funds earned above-average returns, where these are defined as returns in excess of those that can be earned by a simple buy-and-hold strategy. The results of such an investigation would have interesting implications for the efficient-market hypothesis.

Researchers have found that mutual funds do not seem to be able to earn greater net returns (after sales expenses) than those that can be earned by investing randomly in a large group of securities and holding them. Furthermore, these studies indicate, mutual funds are not even able to earn gross returns (before sales expenses) superior to those of the native buy-and-hold strategy. These results occur not only because of the difficulty in applying fundamental analysis in a consistently superior manner to a large number of securities in an efficient market but also because of portfolio

overdiversification and its attendant problems- two of which are high book-keeping and administrative costs to monitor the investments, and purchases of securities with less favourable risk-return characteristics. Therefore, it would seem that the mutual-fund studies lend some credence to the efficient-market hypothesis.



7.8 LET US SUM UP

There are three broad theories concerning stock price movements. The fundamentalists believe that by analyzing key economic and financial variables, they can estimate the intrinsic worth of the security and then determine what investment action to take. The technical or chartist school maintains that fundamental analysis is unnecessary; all that has to be done is to study historical price patterns and then decide how current price behaviour fits into these. Because the technician believes that history repeats itself, he can then predict future movements in price based on the study of historical patterns. The random-walk school has demonstrated to its own satisfaction through empirical tests that successive price changes over short periods, such as a day, a week, or a month, are independent. To the extent that this independence exists, the random-walk theory directly contradicts technical analysis; and furthermore, to the extent that the stock markets are efficient in the dissemination of information and that they have informed market participants and the proper institutional setting, the random-walk school poses an important challenge to the fundamentalist camp as well.

If the markets are truly efficient, then the fundamentalist will be successful only when (1) he has inside information, or (2) he has superior ability to analyze publicly available information and gain insight into the future of the firm, and (3) he uses (1) and/or (2) to reach long-term buy-and-hold investment decisions.

The empirical evidence in support of the random-walk hypothesis rests primarily on statistical tests, such as runs tests, correlation analysis, and filter tests. The results have been almost unanimously in support of the random-walk hypothesis, the weak form of the efficient market hypothesis.

The results of semistrong-form tests have been mixed.

Random walk model says that successive price changes are independent i.e. previous price changes or changes in return are useless in predicting future price or return changes.

There are three forms of EMH: Weak form of efficient-market hypothesis says that the current prices of stocks fully reflect all the information that is contained in the historical sequence of prices.Semi-strong form of efficient-market hypothesis says that current prices of stocks not only reflect all past price information but also reflect all public information.Strong form of the efficient-market hypothesis maintains that all information is useless to the investor or analyst for predicting future prices of shares.



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7.10 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q1: Liquidity Traders are traders who do not buy or sell shares on the basis of research and analysis but on the basis of their individual fortune and liquidity traders.

Ans to Q2: Informational Traders are traders who buy and sell shares on the basis on through research and analysis of the market

are informational traders. They usually invest on the basis of differences in intrinsic value and market value of a security.

Ans to Q3: The weak form of EMH assumes that current stock prices fully reflect all currently available security market information.

Ans to Q4: In strong form of efficiency stock prices quickly reflect all types of information which include public information plus companies inside or private information.



7.11 MODEL QUESTIONS

1. How do technicians and random-walk advocates differ in their view of the stock market?
2. Describe briefly the tests of weak form, semi-strong and strong form of efficient market hypothesis.
3. What is the connection between the efficient-market hypothesis and the studies of mutual-fund performance?
4. Explain the implications of the serial-correlation tests for

a. the random-walk theory,

b. technical analysis, and

c. fundamental analysis.

5. What sequence of events might bring about an ‘efficient market’?
6. Does the random-walk theory suggest that security price levels are random? Explain.
7. How is technical analysis generally regarded in the academic literature? Wh y? What do technical analysts have to say about this.16) Maurice Joy and Charles P. Jones, “Earnings Reports and Market Efficiencies: An Analysis of Contrary Evidence”, Journal of Financial Research 2, No. 1 (Spring 1979), pp. 51-63.

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UNIT 8 : VALUATION OF BONDS

UNIT STRUCTURE

8.1 Learning Objectives

8.2 Introduction

8.3 Valuation of Bonds : Terminology

8.3.1 The Time Value Concept

8.3.2 The Present Value

8.4 The Bond Valuation Model

8.5 Bond Yield

8.6 Price-Yield Relationship

8.7 Bond market

8.8 The term structure of interest rate (yield curve)

8.9 Riding the yield curve

8.10 Duration and Immunisation

8.11 Let Us Sum Up

8.12 Further Reading

8.13 Answers to Check Your Progress

8.14 Model Questions

8.1 LEARNING OBJECTIVES

After going through this unit,you will be able to :

- discuss the main characteristics of fixed income instruments.
- describe the time value concept
- discuss basic discounted cash flow valuation model and its application to bonds.

8.2 INTRODUCTION

In the previous unit, we have discussed about 'Efficient Market Hypothesis'. In this unit we rae going to discuss about Bond valuation-Terminology, Valuation model, Bond return, Price-yield relationshi, Bond market and Immunisation. A long-term debt instrument (a legal contract) in

which a borrower agrees to make payments of principal and interest, on specific dates, to the holders of the bond.

Assets can be real or financial; securities like shares and bonds are called financial assets while physical assets like plant and machinery are called real assets. The concepts of return and risk, as the determinants of value, are as fundamental and valid to the valuation of securities as to that of physical assets.

Let us now discuss the concept oin the following ways:

8.3 VALUATION OF BONDS:TERMINOLOGY

Let us first discuss about the terms.

Bond: A long-term debt instrument (a legal contract) in which a borrower agrees to make payments of principal and interest, on specific dates, to the holders of the bond. A bond or debenture is a debt instrument issued by the government or a government agency or a business enterprise.Table 8.1 describes briefly the variety of debt instruments in the Indian market.

Table 8.1. Debt Instruments

Type	Typical features
Central Government Securities	Medium- to long-term bonds issued by RBI on behalf of GOI. Coupon payments are semi-annual.
State Government Securities	Medium- to long-term bonds issued by RBI on behalf of the state government. Coupon payments are semi-annual.
Government-Guaranteed Bonds	Medium- to long-term bonds issued by government agencies and guaranteed by the central government or a state government. Coupon payments are semi-annual.
PSU Bonds	Medium- to long-term bonds issued by public sector companies in which the central or state government has an equity stake of 51 per cent or more.

Corporate Debentures	Short-to medium-term debt issued by private and public sector companies.
Money Market Instruments	Debt instruments like Treasury Bills (issued by GOI), Commercial Paper (issued by corporates) and Certificates of deposits (issued by banks and financial institutions) that have a maturity of less than a year.

Types of Bonds: Bonds with Maturity,Pure Discount Bonds and Bond Yields

Concept of Value : The value can be classified as below:

Book Value- Book value per share is determined as net worth divided by the number of shares outstanding. Book value reflects historical cost, rather than value.

Replacement Value- Replacement value is the amount that a company would be required to spend if it were to replace its existing assets in the current condition.

Liquidation Value- Liquidation value is the amount that a company could realise if it sold its assets, after having terminated its business.

Going Concern Value- Going concern value is the amount that a company could realise if it sold its business as an operating business.

Market Value- Market value of an asset or security is the current price at which the asset or the security is being sold or bought in the market.

In order to understand the valuation of bonds, we need to be also familiar with certain bond-related terms:

Par Value- It is the value stated on the face of the bond. It represents the amount the firm borrows and promises to repay at the time of maturity. Usually the par or face value of bonds issued by business firms is Rs. 100. Sometimes it can be Rs. 1000.

Coupon Rate and Interest- A bond carries a specific interest rate which is called the coupon rate. The interest payable to the bond holder is simply par value of the bond × coupon rate. Most bonds pay interest semi-annually. For example, a GOI security which has a par value of Rs. 1000 and a coupon rate of 11 per cent pays an interest of Rs. 55 every six months.

Maturity Period- Typically, bonds have a maturity period of 1-10 years; sometimes they have a longer maturity. At the time of maturity the par (face) value plus perhaps a nominal premium is payable to the bondholder.

8.3.1 The Time Value Concept

The time value concept of money is that the rupee received today is more valuable than a rupee received tomorrow. The investor will postpone current consumption only if he could earn more future consumption opportunities through investment. Individuals generally prefer current consumption to future consumption. If there is inflation in the economy, a rupee today will represent more purchasing power than a rupee at a future date.

Interest is the rent paid to the owners to part their money. The interest that the borrower pays to the lender causes the money to have a future value different from its present value. The time value of money makes the rupee invested today grow more than a rupee in the future. To quantify this concept mathematically compounding and discounting principles are used.

The one period future time value of money is given by the equation: *Future Value = Present Value (1 + interest rate).* If hundred rupees are put in a savings bank account in a bank for one year, the future value of money will be:

Future Value = Rs. 100 (1.0 + 6%)

100 × 1.06 = Rs. 106.

If the deposited money is allowed to cumulate for more than one time, the period exponent is added to the previous equation.

Future Value = (Present Value) $(1 + \text{Interest Rate})^{t}$

t- the number of time periods the deposited money accumulates as interest. Suppose Rs. 100 is put for two years at the 6% rate of interest, money will grow to be Rs. 112.36.

Future Value = Present value $(1 + \text{interest rate})^2$

$= 100 (1 + 0.06)^2$

= 100 (1.1236)

= 112.36.

To find out the values in a simple manner, the compound sum of Re. 1 at the end of a period FVIF1,/K, n and compound sum of an annuity of Re. 1 per period FVIFA tables are given in the appendix 1 and 2 of the book on- Financial Management for MBA second semester.

8.3.2 The Present Value

The present value of money can be found simply by reversing the earlier equation.

Present value × (1 + interest rate) = Future value

$$\text{Present value} = \frac{\text{Future value}}{1+\text{interest rate}}$$

Here, the discounting principle is used. Today's worth of Rs. 100 to be received after a year at 10 per cent interest would be:

$$\text{Present value} = \frac{\text{Future value}}{1+\text{interest rate}}$$

$$= \text{Rs.}\frac{100}{1+0.10} = \frac{100}{1.1} = \text{Rs. } 90.90$$

The multiple period of present value equation takes into account of the multiple periods**.**

$$\text{Present value} = \frac{\text{Future value}}{(1+\text{interest rate})^{t}}$$



CHECK YOUR PROGRESS

Q1: Define Bond.

.....

.....

Q2: Define Book Value

.....

.....

Q3: What is Time Value Concept

.....

.....

8.4 THE BOND VALUATION MODEL

The value of a bond- or any asset, real or financial- is equal to the present value of the cash flows expected from it. Hence, determining the value of a bond requires:

- An estimate of expected cash flows
- An estimate of the required return.

To simplify the analysis of bond valuation we will make the following assumptions:

- The coupon interest rate is fixed for the term of the bond.
- The coupon payments are made every year and the next coupon payment is receivable exactly a year from now.
- The bond will be redeemed at par on maturity.

Given these assumptions, the cash flow for a non-callable bond comprises an annuity of a fixed coupon interest payable annually and the principal amount payable at maturity. Hence the value of a bond is:

$$P = \sum_{t-1}^{n} \frac{C}{(1+r)^t} + \frac{M}{(1+r)^n}$$

Where P = Present value (in rupees)

n = number of years

C = annual coupon payment (in rupees)

r = periodic required return

M = maturity value

t = time period when the payment is received.

Since the stream of semi-annual coupon payments is an ordinary annuity, we can apply the formula for the present value of an ordinary annuity. Hence the bond value is given by the formula:

$$P = C \times PVIFA_{r, n} + M \times PVIF_{r, n}$$

To illustrate how to compute the value of a bond, consider a 10-year, 12 per cent coupon bond with a par value of Rs. 1000. Let us assume that the required yield on this bond is 13 per cent. The cash flows for this bond are as follows:

- 10 annual coupon payments of Rs. 120.
- Rs. 1000 principal repayment 10 years from now.

The value of the bond is:

$$P = 120 \times PVIFA_{(13\%, 10\ yr)} + 1{,}000 \times PVIF_{(13\%, 10yr)}$$

$$120 \times 5.426 + 1000 \times 0.295$$

$$651.1 + 295 = \text{Rs. } 946.1$$

Bond values with semi-annual interest

Most bonds pay interest semi-annually. To value such bonds, we have to work with a unit period of six months, and not one year. This means that the bond valuation equation has to be modified along the following lines:

- The annual interest payment, C, must be divided by 2 to obtain the semi-annual interest payment.
- The number of years to maturity must be multiplied by two to get the number of half-yearly periods.
- The discount rate has to be divided by two to get the discount rate applicable to half-yearly periods.

With the above modifications, the basic bond valuation becomes:

$$P = \sum \frac{C/2}{(1+r/2)^{2n}} + \frac{M}{(1+r/2)^{2n}}$$

$$P = C/2 * PVIFA_{(r/2,\ 2n)} + M * (PVIF)_{(r/2,\ 2n)}$$

Where P = value of the bond

C/2 = semi-annual interest payment

r/2 = discount rate applicable to a half-year period

M = maturity value

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



Excercise 8.1:

Consider a 8-year, 12 per cent coupon bond with a par value of Rs. 100 on which interest16 is payable semi-annually. The $\sum$ C/26 ++ 100M required return on this bond is 14 per(1cent+r/2).t^t (1+ r/2)$16^{2n}_{t=1}$ (1.07) (1.07)

Solution.

The value of the bond is:

P=

$$P = \sum \frac{C/2}{(1+r/2)^{...}} \quad (1+r/2)^{...}$$

P = 6 ($PVIFA_{7\%, 16\ yr}$) + 100 ($PVIF_{7\%, 16\ yr}$)

Rs. 6 (9.447) + Rs. 100 (0.388) = Rs. 95.5.



Excercise 8.2:

At an annual rate of compounding of 9%, how long does it take for a given sum to become double and triple its original value?

Solution.

$P_t = P_0 (1 + r)^n$

When the n value is not given it can be solved by using log ln:

n ln (1 + r) = ln P_t

n ln (1 + 0.09) = ln 2

n. ln 0.0862 = ln 0.6931

n = 8.04 years

To triple

n ln (1 + 09) = ln 3

n. ln 0.0862 = ln 1.0986

= 12.74 years



Excercise 8.3:

Of the following which amount is worth more at 16 per cent; Rs. 1000 today or Rs. 2100 after five years.

Solution.

The present worth of Rs. 2100

$$= \frac{2100}{(1+r)^n}$$

$$= \frac{2100}{(1+0.16)^5}$$

$$2100 \times 0.476 = 999.60$$

The present worth of Rs. 2100 is Rs. 999.60 which is less than Rs. 1,000. Hence Rs. 2100 after five years is not worthful.

8.5 BOND YIELD

Bond yield is the return an investor realizes on a bond. The bond yield can be defined in different ways. Setting the bond yield equal to its coupon rate is the simplest definition. The current yield is a function of the bond's price and its coupon or interest payment, which will be more accurate than the coupon yield if the price of the bond is different than its face value. More complex calculations of a bond's yield will account for the time value of money and compounding interest payments.

The bond yield is the annualized return of the bond. Thus, bond yield will depend on the purchase price of the bond, its stated interest rate — which is equal to the annual payments by the issuer to the bondholder divided by the par value of the bond — plus the amount paid at maturity. Let us discuss the bond yields in following ways:

- **The current yield** - The current yield is the coupon payment as a percentage of current market prices. Because bonds trade in the secondary market, they may sell for less or more than par value, which will yield an interest rate that is different from the nominal yield, called the current yield, or current return. Since the price of bonds moves in the opposite direction of interest rates, bond prices decrease when interest rates increase, and vice versa.

$$\text{Current yield} = \frac{\text{Annual coupon payment}}{\text{Current market price}}$$

With this measure the investors can find out the rate of cashflow from their investments every year. The current yield differs from the coupon rate, since the market price differs from the face value of the bond. When the bond's face value and market price are same, the coupon rate and the current yield would be the same. For example, when the coupon payment is 8% for Rs. 100 bond with the same market price, the current yield is 8%. If the current market price is Rs. 80 then the current yield would be 10%.

- **Yield to Maturity (YTM)**

The concept of yield-to-maturity (YTM) is one of the widely used tools in bond investment management. Arithmetically, YTM is the single discount factor that makes present value of future cashflows from a bond equal to the current price of the bond. Intuitively, YTM is the rate of return, which an investor can expect to earn if the bond is held till maturity.

The yield to maturity is calculated based on certain assumptions. They are:

1. There should not be any default. Coupon and principal amount should be paid as per schedule.
2. The investor has to hold the bond till maturity.
3. All the coupon payments should be reinvested immediately at the same interest rate as the same yield to maturity of the bond.

Understanding this, is crucial for better investment decisions. For example, if an 11 per cent coupon paying bond with four years to mature has a TYM, of say 13 per cent it would be realised only if two conditions are met: One, the bond is held till maturity (for four years), and two, the interest received from the bond is reinvested for the rest of the period at 13 per cent. Otherwise actual or realised rate of return of the investor will be different from the expected return.

In the above example, if coupon receipts are re-invested at say, 10 per cent for the rest of the period then the realised rate of return will be less than the YTM. Conversely, if the coupon receipts are reinvested at 14 per cent, the realised rate of return will be higher than the YTM.

Any difference in the re-investment rate will cause a difference between the actual return and the YTM. In this sense, the YTM is only a

measure of yield. It cannot be regarded as a measure of return from a coupon-paying bond.

The YTM concept has a slightly different meaning for Zero Coupon Bonds (ZCB), popularly known as Deep Discount Bonds (DDB). ZCBs do not carry any coupon but are issued at a price discounted to the face value. On maturity, these bonds are redeemed at face value. Since thee bonds do not have any coupon payments during the life of the bond, the question of re-investment of coupon payments does nto arise at all. There is no re-investment risk for ZCBs.

To find out the yield to maturity the present value technique is adopted. The formula is,

$$\text{Pr esent value} = \frac{\text{Coupon}_1}{(1+y)^1} + \frac{\text{Coupon}_2}{(1+y)^2} + \ldots + \frac{(\text{Coupon}_n + \text{face value})}{(1+y)^n}$$

Y = The yield to maturity.



Excercise 8.4

A four-year bond with the 7% coupon rate and maturity value of Rs. 1000 is currently selling at Rs. 905. What is its yield to maturity?

Solution. Since all the three values are known out of the four values, it can be found out by using trial and error procedure. Let us try ten per cent.

Cash flow	PV for 10%	PV of CF
70	0.9091	63.64
70	0.8264	57.85
70	0.7513	52.59
1070	0.6830	730.82
		Rs. 904.90

The yield to maturity is 10 per cent

The approximate yield to maturity can be found out by using the following formula too.

$$Y = \frac{C + (P \text{ or } D/\text{years to maturity})}{(Po + F)/2}$$

Y = Yield to maturity

C = Coupon interest

P or D = Premium or discount

P_O = Present value

F = Face value

In the case of previous sum

$$= \frac{70 + (95/4)}{(905 + 1000)/2} = \frac{93.75}{952.5} = 0.098$$

Y = 9.8%

Yield to maturity(YTM)= 9.8%.

8.6 PRICE-YIELD RELATIONSHIP

A basic property of a bond is that its price varies inversely with yield.

The reason is simple. As the required yield increases, the present value of the cash flow decreases; hence the price decreases. Conversely, when the required yield decreases, the present value of the cash flow increases; hence the price increases. The graph of the price-yield relationship for any callable bond has a convex shape as shown in Fig 8.1

Fig 8.1. Price-yield relationship

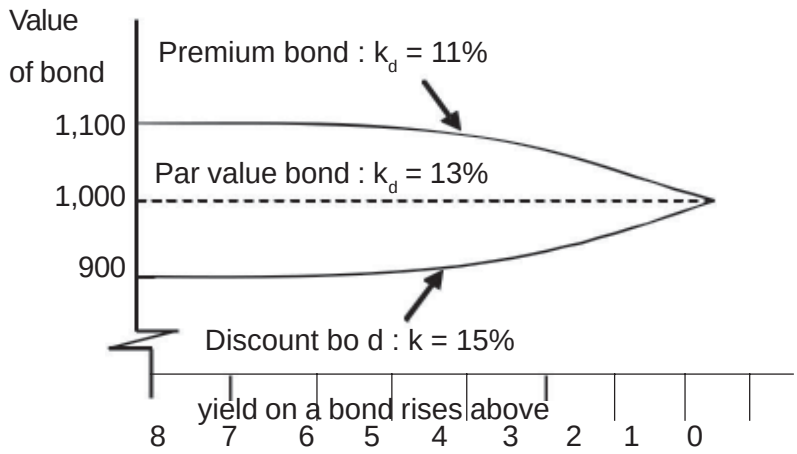


Relationship between bond price and time

Bond prices, generally, change with time as the price of a bond must equal its par value at maturity (assuming that there is no risk of default). For example, a bond that is redeemable for Rs. 1000 (which is its par value) after 5 years when it matures, will have a price of Rs. 1000 at maturity, no matter what the current price is. If its current price is, say, Rs. 1100, it is said to be a premium bond. If the required yield does not change between

now and the maturity date, the premium will decline over time as shown by curve A in Fig 8.2. On the other hand, if the bond has a current price of say Rs. 900, it is said to be a discount bond. The discount too will disappear over time as shown by curve B in Fig 8.2. Only when the current price is equal to par value-in such a case the bond is said to be a par bond-there is no change in price as time passes, assuming that the required yield does not change between now and the maturity date. This is shown by the dashed line in Fig 8.2.

Fig 8.2: Price changes with time



Relationship between coupon rate, required yield, and price

As yields change in the marketplace, prices of bonds change to reflect the new required yield. When the required its coupon rate, the bond sells at a discount. When the required yield

Years to maturity on a bond equals its coupon rate, the bond sells at par. When the required yield on a bond falls below its coupon rate, the bond sells at a premium. We can summarise the relationship between coupon rate, required yield, and price as follows:

Coupon Rate < Required Yield **<=>** Price < Par (Discount bond)

Coupon Rate = Required Yield **<=>** Price = Par

Coupon Rate > Required Yield **<=>** Price > Par (Premium bond)

Realised Yield to Maturity(YTM)

The YTM calculation assumes that the cash flows received through the life of a bond are reinvested at a rate equal to the yield to maturity. This assumption may not be valid as reinvestment rate/s applicable to future

cash flows may be different. It is necessary to define the future reinvestment rates and figure out the realised yield to maturity. How this is done may be illustrated by an example.

For example,consider a Rs. 1000 par value bond, carrying an interest rate of 15 per cent (payable annually) and maturing after 5 years. The present market price of this bond is Rs. 850. The reinvestment rate applicable to the future cash flows of this bond is 16 per cent. The future value of the benefits receivable from this bond, calculated in Exhibit 10.3 works out to Rs. 2032. The realised yield to maturity is the value of r* in the following equation.

Present market price $(1 + r^*)^5$ = Future value

$$850\ (1 + r^*)^5 = 2032$$

$$(1 + r^*)^5 = 2032/850 = 2.391$$

$$1 + r = (2.391)^{1/5}$$

$$r^* = 0.19 \text{ or } 19\%.$$

Table 8.2. Future value of benefits

	0	1	2	3	4	5
● Investment	850					
● Annual interest		150	150	150	150	150
● Re-investment period (in years)		4	3	2	1	0
● Compound factor (at 16%)		1.81	1.56	1.35	1.16	1.00
● Future value of intermediate cash flows		271.5	234.0	202.5	174.0	150.0
● Maturity value						1000
● Total future value	= 271.5 + 234.0 + 202.5 + 174.0 + 150.0 + 1000 = 2032					

8.7 BOND MARKET

Bonds are bought and sold in large quantities. Most trading in bonds, however, takes place over the counter. This means that the transactions

are privately negotiated and they do not take place through the process of matching of orders on an organised exchange. This is a characteristic of bond markets all over the world, not just in India. Because the bond market is largely over the counter, it lacks transparency. A financial market is transparent if you can easily observe its prices and volumes.

The National Stock Exchange has a Wholesale Debt Market (WDM) segment. The WDM segment is a market for high value transactions in government securities, PSU bonds, commercial papers, and other debt instruments. The quotations of this segment mostly reflect over-the-counter transactions that are privately negotiated over the phone or computer and registered with the exchange for reporting purposes.

8.8 THE TERM STRUCTURE OF INTEREST RATE (YIELD CURVE)

The bond portfolio manager is often concerned with two aspects of interest rates; the level of interest rate and the term structure of interest rate. The relationship between the yield and time or years to maturity is called term structure. The term structure is also known as yield curve. In analysing the effect of maturity on yield all other influences are held constant. Usually pure discount instruments are selected to eliminate the effect of coupon payments. The bonds chosen do not have early redemption features. The maturity dates are different but the risks, tax liabilities and redemption possibilities are similar.

The general reception is that the curve will be upward moving up to a point then it becomes flat. This is indicated in the following Figure 8.3.

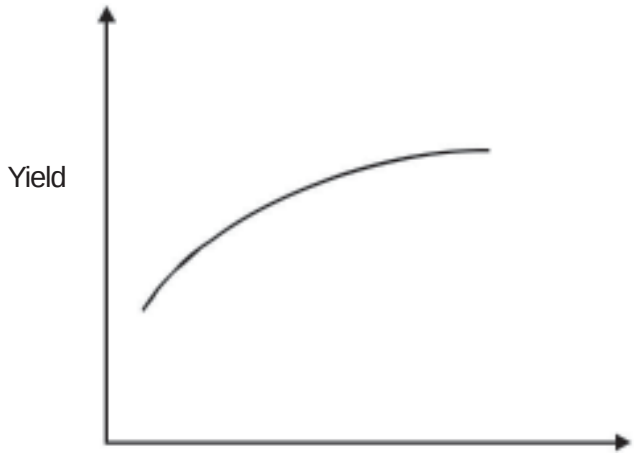


Fig. 8.3 Rising yield curve

There are at least three competing theories that attempt to explain the term structure of the interest rates viz., the expectation theory, liquidity preference theory and preferred habitat or segment theory.

Expectation theory- The theory was developed by J.. Hicks (1939), F. Lutz (1940) and B. Malkiel (1966). According to the expectation theory, the shape of the curve can be explained by the expectations of the investors about the future interest rates. If the short term rates are expected to be relatively low in the future, then the long term rate will be below the short term rate.

There are three reasons for the investors to anticipate the fall in the interest rate.

- Anticipation of the fall in the inflation rate and reduction in the inflation premium.
- Anticipation of balanced budget or cut in the fiscal deficit.
- Anticipation of recession in the economy, and a fall in the demand for funds by the private corporate.

The long term rates will exceed the current short term rates if there is an expectation that the market rates would be higher in the future. Thus the yield curve depends upon the expectations of the investors.

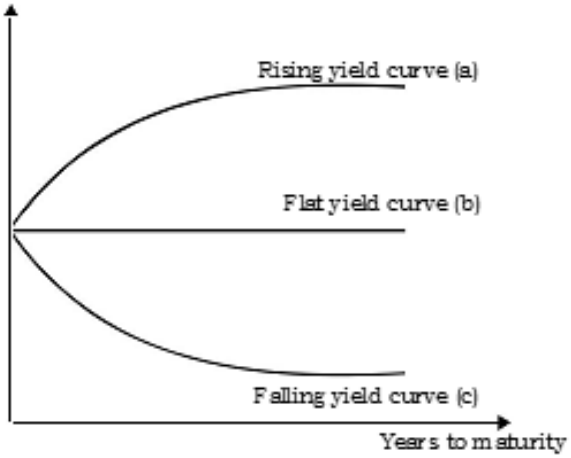


Fig. 8.4

A rising yield curve (a) indicates that the investors' expectation of a continuous rise in interest rate. The flat yield curve (b) means that the investors expect the interest rate to remain constant. The declining yield curve (c) shows that the investor expects the interest rate to decline.

Liquidity preference theory- Keynes' liquidity preference theory as advocated by J.R. Hicks (1939) accepts that expectations influence the shape of the yield curve. In a world of uncertainty, it would be more desirable for the investors to invest in short term bonds than on long term bonds because of their liquidity property. If no premium exists for holding the long term instruments, investors would prefer to hold short term bonds to minimise the possible variation in the nominal value of their portfolio.

The exponents of the liquidity preference theory believe that the investors prefer short term rather than long term. Hence they must be motivated to buy the long term bonds or lengthen the investment horizon. The bond issuing corporate or contributor pay premium to motivate the investors to buy. This liquidity premium theory indicates that in years time the forward rates are actually higher than the projected interest rate.

Sementation theory- Critics of the expectation theory, such as, J. Culbertson (1957) and F.V. Modigliani and R. Sutch (1966) pointed out that the liquidity preferences cannot be the main consideration for all classes of investors. In their view insurance companies, pension funds and even retired persons prefer the long term rather than short term securities to avoid the

possible fluctuations in the interest rate. This can be explained in detail.

Life insurance companies offer insurance policies that do not require any payment for a long time. For example, an insurance policy issued to a 25 year old individual may involve another 20 or more years before the company has to make a payment. Premium payments are fixed by the expected future rate of interest. If the insurance company invests the funds in a long term bond, the interest the bond would earn is certain and if the earned interest rate is higher than the promised interest rate, the company stands to gain and its risk is also reduced. If it invests in one year bonds, the risk of re-investment is there and if there is a fall in the market interest rate, the insurance company stands to lose and it would be difficult for the company to meet its obligation. This leads the insurance companies to prefer the long term bonds rather than short term bonds.

On the other hand, commercial banks and corporates may prefer liquidity to meet their short term requirements and therefore, they prefer short-term issues. Supply and demand for fund are segmented in sub markets because of the preferred habitats of the individuals. Thus the yield is determined by the demand and supply of the funds.

8.9 RIDING THE YIELD CURVE

When the long term coupon rates are higher than the short term rates, the yield curve would have an upward sloping shape. Bond portfolio manager tries to exploit this to his advantage and tries to increase the yield by purchasing the long term bonds. This strategy is known as riding the yield curve. When the long term bond approaches to maturity, the interest rate may get closer to the short term bond but, there would be capital gain. The bond portfolio manager may maintain the long term bond to utilise the capital gains as the bond moves to maturity date and “rides down the yield curve” to the lower interest rate, which will be appropriate when it becomes shorter term bond. Riding the yield curve would be successful only if the market interest rate does not rise. Sometimes the market interest rate may increase or short term end of the yield curve may slope upwards causing capital losses to the bond portfolio manager. To manage the situation

efficiently the bond portfolio manager should be continuously watchful about the shape of the yield curve and the shifts that occur in the market interest rates.

8.10 DURATION AND IMMUNISATION

Duration

Duration measures the time structure of a bond and the bond's interest rate risk. The time structure ways. The common way to state is how many years until the bond matures and the principal money is paid back. This is known as asset time to maturity or its years to maturity. The other way is to measure the average time until all interest coupons and the principal is recovered. This is called Macaulay's duration. Duration is defined as the weighted average of time periods to maturity, weights being present values of the cash flow in each time period. The formula for duration is,

$$D = \frac{\frac{C_1}{(1+r)}}{P_0} x1 + \frac{\frac{C_1}{(1+r)^1}}{P_0} x2 + \ldots\ldots\ldots \frac{\frac{C_1}{(1+r)^t}}{P_0} xT$$

This can be summarised as

$$D = \sum_{t=1}^{T} \frac{Pv(C_t)}{P_o} \times t$$

D = Duration

C = Cash flow

R = Current yield to maturity

T = Number of Years

PV (C) = Present value of the Cash flow

P = Sum of the present values of cash flow.



Excercise 8.5

Calculate the duration for bond A and Bond B with 7 per cent and 8 per cent coupons having maturity period of 4 years. The face value is Rs. 1000. Both the bonds are currently yielding 6 per cent.

Solution.

$$D=\frac{\frac{C_1}{(1+r)}}{P_0}x1+\frac{\frac{C_1}{(1+r)^2}}{P_0}x2+\frac{\frac{C_1}{(1+r)^3}}{P_0}x3+\frac{\frac{C_1}{(1+r)^4}}{P_0}x4$$

C_4 includes principal repayment

Bond 'A' with 7% coupon rate.

Year	Cash flow Ct	$\frac{1}{(1+r)^t}$	PV × CT	$\frac{\frac{C_t}{(1+r)^t}}{P_0}$	$\frac{\frac{C_t}{(1+r)^t}}{P_0} \times t$
1.	70	0.943	66.01	0.0638	0.0638
2.	70	0.890	62.30	0.0602	0.1204
3.	70	0.8396	58.77	0.0568	0.1704
4.	1070	0.7921	847.55	0.8191	3.2764
		P_0 = Rs. 1034.63			D = 3.6310

Bond 'B' with 8% coupon rate.

Year	Cash flow Ct	$\frac{1}{(1+r)^t}$	PV × CT	$\frac{\frac{C_t}{(1+r)^t}}{P_0}$	$\frac{\frac{C_t}{(1+r)^t}}{P_0} \times t$
1.	80	0.943	75.44	0.0706	0.0706
2.	80	0.890	71.200	0.0666	0.1332
3.	80	0.8396	67.168	0.0628	0.1884
4.	1080	0.7921	855.468	0.8000	3.2000
		P_0 = Rs. 1069.276		D = 3.5922	

Example	'A' Bond	'B' Bond
Face value	Rs. 1000.00	Rs. 1000.00
Coupon rate	7%	8%
Years to maturity	4.0	4.0
Macaulay's duration	3.631 Years	3.592 Years

From the above Excercise 8.5, it is clear that the bond with larger coupon payments has a shorter duration compared to the bond with low coupon rate.

General Rule

1. Larger the coupon rate, lower the duration and less volatile the bond price.
2. Longer the term to maturity, the longer the duration and more volatile the bone.
3. Higher the yield to maturity, lower the bond duration and bond volatility, and vice versa.
4. In a zero coupon bond, the bond's term to maturity and duration are the same. The zero coupon bond makes only one balloon payment to repay the principal and interest on the maturity date.

Importance of Duration- The concept of duration is important because it provides more meaningful measure of the length of a bond, helpful in evolving immunisation strategies for portfolio management and measures the sensitivity of the bond price to changes in the interest rate.

Duration and Price Changes- The price of the bond changes according to the interest rate. Bond's price changes are commonly called bond volatility. Duration analysis helps to find out the bond price changes as the yield to maturity changes. The relationship between the duration of a bond and its price volatility for a change in the market interest rate is given by the following formula.

$$\text{Percentage change in price} = \frac{-MD[BP]}{100}$$

MD = Modified duration

BP = Basis point is 0.01 of 1% (1% = 100).

$$\text{Modified duration MD} = \frac{D}{1+\frac{R}{P}}$$

Where

D = Duration

R = Market Yield

P = Interest payment per year (usually two)

Immunisation:

Immunisation is a technique that makes the bond portfolio holder to be

relatively certain about the promised stream of cash flows. The bond interest rate risk arises from the changes in the market interest rate. The market rate affects the coupon rate and the price of the bond. In the immunisation process, the coupon rate risk and the price risk can be made to offset each other. Whenever there is an increase in the market interest rate, the prices of the bonds fall. At the same time the newly issued bonds offer higher interest rate. The coupon can be reinvested in the bonds offering higher interest rate and losses that occur due to the fall in the price of bond can be offset and the portfolio is said to be immunized.

Let us now solve sum excercise which are as follow:



Excercise 8.6

Determine the price of Rs. 1,000 zero coupon bond with yield to maturity of 18 per cent and 10 years to maturity. What is YTM of this bond if its price is Rs. 220 ?

Solution.

(a) $$\text{Price} = \frac{\text{Face value}}{(1+\text{YTM})^n}$$

$$= \frac{1{,}000}{(1+0.18)^{10}} = \frac{1{,}000}{5.2338}$$

Rs. 191.07

(b) $$\left(\frac{\text{Face value}}{\text{Bond value}}\right)^{1/r} - 1 = \text{YTM}$$

$$\left(\frac{\text{Rs. } 1000}{\text{Rs. } 220}\right)^{1/r} - 1 = \text{YTM}$$

$(4.55)^{0.1} - 1 = \text{YTM}$

$1.163 - 1 = 0.163$

YTM = 16.3%



Exercise 8.7

Arvind considers Rs. 1000 par value bond bearing a coupon rate of 11% that matures after 5 years. He wants a minimum yield to maturity of 15%. The bond is currently sold at Rs. 870. Should he buy the bond ?

Solution.

$$Po = \frac{Coupon}{(1+Y)} + ... + \frac{Coupon + Face\ value}{(1+Y)^5}$$

(or)

P_0 = (Coupon) (PVIFA, n) + (Principal amount) (PVIF/k,n)

P_0 = 110 (PVIFA 15%, 5 years) + 1000 (PVIF/15%, 5 yrs)

110 (3.352) + 1000 (0.497)

368.7 + 497 = 865.7.

At Arvind's anticipated minimum yield of 15% the price should be Rs. 865.70 but the market price is higher. Hence, he should not buy.



Exercise 8.8

Anand owns Rs. 1,000 face value bond with five years to maturity. The bond has an annual coupon of Rs. 75. The bond is currently priced at Rs. 970. Given an appropriate discount rate of 10%, should Anand hold or sell the bond?

Solution.

P_0 = Coupon (PVIFA k, n) + Principal amount (PVIF k, n)

75 (PVIFA 10%, 5 yrs) + 1000 (PVIF 10%, 5 yrs)

75 × 3.7908 + 1000 (0.6209)

Rs. 284.31 + 620.9

Rs. 905.21.

The market price Rs. 970 is higher than the estimated price Rs. 905.2. It is better for Anand to sell the bond.



CHECK YOUR PROGRESS

Q4: Define Current Yield

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.....

Q5: Define Term Structure

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8.11 LET US SUM UP

- Bonds, do have risk. Changes that occur in the market interest rate affect the value of the bond. It is known as interest rate risk. Other than this, there are default risk, marketability risk and callability risk.

  Holding period return

  $$= \frac{\text{Price gain or loss during the holding period} + \text{Coupon interest}}{\text{Price at the beginning of holding period}}$$

- Yield to maturity is the single discount factor that makes the present value of future cash flows from a bond equal to current price of the bond.

  $$\text{Pr esent value} = \frac{\text{Coupon}_1}{(1+y)^1} + \frac{\text{Coupon}_2}{(1+y)^2} + \ldots + \frac{(\text{Coupon}_n + \text{face value})}{(1+y)^n}$$

- Bond value theorem states that market price affects the yield and vice versa. This leads to convexity in the yield curve.
- The relationship between the yield and time to maturity is the term structure of interest rate. The term structure of interest rate is explained by expectation theory, liquidity theory and segmentation theory.
- When the long term coupon rate is higher than the short term rate, the bond portfolio manager may switch over from short term bond to long term bond and earn capital gains. This is known as riding the yield curve.
- Duration is a measure of the average time until all interest coupons and the principal amount is recovered.

  $$D = \left[\sum_{t=1}^{T} \frac{Pv(C_t)}{P_o} \times t \right]$$

- Immunisation is the technique adopted to make the cashflows from holding the bond relatively certain. On the basis of duration immunisation can be done.



8.12 FURTHER READING

- M. Ranganathan and R. Madhumathi: *Investment Analysis and Portfolio Management,* Pearson Education, New Delhi.
- Punithavathy Pandian: *Security Analysis and Portfolio Management,* Vikas Publishing House Pvt. Ltd., New Delhi.
- Bharti V. Phathak: I*ndian Financial System, Pearson Education,* Delhi.
- Donald E. Fischer and Ronald J. Jordon: *Security Analysis and Portfolio Management,* PHI.
- Prasanna Chandra: *Investment Analysis and Portfolio Management,* TMH, Delhi.



8.13 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q1: A bond is a debt instrument issued by the government or a government agency or a business enterprise.

Ans to Q2: Book value per share is determined as net worth divided by the number of shares outstanding. Book value reflects historical cost, rather than value.

Ans to Q3: The time value concept of money is that the rupee re ceived today is more valuable than a rupee received to morrow.

Ans to Q4: The current yield is the coupon payment as a percentage of current market prices. Because bonds trade in the secondary market, they may sell for less or more than par value, which will yield an interest rate that is different from the nominal yield, called the current yield,

Ans to Q5: The relationship between the yield and time or years to maturity is called term structure.



8.14 MODEL QUESTIONS

1. How would you assess the present value of a bond? Explain the various bond value theorems with examples.
2. Discuss the term structure of the interest rate? How do theories explain the term structure of the interest rate?
3. What is meant by duration? Explain the relationship between duration and price change.
4. How would you immunise the bond portfolio using the immunisation technique?
5. Find out the yield to maturity on a 8 per cent 5 year bond selling at Rs. 105?
6. Determine the present value of the bond with a face value of Rs. 1000, coupon rate of Rs. 90, a maturity period of 10 years for the expected yield to maturity of 8 per cent.
   (ii) If N is equal to 7 years in the above example, determine the present value of the bond. Discuss the effect of the maturity period on the value of the bond.
7. Bond A and B have similar characters except the maturity period. Both the bonds carry 9 per cent coupon rate with the face value of Rs. 10,000. The yield to maturity is 9%. If the yield to maturity is to rise to 11% what will be the respective percentage price change in bond A with 7 years to maturity and B with 10 years to maturity?
8. A bond with the face value of Rs. 1000 pays a coupon rate of 9 per cent. The maturity period is 9 years (a) Find out the approximate yield to maturity (b) current yield and the nominal interest rate.
9. Determine the yield to maturity if a zero coupon bond with a face value of Rs. 1000 is sold at Rs. 300. The maturity period is 10 years.
10. Prem is considering the purchase of a bond currently selling at Rs. 878.50 the bond has four years to maturity, face value of Rs. 1,000 and 8% coupon rate. The next annual interest payment is due after one year from today. The required rate of return is 10%.

a. Calculate the intrinsic value (Present value) of the bond. Should Prem buy the bond?

b. Calculate the yield to maturity of the bond.

11. What is the value of a Rs. 1,000 bond that paying 5 per cent annual coupon rate in semiannual payments over 5 years until it matures if its yield to maturity is 7 per cent?

12. Determine Macaulay's duration of a bond that has a face value of Rs. 1,000 with 10 per cent annual coupon rate and 3 years term to maturity. The bond's yield to maturity is 12 per cent.

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