1

INVESTMENT MANAGEMENT

Unit Structure

1.0 Learning Objectives
1.1 Introduction to Investment
1.2 Objectives of Investment
1.3 Need and Importance of Investment
1.4 Investor & its types
1.5 Philosophy of Investor
1.6 Investor Opportunity
1.7 Summary

1.0 LEARNING OBJECTIVES

After studying this lesson you are able to:

- Understand the meaning of Investment.
- Learn about Objectives and Types of Investment and Investors.
- Know about different investor opportunity

1.1 INTRODUCTION

A person will be earning and spending money throughout his life. Most of the times, there are imbalances between the earnings and spending of a person. This imbalance will lead a person either to borrow or to save to capitalize the long run benefits from the income.

When current income is more than current consumption, people tend to save the excess money. One option is to save the money in the cupboard until some future time when consumption exceeds current income or another option is that a person can give up the present possession of this money for a further larger amount of money that will be available for future consumption. Money does not have any value unless it is invested. This trade-off of present consumption for future consumption is the reason for savings. When the savings are made to make them increase over time is called investment. Money has to be invested in some financial asset to get a return. It is assumed that a person is risk averse and simultaneously he expects a good return on the money that he invests.

Investment is the sacrifice of some present value for the uncertain future reward. An investment decision is a trade-off between risk and

return. All investment choices are made in accordance with the personal investment ends in contemplation of an uncertain future.

1.2 CONCEPT OF INVESTMENT

The term investment has many facets and is used in many fields like management, finance, economics etc. but we will be strictly sticking ourselves to the meaning that is about keeping in mind the financial market.

Warren Buffet, one of the most respected investors all around the world and CEO & Chairman of one of the world famous Investment Company Berkshira Hathway has opined that if a person invests money in the market with even a hint of thought of selling it once the price rises is not at all an investment.

For example, A person purchases shares of Tejas Network company worth 10000/- intending to hold them for a long term and expecting at least Rs. 50 dividends on them.

An investment is said to be genuine if it has been made keeping in mind certain expected rate of return in mind. In the above case, if that person had just taken the Tejas Network share without expecting the dividends then it is not a genuine investment.

There are three things that compensate the investor collectively from the Expected rate of Return such as : 1) Time 2) Inflation 3) Uncertainty

The first one is the time for which the funds are committed. Let's think that Mr. Akash has lot of excess money and he does not know what to do with that so he just digs a hole on the floor of his home and buries all the excess money for two years and after two years he takes money and it should not be surprising for him to find out that amount has not changed. It is just to show that if he had invested the same thing like markets or banks or post offices then he would have received some rate of interest and this is called as pure rate of interest.

Second one is rate of inflation. Just think that you have 100 rupees now in your pocket and with that you can buy 2 kg of sugar but instead of that you choose to invest it in market for one year. There is something called as inflation which changes the purchasing value whenever there is fluctuation in its value so if the inflation rate is% per annum you would definitely expect the investment that you have done in the market to give you a return of 4 rupees so that you can buy the same 2kg of sugar after one year. This is called as nominal rate of interest and it is the sum of pure rate of interest and compensation for inflation.

The third and the last one is uncertainty of the future payments. The payments that we are expecting are uncertain. Hence, the risk element is involved and the investors are ready to take that risk and in return they expect something called as risk premium. Risk premium is nothing but the risk free returns plus extra returns for risk.

1.3 DEFINITION

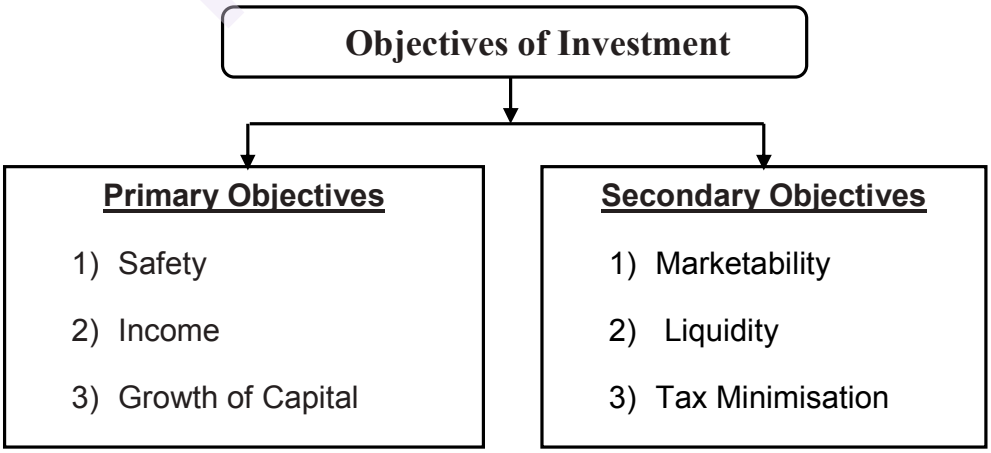
"An investment operation is one which, upon thorough analysis, promises safety of principal and an adequate return. Operation not meeting these requirements are speculative."

- By Graham and Qadd's Security Analysis,

"Investment management is the process of managing money including investments, budgeting, banking and taxes, also called as money management."

1.4 OBJECTIVES OF INVESTMENT

When a person earns more than he spends, he has surplus money. When the money is saved, it is kept in the form of cash and will be readily available for use at any point of time. But the money kept as cash remains stagnant and does not grow it is because money has not been put into use. When the money saved is put into some form of use, then it starts earning and the owner get the return on it. A person who has surplus money is prone to invest the same in some assets with the view to earn some return. There is no guarantee on the money invested as it depends on the type of the investment made and the risk level associated with it. There are different types of assets available for investment with different risk-return characteristics and the investor will choose the assets which offers him higher return for the level of risk he is prepared to take.



The options for investing our savings are continually increasing, yet every single investment vehicle can be easily categorised according to three fundamental characteristics – safety, income and growth which also

correspond to type of investor objectives. While it is possible for an investor to have more than one of these objectives, the success of one must come at the expense of others.

1. Safety: - Perhaps, there is truth to the axiom that there is no such thing as a completely safe and secure investment. Yet, we can get close to ultimate safety for our investment funds through the purchase of government issued securities in stable economic systems, or through the purchase of the highest quality corporate bonds issued by the economy's top companies. Such securities are arguably the best means of preserving principle while receiving a rate or return.

The safety investment are usually found in the money market and include such securities as Treasury bills (T-bills), Certificate of Deposits (CD), Commercial Paper or in the fixed income bonds market in the form of municipal and other government bonds, and in corporate bonds. The securities listed above are ordered according to the typical spectrum of increasing risk and, in turn, increasing potential yield. To compensate for their higher risk, corporate bonds return a greater yield than T-bills.

2. Income: - The safety investment are also the ones that are likely to have the lowest rate of income return or yield. Investors must inevitably sacrifice a degree of safety if they want to increase their yields. This is the inverse relationship between safety and yield; as yield increases, safety generally goes down, and vice versa.

In order to increase their rate of investment return and take on risk above that of money market instruments or government bonds, investors may choose to purchase corporate bonds or preferred shared with lower investment ratings. Investment grade bonds rated at A or AA are slightly riskier than AAA bonds, but presumably also offer a higher income return than AAA bonds.

Most investors, even the most conservative minded ones, want some level of income generation in their portfolios, even if it's just to keep up with the economy's rate of inflation. But maximizing income return can be an overarching principle for a portfolio, especially for individuals who require a fixed sum from their portfolio every month.

For Example: A retired person who requires a certain amount every month, is well served by holding reasonably safe assets that provide funds over and above their income generating assets, such as pension plans

3. Growth of Capital:- Growth of Capital is most closely associated with the purchase of common stock, particularly growth securities, which offer low yields but considerable opportunities for increase in value. For this reason, common stock generally ranks among most speculative of investments as their return depends on what will happen in an

unpredictable future. Blue- chip stocks, by contrast, can potentially offer the best of all worlds by possessing reasonable safety, modest income and potential for growth in capital generated by long term increase in corporate revenues and earnings as the company matures. Yet, rarely is any common stock able to provide the near absolute safety and income generation of government bonds.

Secondary Objectives

1. Tax Minimisation: An investor may pursue certain investments in order to adopt tax minimisation as part of his or her investment strategy. A highly paid executive wants to seek investments with favourable tax treatment in order to lesser his or her overall income tax burden.

2. Liquidity: - Liquidity refers to an investment ready to convert into cash position. In other words, it is available immediately in cash form. Liquidity means that investment is easily realisable, saleable or marketable. When the liquidity is high, then the return may be low. For example, UTI units. An investor generally prefers liquidity for his investments, safety of funds through a minimum risk and maximisation of return from an investment.

3. Marketability: - Marketability refers to buying and selling of Securities in market. Marketability means transferability or saleability of an asset. Securities are listed in a stock market which are more easily marketable than which are not listed. Public Limited Companies shares are more easily transferable than those of private limited companies.

4. Concealability: -Concealability means investment to be safe from social disorders, government confiscations or unacceptable levels of taxation, property must be concealable and leave no record of income received from its use or sale. Gold and precious stones have long been esteemed for these purposes, because they combine high value with small bulk and are readily transferable.

1.5 NEED AND IMPORTANCE OF INVESTMENTS

An investment is an important and useful factor in the context of present day conditions. Some important factors are :

• Longer life expectancy or planning for retirement

Investment decisions have become more significant as most people in India retire between the ages of 58 to 60 and so, they are planned to save their money. Saving by themselves do not increase wealth, saving must be invested in such a way that the principal and income will be adequate for a greater number of retirement years. Longer life expectancy is one reason for effective saving and further investment activity that help for investment decisions.

• Increasing rates of taxation

When tax rate is increased, it will focus for generating saving by tax payer. When the tax payer invest their income into provident fund, pension fund, Unit Trust of India, Life Insurance, Unit Linked Insurance Plan, National Saving Certificates, Development Bonds, Post Office Cumulative Deposit Schemes etc. it affects the taxable income.

• High interest rates

Interest rate is one of the most important aspects of a sound investment plan. The interest rate differs from one investment to another. There may be changes between degree of risk and safe investments. They may also differ due to different benefit schemes offered by the institutions. A high rate of interest may not be the only factor favouring the outlet for investment. Stability of interest is an important aspect of receiving a high rate of interest.

• High rate of inflation

Inflation has become a continuous problem. It affects in terms of rising prices. Several problems are associated and coupled with a falling standard of living. Therefore, investor careful scrutiny of the inflation will make further investment process delayed. Investor ensures to check up safety of the principal amount and security of the investment. Both are crucial from the point of view of the interest gained from the investments.

• Larger incomes

Income is another important element of the investment. When government provides jobs to the unemployed persons in the country, the ultimate result is ensuring of income than saving the extra income. More incomes and more avenues of investment have led to the ability and willingness of working people to save and invest their funds.

Investment Channels

The growth and development of the country leading to greater economic prosperity has led to the introduction of a vast areas of investment outlets. Investment channels means an investor is willing to invest in several instruments like corporate stock, provident fund, life insurance, fixed deposits in the corporate sector and unit trust schemes.

1.6 INVESTOR

"A person whose principal concern in the purchase of a security is the minimizing of risk, compared to the speculator who is prepared to accept calculated risk in the hope of making better-than-average profits, or the 'gambler' who is prepared to take even greater risks. More generally it refers to people who invest money in investment products."

"An individual who makes investments. An investor can act on behalf of others, for example, stock brokers or mutual fund managers make investments for others. Or else an investor can make investments

Types of Investors

Investors are mainly of two types:

❖ **Individual Investors**

Individual Investor are individuals who invest their funds into financial assets. They are in mass. Each individual will have comparatively smaller amount of investible surplus. Majority of individual investors lack the knowledge and skills required to carry out analysis of the investment opportunities available in the market.

❖ **Institutional Investors**

Institutional investor are institutions that mobilize money from individuals and other sources and invest them in financial assets. Mutual Funds, Insurance Companies, Investment Companies, Banks, NBFCs, Financial Investment etc., are institutions who invest their surplus funds. They engage professionals to manage their investment and to carry out extensive analysis for making investments and continuously monitoring the performance of the investments. Such professionals are also responsible for corrective decisions and alteration of investment whenever it is required. Institutional investors are better equipped to maximise their return and minimise their risk.

Philosophy of Investor

• Safety Players

Safety Players who take the path of least resistance, looking primarily for security and safety in their investments and doing what has worked previously.

• Entrepreneurs

Entrepreneurs are a particularly male-dominated profile driven by a passion for excellence and commitment, and who are not motivated by money in itself. Financial success is a scorecard and stock investment is a method of implementing and demonstrating that success.

• Optimists

Optimists are non-risk oriented, often near retirement, seeking peace of mind, these are investors who don't like to become too involved with their own financial management as it would cause them stress and reduce their enjoyment of life.

• Hunters

Hunters are often educated, high-earning women with an impulsive streak, a 'live now attitude.' They have a strong work ethic, much like entrepreneurs, but lack the same confidence in themselves. They may attribute their success to luck rather than ability.

• Achievers

Achievers are conservative, risk-averse, these investors like to feel in control of their money, with security and protection of their assets a

primary consideration. They are often, married, well educated, high-earners who feel that hard work and diligence is more likely to bring financial reward than investing.

• **Perfectionists**

Perfectionists are afraid of making financial mistakes, they tend to avoid investment decisions altogether. They lack confidence and self-esteem, and have low pride in handling financial matters, finding every conceivable excuse for not taking action. For them no investment is without fault.

• **Producers**

Producers are highly committed to their work. They may earn less due to a lack of self-confidence in money management. And with a lack of basic financial knowledge they may have less available funds to invest. They do not appreciate how to evaluate risk appropriately.

• **High Rollers**

High Rollers are thrill seekers, power seekers, creative and extroverted; they work hard and play hard. They have to be involved in high risk investing with a large amount of their assets. Financial security bores them - even though their actions may have financially dangerous consequences.

• **Money Masters**

Money Masters are tending to have a balanced financial outlook that gives contentment and security; these investors like to be involved with the management of their money and their choice of investments, although they will take onboard good, sound advice. They are determined individuals, not easily thrown of their chosen course, and who don't leave things to luck.

• **Adventurers**

Adventurers are confident 'go for' and ready to take chances.

• **Celebrities**

Celebrities are those who need to be in the center of things and don't like to be left out, often constantly checking whether they should be in the latest fashionable investment but may not really have any clue as to how to take control of their finances.

• **Individualists**

Individualists are confident individuals who make their own decisions but who are methodical, careful, balanced and analytical.

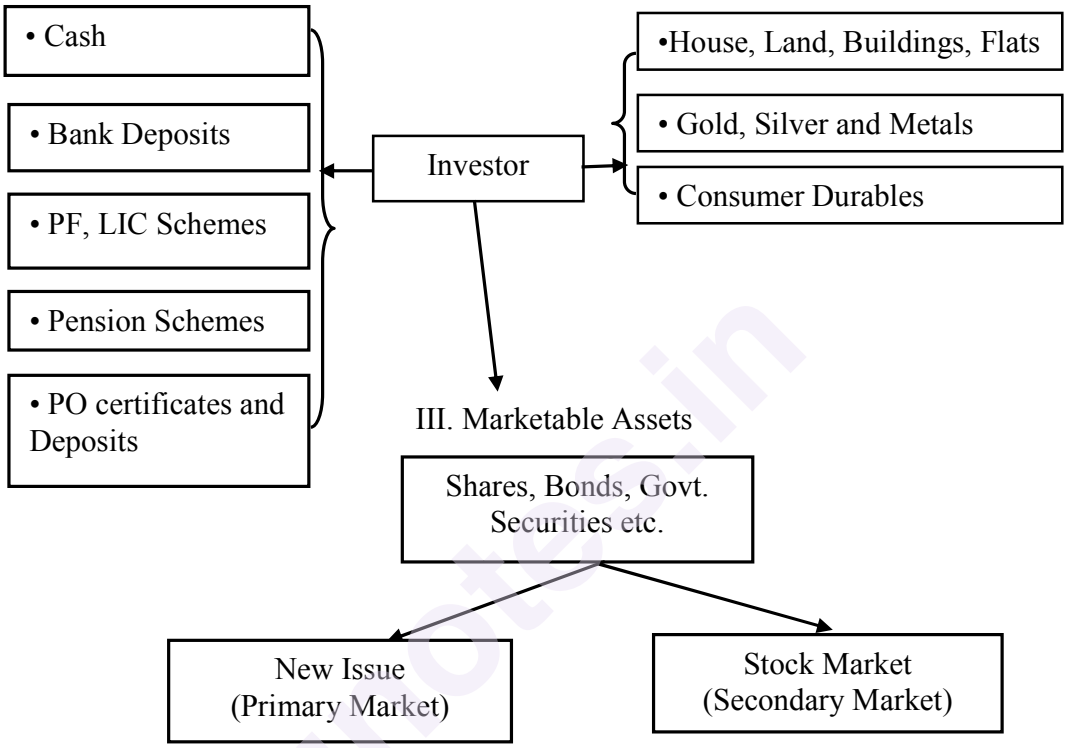
• **Guardians**

Guardians are investors, often older ones, who are cautious and intent on safeguarding their wealth, shunning volatility or excitement.

1.7 INVESTMENT OPPORTUNITIES

Investment activity includes buying and selling of the financial assets, physical assets and marketable assets in primary and secondary markets. Investment activity involves the use of funds or savings for further creation of assets or acquisition of existing assets.

I. Financial Assets II. Physical Assets



A. Classification of Investment

- **On the Basis of Physical Investments**

Physical investments are:

• House
• Land
• Building
• Gold and Silver
• Precious stones

- **On the Basis of Financial Investment**

Financial investments further classified on the basis of:

i) Marketable and Transferable investments

Marketable investments are: 3

- Shares (Equity Shares & Preference Shares)
- Debentures of Public Limited Companies, particularly the listed company in Stock Exchange
- Bonds of Public Sector Units Government Securities, etc.

ii) Non-Marketable Investments
Non-marketable investments are:

• Bank Deposits
• Provident and Pension Funds
• Insurance Certificates
• Post office Deposits
• National Saving Certificates
• Company Deposits
• Private Companies Shares etc.

B. Modes of Investment

Modes of investment consist of:

• Security Forms of Investment
• Non-Security Forms of Investment/Non-Marketable Investment Security

Forms of Investment :

i) Security forms of investment includes the following:

• Corporate Bonds/Debenture
    (a) Convertible
    (b) Non-Convertible
• Public Sector Bonds
    (a) Taxable
    (b) Tax Free
• Preference Shares
• Equity Shares
    (a) New Issue
    (b) Rights Issue
    (c) Bonus Issue

ii) Non-Security Forms of Investment (non transferable)

Non-security forms of investment as outlined below:

• National Savings Scheme
• National Savings Certificates
• Provident Funds
    (a) Statutory Provident Fund
    (b) Recognised Provident Fund
    (c) Unrecognised Provident Fund
    (d) Public Provident Fund
• Corporate fixed deposits
    (a) Public Sector
    (b) Private Sector

• Life insurance policies

(a) Whole Life Policies
(b) Limited-payment Life Policy
(c) Convertible Whole Life Assurance Policy
(d) Endowment Assurance Policy
(e) Jeevan Mitra
(f) The Special Endowment Plan with Profits
(g) Jeevan Saathi
(h) The New Money Back Plan
(i) Marriage Endowment/Educational Annuity Plan with Profits
(j) Bima Sandesh Premium Back Term Insurance Plan
(k) New Children's Deferred Assurance Plan
(l) Jeevan Dhara
(m) New Jana Raksha Plan with Profits
(n) Jeevan Akshay Plan
(o) Jeevan Balya Plan
(p) Jeevan Kishor
(q) Jeevan Griha
(r) Jeevan Sarita and Others

• Unit schemes of Unit Trust of India (Some are marketable among these)

(a) Unit Scheme, 1964
(b) Reinvestment Plan, 1966
(c) Unit Linked Insurance Plan, 1971
(d) Capital Gains Unit Scheme, 1983
(e) Children's Gift Growth Funds, 1986
(f) Parent's Gift Growth Funds, 1987
(g) Monthly Income Unit Scheme with Extra Bonus Plus Growth
(h) Master Shares
(i) Master Gains
(j) Equity Linked Savings Scheme
(k) Growing Monthly Income Unit Scheme
(l) Master share Plus etc.

•Post Office Savings Bank Account

(a) Recurring Deposits
(b) Time Deposits
(c) Monthly Income Scheme
(d) Social Security Certificates

•Others

(a) Rahat Patras or Relief Bonds

(b) Kisan Vikas Patra

(c) Deposits in Co-operative Banks

(i) Recurring deposits

(ii) Time deposits, etc.

1.8 SUMMARY

The purpose of this unit is to provide background that can be used in subsequent chapters. To achieve that goal, we covered several topics:

- We discussed why individuals save part of their income and why they decide to invest their savings. We defined investment as the current commitment of these savings for a period of time to derive a rate of return that compensates for the time involved, the expected rate of inflation, and the uncertainty.
- We discussed the objectives of investment in which we studies the primary objectives and secondary objectives of investment and also explained the importance of investment.
- We considered the term 'Investor', explained the types of investor and the philosophy of investors.
- We discussed the different opportunities of Investment, Classification of Investment and Modes of Investment.

1.9 REVIEW QUESTIONS:

1. Define the term Investment. Explain the objectives of Investment
2. What is Investment? Explain the importance of Investment
3. Who is Investor? Discuss the Philosophy of Investor
4. Discuss the different opportunities for Investor.

2

FUNDAMENTAL ANALYSIS

Unit Structure

2.0 Learning Objectives
2.1 Introduction
2.2 Fundamental Analysis
2.3 Economic Analysis
a) Introduction
b) Concept
c) Factors of Macro Economic Analysis
d) Economic Factors Influenced to Investment Management
2.4 Summary

2.0 LEARNING OBJECTIVES

After studying this lesson you are able to:

- To understand the meaning of fundamental analysis
- To know the impact of economic factors on stock value
- To know the Economic factors influenced Investment Management

2.1 INTRODUCTION

Investment decisions are a part of our economic life. Everybody makes such decisions in different contexts at different times. Some are able to reap more profits through them; while others simply lose their money. Attempts should, therefore, be made to understand and know the way sound investments decision can be made in order to improve the change of making profit through them. Investment decision making being continuous in nature should be attempted systematically. These are fundamental analysis and technical analysis. In this approach, the investor attempts to look at fundamental factors that affect risk return characteristics of the security. While in the second approach, the investor tries to identify the price trends that reflect these characteristics. Technical analysis concentrates on demand and supply of securities and prevalent trend in share price mean by various market indices in the stock market.

2.2 FUNDAMENTAL ANALYSIS

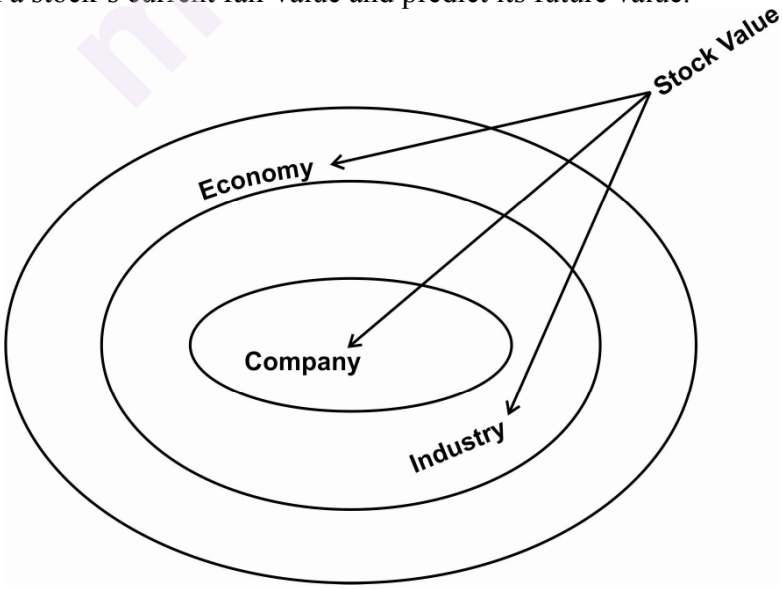
In the fundamental approach, an attempt is made to analyse various fundamental or basic factors that affect the risk-return of the securities.

The effort here is to identify those securities that one perceives as mispriced in the stock market. The assumption in this case is that the market price of the security and the price as justified by its fundamental factors called intrinsic value are different and the market place provides an opportunity for a discerning investor to detect such discrepancy. The moment such a description is observed, a decision to invest or disinvest is made. The decision rule under this approach is like this:

If the price of a security at the market price is higher than the one, which is justified by the security fundamentals, sell that security. This is because, it is expected that the market will sooner or later realise its mistake and price the security properly. A deal to sell this security should be based on its fundamentals, it should be both before the market correct its mistake by increasing the price of security in question. The price prevailing in market is called market price (MP) and the one justified by its fundamentals is called intrinsic value (IV).

1. If IV > MP, buy the securities
2. If IV < MP, sell the securities
3. If IV = MP, no action

The fundamental factors mentioned above may relate to the economy or industry or company or some of this. Thus, economy fundamentals, industry fundamentals and company fundamentals are considered while prizing the securities for taking investment decision. This framework can be properly utilized by making suitable adjustments in a regular context. This kind of fundamental analysis is known as 'top down approach' because the analysis starts from an analysis of the economy, moves to industry, and narrows down to the company. This is also called EIC (Economy, Industry and Company) analysis. Fundamental analysis is a combination of economic, industry and company analysis to obtain a stock's current fair value and predict its future value.



The fundamental analysis of the investment management involves three major steps. They are as outlined below :

- Economic Analysis
- Industry Analysis
- Company Analysis

2.3 ECONOMIC ANALYSIS

a) Introduction

Companies are a part of the industry, which itself is a part of the overall economy. Thus, the performance of a company depends upon the performance of the economy in the first place. In order to estimate stock price changes, an analyst must spend more than a little time probing the forces operating in the overall economy. A failure to examine the overall economic influences is a naïve, that of assuming that individual companies follow their own private paths in a vacuum.

It is important to predict the course of the national economy, because economic activities affect corporate profits, investor attitudes and expectations and then ultimately influence the security prices. If the economy is in recession or stagnation, ceteris paribus, the performance of the company will be bad in general, with some exceptions. However, on the other hand, if the economy is booming, income is rising and demand is good, then the industries and the companies in general may be prosperous, with some expectations. However, An outlook of subsiding economic growth, can lead to lower corporate profits.

b) Concept

Economic analysis is a study of the general economic factors that go into an evaluation of a security's value. The stock market is an integral part of an economy. When the level of economic activity is low, stock prices are low, and when the level of economic activity is high, stock prices are high, reflecting a booming outlook for the sales and profit of the firms. An analysis of the macroeconomic environment is essential to understand the behaviour of stock price.

c) Macro-Economic Analysis

The analysis of the following factors indicates the trends in macro-economic changes that effect the risk and return on investment.

i. Gross Domestic Product

The economic well-being of any nation can be depicted through several measures. However, the annual total output of goods and services stands out as the best available measure. The most commonly used measure of the aggregate output of any economy is the gross domestic product (GDP).

Gross domestic product is the total market value of a nation's output. It is the market value of all final goods and services produced

within a given period of time by factors of production located within a nation. It is a key concept in the national income and product accounts. GDP, as a measure of the total production of an economy, acts as an economic barometer of a nation.

ii. Savings and investment

It is obvious that growth requires investment, which is turn, requires a considerable amount of domestic savings. Growth in savings naturally leads to more investments. High capital investment means possibility of more production, more demand and supply, better prices in the future and consequently, higher business profits and a positive outlook for the stock market. Savings are distributed over different assets like equity shares, deposits, mutual fund units, real estate etc. The primary market is a channel through which the savings of investors are made available to corporate bodies.

iii. Inflation

A simple explanation of inflation is that it refers to a situation where too much money is chasing too few goods. Inflation indicates a rise in the price of goods and services. Along with the growth of GDP, if the inflation rate also increases, then the real rate of growth would be very low. Inflation and stock market have a very close relationship. If there is inflation, the stock market is adversely affected. The price of stock is directly related to the performance of the company.

iv. Interest rates

Interest rate play a key role in the general business cycle and the financial markets. When interest rates or interest rate expectations change, the effects become far-reaching. When rates rises, consumer spend less, slowing down the retail sales which lead to lower corporate profits, a declining stock market, and higher employment. Vice versa holds good. The effect of declining corporate profits on the stock market is compounded by the fact that higher interest rates make interest bearing investments more attractive, causing an exodus of money from the stock market.

v. Budget and fiscal deficit

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

Fiscal deficit is the difference between the government's total receipts (excluding borrowing) and total expenditure. It can be expressed as follows:

Fiscal deficit = Total expenditure (revenue + capital) – (Revenue receipts + Non debt capital receipts)

vi. Tax structure

Every year in march, the business community eagerly awaits the statement from the government regarding the tax policy. Concession and incentives given to a particular industry encourage investment in that particular industry. The finance minister introduced tax exemptions for stock market investments in union Budget (2012-13) to attract retail investors to the stock market. GST has been introduced in the year 2017.

vii. Balance of Payment

The balance of payment is the record of a country's money receipts from abroad and payments to foreign countries. The difference between receipts and payments may be surplus or a deficit. Balance of payment is a measure of the strength of the rupee on the external account. If the deficit increases, the rupee value may depreciate against other currencies, thereby affecting the cost of imports. Industries involved in the export and imports are markedly affected by changes in the foreign exchange rate. The volatility of the foreign exchange rate affects the investment of the foreign institutional investors in the Indian stock market. A favourable balance of payments has a positive effect on the stock market.

viii. Foreign Direct Investment

According to the International Monetary Fund (IMF), the definition of the foreign direct investment (FDI) includes different elements, namely, equity capital, reinvestment earnings of foreign companies, inter- company debt transactions, short and long-term loans, financial leasing, trade credits, investment made by foreign venture capital investors and so on. FDIs help in the upgrading the technology, skills and managerial capabilities and bring much needed capital into the economy. They also help in providing employment opportunities.

ix. Investment by Foreign Institutional Investor (FIIs)

FIIs are considered to be the main drivers of the stock market. Outflows of FII investment affect the stock market negatively. Considering the importance of FIIs investments, in Jan, 2012, the government announced its decision to allow qualified foreign investor (QFIs) to invest directly in the Indian equity market

x. International economic conditions

Worldwide economics are not independent but interdependent. The boom or depression in one country affects other countries and the stock market. For example, the sub-prime crisis in the US, bankruptcies and 29 % drop in the Dow Jones and NASDAQ had an impact on the Indian economy.

xi. Monsoon and agriculture

In spite of technological advancements, Indian agriculture still depends heavily on the monsoons. Good monsoon are a boon for agriculture. Agriculture is directly and indirectly linked to many industries. For example, the sugar, cotton, textile and food processing

industries depend upon agriculture for raw materials. Farm equipment, fertilizer, and insecticide industries supply the inputs used in agriculture. A favourable monsoon leads to higher demands for these inputs, a bumper crops and more disposable income in rural areas. This leads to buoyancy in the stock market. When the monsoon fails, agriculture production and hydropower generation decline. They cast a shadow on the share market.

xii. Infrastructure facilities

Good infrastructure facilities affect the stock market that is favourable. Infrastructure facilities are essential for the growth of the industrial and agricultural sectors. A wide communications network is a must for the growth of the economy. Regular supply of energy without any power cuts will enhance production. The banking and financial sector should also be strong enough to provide adequate support to industry and agriculture. In India, even though infrastructural facilities have been developed, they are not enough. The government has liberalised its policy for the communication, transport and power sector.

xiii. Demographic factors

Demographic data provide details about the population of age, occupation, literacy and geographical location. This is needed to forecast the demand for consumer goods. The population by age indicates the availability of a skilled workforce. The cheap labour force in India has encouraged many multinationals to launch their ventures. Indian labour is cheaper compared to its western part. Population, by providing employees and demand for products, affects industry and the stock market

d) Economic Analysis factors influenced Investment Management

- Demand of security from the investor. It has created a heavy demand for security. If demand, the price value of the securities is increased in the market.
- Demand and supply is also influenced by investment; for example, if supply of securities is greater, the result is the price of securities is reduced.
- If demand for security, there is no supply, in this circumstance, the price of such company's shares is high.
- Economic factors have help to creation of savings.
- Economy tells something about the effective way to earn income and then how to convert a successful saving avenue to the common people.
- Economical factors are in favour with investment decisions. If there is inflation, the result is price increased for commodities. At the same time, business earns more profit that will be convert as saving. If there is deflation, the commodities price is reduced. At the same time, common people save money and then will investment companies.

2.4 SUMMARY

- Fundamental analysis is the study of the economic factors, and the industrial environment and other factors that have a bearing on the company.
- A commonly advocated procedure for fundamental analysis involves three steps: Macro Economic Analysis, Industry analysis and Company analysis.
- The state of the economy determines the growth of GDP and investment opportunities.
- An economy with favourable savings, investments, stable prices, balance of payments, and infrastructural facilities provides the best environment for common stock investment
- The leading, coincidental and lagging indicators help to forecast economic growth. A rising stock market indicates a strong economy ahead.
- And, also explains the significance of Economical factors which are favourable for investment decisions.

5. REVIEW QUESTIONS:

1. What is fundamental Analysis? Explain the concept of Economic analysis.
2. What are the factors influencing economic analysis?
3. Explain the importance of economic analysis and the state the economic factors considered for this analysis.

3

INDUSTRY ANALYSIS (PART - A)

Unit Structure

3.0 Learning Objectives
3.1 Industry Analysis- Introduction
3.2 Elements of Industry Analysis
3.3 Need of Industrial Analysis
A. Classification of Industry
B. Industry Groups
3.4 Summary
3.5 Review Questions

3.0 LEARNING OBJECTIVES

After studying this lesson you are able to:

- To understand the meaning of Industry analysis
- To know the elements of industry analysis
- To understand the need of industry analysis
- To know the classification of industries and industrial groups

3.1 INTRODUCTION

The term 'Industry' refers to a group of firms producing similar or reasonably similar products. For example, textile industry includes spinning mills, weaving mills, dyeing units, textile processing units, garment manufacturing units etc. In an economy, there will be many industries. Textile, steel, automobile, chemical, food processing industry etc. are some of the major industries.

The prospects of a company depend on the fortunes of the industry to which the company belongs. Hence, an investor, before analysing the company in which he is going to invest, has to analyse the industry to which the company belongs. If a particular industry has good scope for improved performance, a company belonging to that industry is also expected to perform well unless the company has some inherent weakness that may affect its performance. When a particular industry show signs of growth, it offers a strong foundation for the different companies belonging to that industry to perform well. For example., let us assume that textile

industry is found to have excellent growth prospects for the next ten years. This conclusion could have been arrived at only after studying and analysing various factors that have a bearing on the performance of the textile industry. When the textile industry is expected to perform well for the next ten years, it reveals that the different firms/companies that are operating in the textile sector are also having good scope for showing better performance for the next ten years.

3.2 ANALYSIS OF INDUSTRY - ELEMENTS

Under a given economic condition, on the basis of structural and operational features, one industry may perform better that another. The following are some of the key industry elements that need to be studied:

i. Demand Supply Gap

The demand for a product depends on factors like consumer preference, affordability, availability of substitute products etc. Since, the factors that determine the demand for a product change gradually over a period of time, the change in demand for a product is also gradual. On the other hand, the supply of a product depends on the existing production capacity for the product and the rate at which additional production capacities are added. In view of this, the production capacity for producing a product does not vary smoothly, but will show irregular variations. Due to this, there is bound to be gap between the demand and supply. There can be shortage of production capacity in which case the demand will be more than the supply. There can also be a situation where the demand has come down, making the available production capacity or may experience under capacity.

ii. Growth rate of the industry

The faster the growth of an industry, the better it is. Analysing the past performance of the industry in terms of growth and profitability will throw light on the future prospects of the industry. The trend of growth in the immediate past will act as a pointer to the likely future performance of the industry. Centre for Monitoring Indian Economy (CMIE) published periodically, statistical data on industry wise growth rate which will be of great use for the analyst. CMIE has built a large and well-integrated database on Indian economy.

iii. Competition

Competition is to be handled with care. While certain amount of competition existing in the industry among the domestic firms coupled with that arising out of the foreign firms is desirable and adds to a healthy growth of the industry, excess competition market structure. The competition existing in an industry is a direct function of the number of firms operating in the industry, their market shares, their pricing policies, degree of homogeneity in the products, entry and exist barriers and other similar factors.

iv. Labour Conditions

As unions grow in power in our economy, the state of labour conditions in the industry under analysis becomes even more important, i.e. if we are dealing with a very labour intensive production process or a very mechanized capital intensive process where labour performs crucial operations, the possibility of a strike becomes an important factor to be reckoned with. In a labour intensive industry, the variable costs would undoubtedly dominate the fixed costs. However, even in this case the loss of customer goodwill during a long strike would probably be more than offset the possible advantages of low fixed costs.

v. Technology and Research

Industries have a certain degree of dependence on technology. Some industries might be more affected by the changes in technology than others. On having chosen an investment, which suits the risk profile of the investor, important technological changes on the horizon and their implications to the future performance of the industry must be carefully scanned. A study also needs to be done on the research and development outlays as a percentage of the industry sales, as to how much of the incremental sales and profitability can be attributed to the new products.

vi. Government's Attitude Towards the Industry

There are industries that have historically had excessive government controls, whether through direct or indirect means. Society, environment, scarce natural resources and forex requirement are some of the factors that make the government control the industry. As government becomes more influential in attempting to regulate business and to advocate consumer protection, the performance of the industry might well be affected. Not necessarily that the government interference will drive it out of the business but the profits of the industry can be adversely affected. Sometimes an industry may loose its importance because of the legal restrictions that are placed on it.

vii. Cost Structure and Profitability

Every industry has its own structure. Cost structure refers to the proportion of fixed and variable costs. Certain industries (cement industries, steel industries etc.) require a larger proportion of fixed cost. When the proportion of fixed cost is higher, larger sales volumes are required to reach the Break Even Point and profitability can be strengthened by improving the capacity utilization of the plant to its maximum possible limit. However, industries that have large fixed cost have longer gestation period. Moreover, when the demand for their product increases suddenly, the industry cannot immediately absorb the increased demand since it will take a longer time and will also require huge investments for creating additional production facilities to cater to the increased demand. On the other hand, in industries where the fixed cost forms only a smaller part of the total cost, the Break even point will be reached faster and additional production capacity, if warranted, can be created within a short period of time and with a comparatively smaller

investment. Thus, industries with lower production of fixed cost enjoy greater flexibility than industries that required a larger proportion of fixed cost.

viii. Profit Margin

Average profit margin offered by industries differ. Over a period of time, some industries may be offering a higher return as compared to other industries. Higher profit margins over a period of time indicate growth of the concerned industrial sector while lower profit margins sustained for a longer period.

ix. Barriers to Entry

Entry barriers for new firms will protect existing firms in the industry from competition. The entry barrier may be either due to Governement's restrictions in allowing entry to new firms in the sector or due to inherent conditions that are specific to the industry that make entry of new firms difficult. For example, very huge capital investment required, non-availability of technical know-how etc are some of the factors that may be inherent to a particular industry that will act as entry barriers to new comers in the field. An industry that does not possess any entry barriers is open to stiff competition and individual firms in the industry should be always on vigil to ensure that they do not lose their competitive position

3.3 NEED OF INDUSTRY ANALYSIS

Industry analysis is useful in a number of investment applications that make use of fundamental analysis.

- **Understanding a company's business and business environment:**

Industry analysis is often a critical early step in stock selection and valuation because it provides insights into the issuer's growth opportunities, competitive dynamics, and the business risks. For a credit analyst, industry analysis provides insights into the appropriateness of a company's use of debt financing and into its ability to meet its promised payments during economic contractions.

- **Identifying active equity investment opportunities:**

Investors taking a top down investing approach use industry analysis to identify industries with positive, neutral, or negative outlooks for profitability and growth. Generally, investors will then overweight, market weight, or underweight those industries relative to the investor's benchmark if the investor's benchmark and if the investor judges that the industry's perceived prospects are not fully incorporated in market prices. Apart from securities selection, some investors attempt to outperform their benchmarks by industry or sector rotation that is timing investment in industries in relation to an analysis of industry fundamentals and business cycle conditions.

- **Portfolio performance attribution:**

Performance attribution, which addresses the sources of a portfolio's returns, usually in relation to the portfolio's benchmark, includes industry or sector selection. Industry classification schemes play a role in such performance attribution.

A. CLASSIFICATION OF INDUSTRY

Industries or Industrial activities can be further classified into four categories. They are as mentioned below:

I. Extractive Industries

Extractive industries refer to those activities which are concerned with the extraction or production of wealth from soil, air, water or from beneath the surface of the earth. They include :

- Agriculture
- Mining
- Fishing
- Fruit gathering

II. Genetic Industries

Genetic industries refer to those activities which are undertaken for reproducing or multiplying plants and animals with the object of earning profit from their sale. Examples are:

- Nurseries raising seedlings and plants
- Cattle breeding
- Poultry farming etc.

III. Construction Industries

Construction industries refer to those activities which are concerned with the creation of infrastructure necessary for economic development. Examples are:

- Construction of buildings, roads, bridges, lines, dams, canals etc.

IV. Manufacturing Industries

Manufacturing industries refer to activities with the creation of form utility. It means that, raw material converted into finished goods. Examples are:

- Conversion of raw cotton into cotton textiles.
- Conversion of raw jute into jute manufactures.
- Production of sugar from sugarcane.
- Production of iron and steel from iron ore etc.

Types of Manufacturing Industry

Manufacturing industries may be sub-divided into four types. They are:

a. Analytical Industries

Analytical industries refers to those manufacturing industries which produce many types of products by analysing and separating the same basic raw materials into different products. For example: Oil refining is an analytical industry. In oil refining, the same crude oil is analysed and separated into different products like petrol, diesel oil, kerosene, lubricating oil etc.

b. Synthetic Industries

Synthetic industries refer to all those manufacturing industries where various materials are combined together in the manufacturing process to manufacture a new product.

For example: • Cement industry is a synthetic industry. i.e., cement is produced by a cement industry by combining many materials like as concrete, gypsum, coal etc.

c. Processing Industries

Processing industries refer to those manufacturing industries where the raw materials are processed through different stages/process into finished goods.

For example: • Textile Industry • Paper Industry

d. Assembly Line Industries

Assembly line industries refer to those manufacturing industries where different component parts that are already manufactured are assembled into final products.

For example: • Automobile Industry • Television Industry

B. INDUSTRY GROUPS

Industry groups can be classified:

- **On the basis of normal sizewise classification**

It can be further classified into as follows:

• Small scale units

• Medium scale units

• Large sized industries

- **On the basis of proprietary based classification**

Industries have been classified on the basis of proprietary :

- Private Sector Industries
- Public Sector Industries
- Joint Sector (Jointly owned by private and public) Industries.

- **On the basis of use based classification**

Industries have also been classified on the basis of use based :

- Basic Industries
- Capital Goods Industries
- Intermediate Goods
- Consumer Goods Industries

- **On the basis of input based classification**

- Agro based products
- Forest based products
- Marine based products
- Metal based products
- Chemical based products

3.4 SUMMARY

- Industry analysis is the analysis of a specific branch of manufacturing, service, or trade. Understanding the industry in which a company operates provides an essential framework for the analysis of the individual company. Equity analysis and credit analysis are often conducted by analysts who concentrate on one or several industries, which results in synergies and efficiencies in gathering and interpreting information.

- Industry analysis is useful for :
  - ✓ Understanding a company's business and business environment.
  - ✓ Identifying active equity investment opportunities.
  - ✓ Formulating an industry or sector rotation strategy.
  - ✓ Portfolio performance attribution.
- Classification of Industry Analysis
  - ✓ Extractive Industries
  - ✓ Genetic Industries
  - ✓ Construction Industries
  - ✓ Manufacturing Industries
- Industry Groups

Industry groups can be classified:

- On the basis of normal sizewise classification
- On the basis of proprietary based classification
- On the basis of use based classification
- On the basis of input based classification

3.5 REVIEW QUESTIONS:

1. What is Industry Analysis? Explain the elements of industry analysis
2. Write a note on classification of industry and groups of industry
3. Explain the Industry analysis and its need.

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4

INDUSTRY ANALYSIS (PART - B)

Unit Structure

4.0 Learning Objectives
4.1 Industry Analysis- Industry Life Cycle
4.2 Economic Factor & Industrial Analysis
4.3 SWOT analysis of Industries- Porter's Five Force Model
4.4 Summary
4.5 Self Assessment Question

4.0 LEARNING OBJECTIVES

After studying this lesson you are able to:

- To know the stages of Industry Life Cycle and its limitations
- To know the Economic Factor and Industry Analysis
- To Understand Porter's Five Force Model

4.1 INDUSTRY ANALYSIS- INDUSTRY LIFE CYCLE

Every product is found to have a life cycle. Since, an industry is made up of firms producing same or similar category of products every industry also has a life cycle.

Industry have been found to go through the following four stages:

I. **Pioneering Stage**
II. **Rapid Growth Stage**
III. **Maturity and Stabilization Stage**
IV. **Declining Stage**

The above four stages make a complete life cycle for an industry

I. Pioneering Stage

In this stage, the prospective demand for the product is promising and the technology of the product is low. The demand for the product encourages many producers to produce that particular product. There is severe competition and only the fittest companies survive this stage. The producers try to develop the brand name, differentiate the product, and create a product image. This leads to non-price competition too. The severe competition often leads to the change of position of the firms in

terms of market share and profits. In this situation, it is difficult to select companies for investment because the survival rate is unknown.

Features of Fastest Growing/Pioneering Companies
• In this stage, Active Investor will notice a great increase in the activity of the company. • Production can raise and there will be great demand for the product. • In this stage, profit is high. • A heavy competition from competitors. • The competitive pressures keep on increasing with the entry of new firms and the prices keep on declining and then ultimately the companies Profits fall. • A few efficient companies run the business and most of the other companies are wiped out in the growing or pioneering stages of the companies. Companies are wiped out in the growing or pioneering stages of the companies.

II. Rapid Growth Stage

This stage starts with the appearance of surviving firms from the pioneering stage. The companies that have withstood the competition steadily improve their market share and financial performance. The technology used in production improves resulting in low cost of production and good quality products. The companies have stable growth rate in this stage and they declare dividends to their shareholders. It is advisable to invest in the shares of these companies. The pharmaceutical industry has improved its technology and the top companies in this sector are giving dividends to their shareholders. The power and telecommunications industries can also be cited as examples of industries in this expansion stage. In this stage the growth rate is more than the industry's average growth rate.

Features of Growing/Expansion Stage
• In this stage, further investment is needed. • Product and services price is stabilised. • Companies earn huge profits. • Investor yield on good return from investment. • Companies internally generate funds to keep financial requirement of the organisation. • This stage is also known as maturity stage for companies. • Companies start with expansion and diversification of products. • During this stage, companies introducing different variety of products

III. Maturity and Stabilization Stage

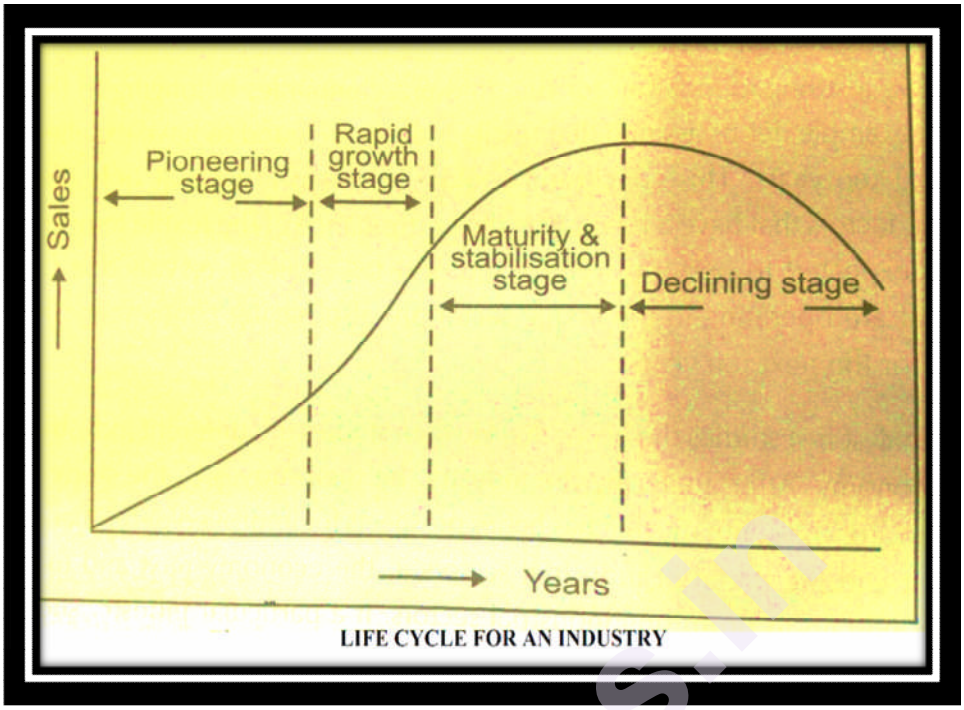
In the stabilization stage, the growth rate tends to moderate and the rate of growth more or less equals the industrial growth rate or the gross domestic product growth rate. Symptoms of obsolescence may appear in technology. To keep going, technological innovations in the production process and products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

Features of Maturity and Stabilization
• Increase in sales.
• Profits of the company is to some extent reduced.
• During this stage, growth is also reduced.
• Company spent huge amount for advertisement for promotion of goods and service.
• Investors plan and are careful about their investment avenues in the business.
• Investors are cautious about future plan and ready to sell their securities in the financial market.

IV. Declining Stage

In this stage, demand for the particular product and the earnings of the companies in the industry decline. Nowadays, very few consumers demand black and white television sets. Innovation and changes in consumer preferences lead to this stage. The specific feature of the declining stage is that even in a boom, the growth of the industry is low and declines at a higher rate during a recession. It is better to avoid investing in the shares of the low growth industry even during a boom. Investment in the shares of these types of companies leads to erosion of capital

Features of Declining Stage
• Companies are continuously making loss in the business.
• Investor has not received yield in terms of dividend.
• Customers are rejected to declining companies product.
• Even investors lose their principal amount.
• Expenditure is increased and revenues is decreased.
• Companies close their business units.
• Investor looks for new investment opportunities.



LIFE CYCLE FOR AN INDUSTRY

Limitations of Industry Life Cycle

The four phases which industries go through as explained above are based on the observation of the life cycle that different industries undergo. There can always be expectations. However, continuous close observation and judicious interpretation can reveal the industry life cycle trend and characteristics. Industry life cycle has the following limitations:-

i. Since, the performance of companies, to a larger extend depends on the performance of the industry concerned, a prudent investor will have to study the industry life cycle first before deciding upon the company which he chooses to invest.

ii. When an industry is in its pioneering stage, an investor should be doubly cautious in choosing the companies for his investment. This stage of the life cycle which is marked by high growth rate as well as high mortality rate is more suited for speculators than for prudent investors.

iii. When an industry has moved into rapid growth stage, a prudent investor must act quickly and increase his investment in the industry in order to reap the benefits of rapid as well as stable growth. When an industry shows signs of stagnation, a prudent investor should avoid further financial commitments in the industry and should look for other opportunities of investment that offers scope for better returns. He can even switch his investments from industries that are in stagnation stage to industries that are still in their growth stage.

iv. When an industry shows signs of decline, a prudent investor must act quickly and disinvest his holding in the industry in order to avoid heavy losses that may follow soon if the investments in the declining industrial sector are not withdrawn.

4.2 ECONOMIC FACTOR AND INDUSTRY ANALYSIS

Investment decisions are a part of our economic life, made by almost everybody in different contexts at different times. Long regarded as an art, investment decision making has only recently been considered as science with an attendant body of literature being developed helping us understand its dynamics. Investment decision making is now accepted both as an art as well as science. Decision makers attempt to update themselves on the characteristics of return securities, which keep changing. Their understanding needs sustained efforts. Conceivable investment opportunities were discussed earlier units.

As per research studies available so far, nearly 50 % of the stock price changes can be attributed to market influences which are general and are caused by the economic and industry factors. It is therefore important that any stock market investment is to be preceded by an economic analysis and industry analysis. The economy and industry are so wide and comprehensive that it is difficult to encompass all the likely factors influencing them to be captured in any set of possible indicators.

As the stock market is supposed to be the window of the economy, the totality of forces including socio-political factors operating on the economy would influence the stock market.

In the economy, some industries are expanding while others are stagnant and some contracting, depending on the demand and market conditions. The investor has to choose the growth industry and in that industry, choose the scrips, undervalued as judged by his study and analysis.

Investment Objectives

i. The basic objective of investment is the return on it or yields. The yields are higher, the higher is the risk taken by investor. The riskless return is the bank fixed deposit rate of 6 to 7% at present. Here, the risk is least as funds are safe and return are certain.

ii. Each investor has his own asset preference and choice of investments. Thus, some risk averse operators put their funds in bank or post office deposits or deposits/ certificates with co-operatives and PSUs. Some invest in real estate, land and buildings while others invest mostly in gold, silver and other precious stones, diamonds etc.

iii. Every investor aims at providing for minimum comforts of a house furniture, vehicles, consumer durables and other household requirements. After satisfying these minimum needs, he plans for his

future income, saving in insurance (LIC and GIC), pension and provident funds etc.

iv. Lastly, after satisfying all the needs and requirements, the rest of the savings would be invested in financial assets which will give him future incomes and capital appreciation, so as to improve his future standard of living. These may be stock/ capital market investment.

Cost Benefit Analysis

In making investment of the last point, namely, in financial assets of deposits, bonds, debentures, shares etc. investment management involves a cost benefit analysis.

The major costs are the risk involved and major benefits are the returns involved. Risk is measured by the variability of the returns. But the risk is of various types : non-payment of dividend/ interest, delay or non-payment of principal, variability of return or market value of investments. These risks may be classified as:-

i. Company Risk

It is unique risk to the company; about its own management practices and operations.

ii. Business Risk

The risk of business is relative to trade/ business of the company, product, inputs/ outputs etc.

iii. Market Risk and Financial Risk

Interest Rate, Labour problem, Inflation effect may lead to financial and market risk

iv. Economy Risk of the Nation

Among economy risk, Government policies, Inflation, Monetary and Fiscal Policies etc.

v. International Factors

International factors imports and exports and international prices of inputs of domestic goods etc. can be cited.

The investor has to assess the costs and benefits of each investment, in the process of Investment Management.

4.3 SWOT ANALYSIS OF INDUSTRIES

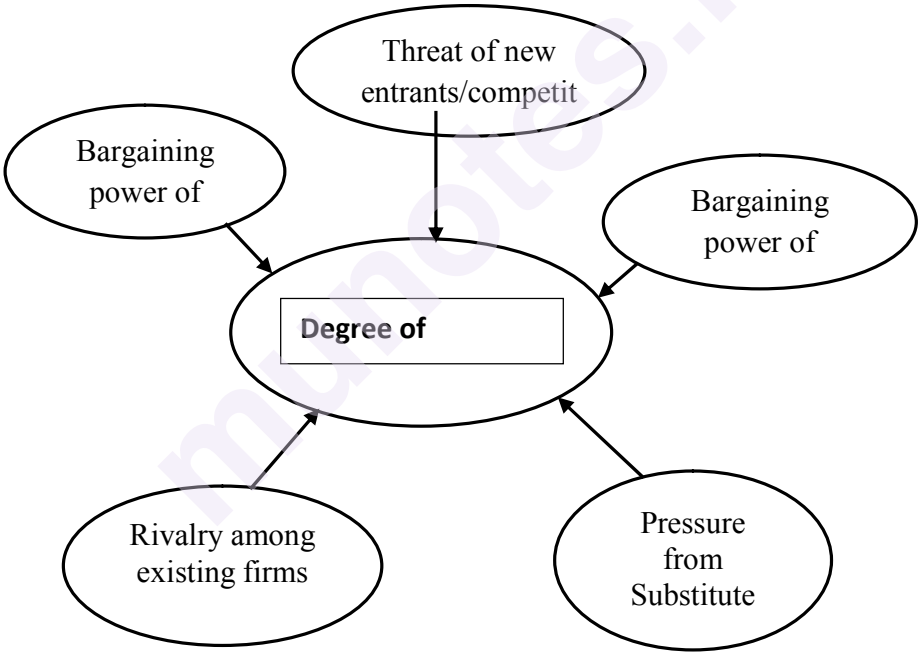
The strength of the industry and its competitiveness can be analysed with the help of SWOT and porter's Five Force Model. As mentioned earlier, elements of Industry analysis (in unit/chapter1.3) itself would become strengths, weakness, opportunities and threats (SWOT) for the industry. Hence, the investor should carry out a SWOT analysis for the chosen industry. Take for instance, increase in the demand for an

industry's product becoming its strength, and the presence of numerous players in the market, i.e., competition becoming a threat to a company in the industry. The progress in the research and development in that particular industry is an opportunity while the entry of multinationals in the industry and cheap imports of the product are a threat to it. This is the way the factors are arranged and analysed.

Porter's Five Force Model

The competitive structure of an industry affects its profitability. The competitive structure differs from industry to industry. Michael E. Porter of Harvard Business School in 1979 came up with a model to analyse the competitive structure of an industry. In his opinion, five competitive forces decide the attractiveness and profitability of an industry.

1. Threat of new entrants/competitors
2. Threat of Substitutes/ Pressure from Substitute Product
3. Bargaining power of Suppliers
4. Bargaining power of Buyer.
5. Rivalry among existing firms



1. Threat of new entrants/competitors

The entry of new companies in the market increases the competition and reduces profitability. The barriers to entry decide the number of new entrants. Entry barriers are higher in industries like aircraft manufacture than in the car industry. The government rules and regulations for establishing a company in such industries as the steel industry may be more stringent than in others. The investment requirements to establish a company, economies of scale, customer switching costs, creation of distribution channels, and the resistance of

existing players are the main barriers for an entrepreneur to start a company.

2. Threat of Substitutes/ Pressure from Substitute Product

Availability of substitute products reduces the scale of the industry's products and in turn, the profitability. The threats posed by substitutes depends on the following factors:

- Willingness of the buyers to utilize substitute products
- The price level of the substitute.
- The degree of similarity and performance of the substitute.
- The cost incurred in switching over to substitutes

3. Bargaining power of Suppliers

Every industry requires raw materials for production. Suppliers may be individuals or companies that provide the required raw materials to the firm. The cost of raw materials form a significant portion of the total cost of production. If there are few suppliers, and they are also organised as cartel, the suppliers bargaining power is high. When there are many suppliers who are fragmented, their bargaining power is less. The bargaining power of the supplier is high when:

- Number of supplier is low.
- There are many buyer.
- Products are similar and of high worth.
- There is the possibility of suppliers integrating forward into the industry.
- There is the profitability of buyers integrating backwards into supply is lower
- The product may be demanded by not just a single industry but by others also.

4. Bargaining power of Buyer.

Here, customers of the industry's product are referred to as buyers. A strong customer can demand a higher quality product or service for the same price. If they cannot get that, they may move over to other similar products. Usually, the more the number of customers for the industry's product, the less their commercial power over it. If the number of producers is high, they can switch from one to the other. When the products are similar and standardised, the possibility of a switch is high.

5. Rivalry among existing firms

In an industry, all the firms try to improve their market share. If it is a fast moving consumer goods industry or the telecommunications industry, the players compete fiercely with each other to improve their

market share and keep their existing share intact. The intensity of competition depends on the following factors:

- **The structure of competition:** When there are more players, the competition is high. It is less when there is a market leader, and if there are cartels.

- **Cost Structure of the industry:** In some industries, the fixed cost is high. To make use of unutilised capacity, firms may cut the price of the end product. This may create a market for their products and create problems for the other players. At the same time, if the variable costs are more than the fixed costs, the problem of using the unutilised capacity may not arise.

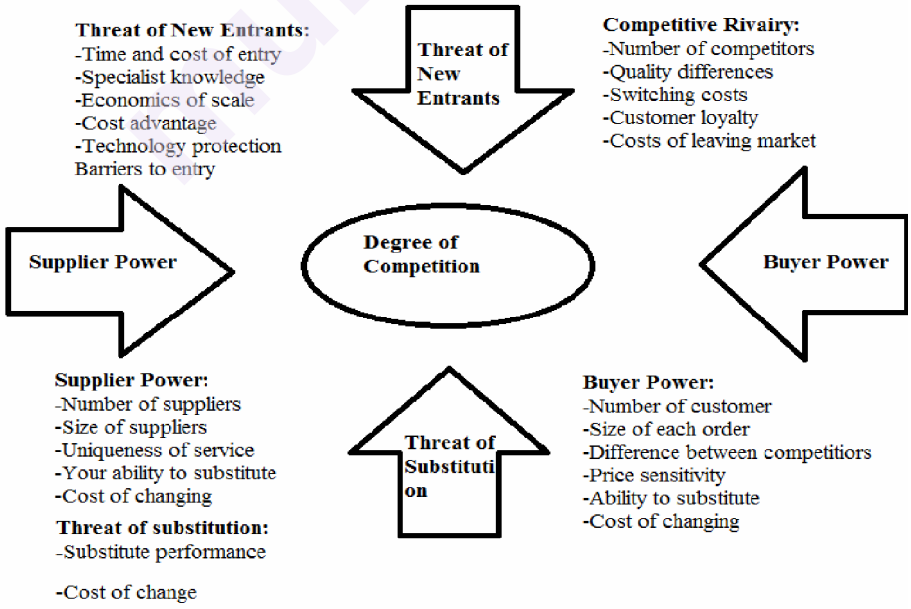
- **Degree of Differentiation:** Firms in industries with similar products and specification typically face the following:

- **Stiff competition:** Usually, coal and steel products are similar in nature

- **Cost of switching:** If the cost of switching from one product to another is high, there will be less competition. In consumer goods, the switching cost is less and hence the competition is high.

- **Strategies:** The strategies followed by the competitors affect the level of rivalry. If they follow an aggressive growth strategy, the marketing strategy will be aggressive. This will affect the level of competition.

- **Exit barriers:** When firms face high exit barriers, the competition may be severe.



4.4 SUMMARY

- An industry's position in its life cycle often has a large impact on its competitive dynamics, so it is important to keep this positioning in mind when performing strategic analysis of an industry. Industries, like individual companies, tend to evolve over time and usually experience significant changes in the rate of growth and levels of profitability along the way. Just as an investment in an individual company requires careful monitoring industry analysis is a continuous process that must be repeated over time to identify changes that may be occurring.

- A useful framework for analysing the evolution of an industry is an industry life cycle, which identifies the sequential stages that an industry typically goes through. The four stages of an industry life cycle are

  - Pioneering Stage
  - Rapid Growth Stage
  - Maturity and Stabilization Stage
  - Declining Stage

The framework for strategic analysis known as "Porter's five forces" can provide a useful starting point. Porter maintains that

- the profitability of companies in an industry is determined by five forces:

i. The influence or threat of new entrants, which in turn is determined by economics of scale, brand loyalty, absolute cost advantages, customer switching costs, and government regulations.

ii. The influence or threat of substitute products,

iii. The bargaining power of customers, which is function of switching costs among customers and the ability of customers to produce their own product.

iv. The bargaining power of suppliers, which is function of the feasibility of product substitution, the concentration of the buyer and supplier groups, and switching costs and entry costs in each case and,

v. The intensity of rivalry among established companies, which in turn is a function of industry competitive structure, demand conditions, cost condition and the height of exit barriers

4.5 REVIEW QUESTIONS:

1. Explain Industry Life Cycle Analysis? What are its limitations
2. Explain Porter Model of Industry analysis.
3. Why is industry analysis important? Why should it follow economic analysis?
4. Industry life cycle shows the status of the industry and gives clues as to entry and exit for investors. Elucidate
5. Discuss SWOT and Porter's Five Force Model.

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5

COMPANY ANALYSIS

Chapter Outline

5.0 Learning Objectives

5.1 Introduction

5.2 Need for Company Analysis

5.3 Company Analysis

(Factors affecting the value of Stock prices of Company)

A] Business Model

B] Corporate Governance

C] Management

D] Operating Efficiency

E] Capital Structure

F] Financial Performance

5.4 Mode of Analysis

A] Economic Value added Method

B] Hybrid Valuation Model

C] Relative Valuation Model

5.5 Analysis of Financial Statement

5.6 Summery

5.7 Self-Assessment Questions

5.0 LEARNING OBJECTIVES

After studying this lesson you are able to:

- To know the factors influencing value of company
- To understand different measurement of earnings
- To understand mode of analysis

5.1 INTRODUCTION

In the previous lesson, we have discussed about Economic Analysis and Industry Analysis and now in this lesson light is thrown on company analysis. 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 analysed to take a better investment decision. The valuation process depends upon the investor ability to draw information from the relationship and inter-relationship among the company related variables. Up-todate 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.

- 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.

5.2 NEED FOR COMPANY ANALYSIS

In order to provide proper perspective to company analysis, let us begin with the way investor makes investment decisions given his goal maximization. For earning better profits, investors apply simple and common sense decision rule of maximization. I.e. Buy the share at a low price & sell the share at high price. This rule is very simple to understand, but difficult to apply in actual practice. Huge efforts are made to operationalize it by using a proper formal & analytical framework. In this respect, fundamental analysis provides the investor a real benchmark in terms of intrinsic value. The value is dependent upon industry and company fundamentals. Company analysis provides a direct link to investor's action and his investment goal in operational terms. This is because an investor buys the equivalent of a company and not that of industry or economy. This framework provides him with a proper background, with which he buys the share of a particular company. It is

essential that a careful examination of company's quantitative and qualitative fundamentals is carried out.

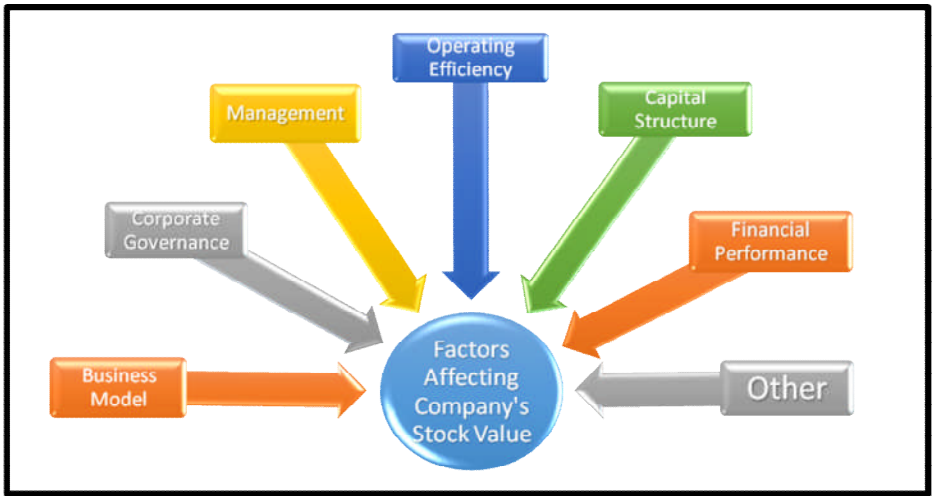
5.3 COMPANY ANALYSIS

Company analysis is a process carried out by investors to evaluate securities, collecting info related to the company's profile, products and services as well as profitability. A company analysis incorporates basic info about the company, like the mission statement and apparition and the goals and values. During the process of company analysis, an investor also considers the company's history, focusing on events which have contributed in shaping the company.

Also, a company analysis looks into the goods and services offered by the company. If the company is involved in manufacturing activities, the analysis studies the products produced by the company and also analyses the demand and quality of these products. Conversely, if it is a service business, the investor studies the services put forward. In the company analysis, the investor assimilates the several bits of information related to the company and evaluates the present and future values of the stock. The risk and return associated with the purchase of the stock is analysed to take better investment decisions. The valuation process depends upon the investors' ability to elicit information from the relationship and inter-relationship among the company related variables.

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 of things like the value of an executive or the risks a company faces with legal issues. The other side of fundamental analysis is the ***qualitative 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 mostly represent an either negative or positive force affecting the company.

Factors affecting the value of Stock prices of Company



The present and future values are affected by a number of factors and they are given in figure.

A] BUSINESS MODEL

This is referred to as a company's business model – it's how a company makes money. You can get a good overview of a company's business model by checking out its website. Sometimes business models are easy to understand. Take Dominos, for instance, which sells Pizzas, soft drinks, Chococakes and whatever other new special they are promoting at the time. It's a simple model, easy enough for anybody to understand.

Other times, you'd be surprised how complicated it can get. Boston Chicken Inc. is a prime example of this. Back in the early '90s its stock was the darling of Wall Street. At one point the company's CEO bragged that they were the "first new fast-food restaurant to reach Rs. 1 Crore in sales since 1969". The problem is, they didn't make money by selling chicken. Rather, they made their money from royalty fees and high-interest loans to franchisees. Boston Chicken was really nothing more than a big franchisor. On top of this, management was aggressive with how it recognized its revenue. As soon as it was revealed that all the franchisees were losing money, the house of cards collapsed and the company went bankrupt.

At the very least, you should understand the business model of any company you invest in. The "Oracle of Omaha", Warren Buffett, rarely invests in tech stocks because most of the time he doesn't understand them. This is not to say the technology sector is bad, but it's not Buffett's area of expertise; he doesn't feel comfortable investing in this area. Similarly, unless you understand a company's business model, you don't

know what the drivers are for future growth, and you leave yourself vulnerable to being blindsided like shareholders of Boston Chicken were.

B] CORPORATE GOVERNANCE

Corporate governance describes the policies in place within an organization denoting the relationships and responsibilities between management, directors and stakeholders. These policies are defined and determined in the company charter and its bylaws, along with corporate laws and regulations. The purpose of corporate governance policies is to ensure that proper checks and balances are in place, making it more difficult for anyone to conduct unethical and illegal activities. Good corporate governance is a situation in which a company complies with all of its governance policies and applicable government in order to look out for the interests of the company's investors and other stakeholders.

Although, there are companies and organizations that attempt to quantitatively assess companies on how well their corporate governance policies serve stakeholders, most of these reports are quite expensive for the average investor to purchase.

Fortunately, corporate governance policies typically cover a few general areas: structure of the board of directors, stakeholder rights and financial and information transparency. With a little research and the right questions in mind, investors can get a good idea about a company's corporate governance.

Financial and Information Transparency

This aspect of governance relates to the quality and timeliness of a company's financial disclosures and operational happenings. Sufficient transparency implies that a company's financial releases are written in a manner that stakeholders can follow what management is doing and therefore have a clear understanding of the company's current financial situation.

Stakeholder Rights

This aspect of corporate governance examines the extent that a company's policies are benefiting stakeholder interests, notably shareholder interests. Ultimately, as owners of the company, shareholders should have some access to the board of directors if they have concerns or want something addressed. Therefore companies with good governance give shareholders a certain amount of ownership voting rights to call meetings to discuss issues with the board.

Structure of the Board of Directors

The board of directors is composed of representatives from the company and representatives from outside of the company. The combination of inside and outside directors attempts to provide an

independent assessment of management's performance, making sure that the interests of shareholders are represented.

The key word when looking at the board of directors is independence. The board of directors is responsible for protecting shareholder interests and ensuring that the upper management of the company is doing the same. The board possesses the right to hire and fire members of the board on behalf of the shareholders. A board filled with insiders will often not serve as objective critics of management and will defend their actions as good and beneficial, regardless of the circumstances.

C] MANAGEMENT

Good and capable management generates profit to the investors. The management of the firm should efficiently plan, organize, actuate and control the activities of the company. The basic objective of management is to attain the stated objectives of the company and once these objectives are achieved, investors will have a profit. A management that ignores profit does more harm to the investors than one that over emphasizes it. The good management depends on the qualities of the manager. Koontz and O'Donnell suggest the following as a special trait of an able manager:

- Ability to get along with people
- Leadership
- Analytical competence
- Industry
- Judgement
- Ability to get things done.

Since the traits are difficult to measure, managerial performance is evaluated against setting and accomplishing a verifiable objective. If the investor needs greater proof of excellence of management, he has to analyse management ability. The analysis can be carried out on the following ways:

a) The background of managerial personnel contributes much to the success of the management. The manager's age, educational background, advancement within the company, levels of responsibility achieved and the activities in the social sphere can be studied.

b) The record of management over the past years has to be reviewed. For several companies what the top management have done during its tenure in office are given in the financial weeklies and monthlies along with critical comments. This gives an insight into the ability of the top management.

c) The management's skill to have market share ahead of others is a proof of managerial success. The investor can rely on this type of management and choose the stock.

d) The next criterion the investor should analyse is the company's strength to expand. A firm may expand from within and diversify products in the known lines. Sometimes it may acquire other company to expand its market. The horizontal or vertical expansion of the production is a healthy sign of an efficient management.

e) The management's ability to maintain efficient production by proper utilization or Plant and machinery has to be analysed. Suitable inventory planning and scheduling have to be drafted and worked out by the management.

f) The management's capacity to finance the company adequately has to be studied. Accomplishing the financial requirement is a direct reflection of managerial ability. The management should adopt a realistic dividend policy in relation to earnings. A realistic dividend policy boosts the image of the company's stock in the market.

g) The functional ability of management to work with employees and union is another area of concern. A union poses a threat to the smooth functioning of the firm. In this context, the management should be able to maintain harmonious relationship with the employees and unions.

h) The management's adaptability to scientific management and quality control techniques should be analysed. The management should be able to give due weightage to maintain technical competence.

After analyzing the above mentioned factors, the investor should select companies that possess excellent management and maintain the competitive position of the company in the market. The investor should also remember that the individual traits of a single manager alone cannot make the company profitable and there should be a strong management system to do so.

D] OPERATING LEVERAGE

If the firm's fixed cost is high in the total cost the firm is said to have a high degree of operating leverage. Leverage means the use of a lever to raise a heavy object with a small force. High degree of operating leverage implies, other factors being held constant, relatively small change in sales result in a large change in return on equity. This can be explained with the help of the following example.

Let us take firm A and B. The firm A has relatively small amount of fixed charges say, `40,000. Firm A would not have much automated equipment, so its depreciation and maintenance costs are low. The variable cost per cent is higher than it would be if the firm used more automated equipment. In the other case, firm B has high fixed costs, `1,20,000.

Here the firm uses automated equipment (with which one operator can turn out many units at the same labour cost) to a much larger extent. The break-even occurs at `40,000 units in firm A and `60,000 units in firm B.

The selling price (P) is `4; the variablecost is `3 for firm A and `2 for firm B per cent.

The break-even occurs when ROE (return on equity) = 0, and hence, when earnings before interest and taxes (EBIT) = 0.

EBIT = 0 =PQ – VQ – F
Here,
P is the average sales price per unit of output,
Q is units of output, V is the variable cost per unit, and F is the fixed operating costs.

The break-even quantity is = F / (P-V)

For Firm A = = 40,000 units

For Firm B = = 60,000 units

To a large extent, operating leverage is determined by technology. For example, telephone companies, iron and steel companies and electric utilities have heavy investments in fixed assets leading to high fixed costs and operating leverage. On the other hand, cosmetics companies, and consumer goods producing companies may need significantly lower fixed costs, and hence lower operating leverage. The investor should understand the operating leverage of the firm because the firm with high operating leverage is affected much by the cyclical decline. The operating efficiency of the firm determines the profit expectation of the company.

E] CAPITAL STRUCTURE

The equity holders' return can be increased manifold with the help of financial leverage, i.e., using debt financing along with equity financing. The effect of financial leverage is measured by computing leverage ratios. The debt ratio indicates the position of the long term and short term debts in the company finance. The debt may be in the form of debentures and term loans from financial institutions.

Preference Shares

In the early days the preference share capital was never a significant source of capital. 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 the debt because the preference share dividends are not tax deductible. If the portion of preference share in the capital is larger, it tends to create instability in the earnings of the equity shares when the earnings of the company fluctuate. Sometimes the preference share may be convertible preference share; in that case it dilutes the earnings per share. So the investor should look into the preference share component of the capital structure.

Debt

Long term debt is an important source of finance. 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 holders. During the boom period the positive side of the leverage effect increases the earnings of the share holders. At the same time, during recession the leverage effect inducts instability in earnings per share and can lead to bankruptcy. Hence, it is important to limit the debt component of the capital to a reasonable level. The limit depends on the firm's earning capacity and its fixed assets.

i) Earnings Limit of Debt

The earnings determine whether the debt is excessive or not. The earnings indicate the probability of insolvency. The ratio used to find out the limit of the debts is the interest coverage ratio i.e., the ratio of net income after taxes to interest paid on debt. The ratio shows the firm's ability to pay the interest charges, the number of times interest is covered by earnings.

ii) Assets Limit to Debt

This asset limit is found out by fixed assets to debt ratio. The financing of fixed assets by the debt should be within a reasonable limit. For industrial units the recommended ratio level is below 0.5.

F] FINANCIAL PERFORMANCE (FINANCIAL STATEMENTS)

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 accompany. 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 shareholder'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.

Limitations of Financial Statements

1. The financial statements contain historical information. This information is useful; but an investor should be concerned more about the present and future.
2. Financial statements are prepared on the basis of certain accounting concepts and conventions. An investor should know them.
3. The statements contain only information that can be measured in monetary units. For example, the loss incurred by a firm due to flood or fire is included because it can be expressed in monetary terms. The loss incurred by the company due to the loss of reputation is not given in the statement because it cannot be measured in monetary unit.
4. Sometimes management may resort to manipulation of data and window dressing. This can be carried out by a. Method of charging depreciation b. Valuation of inventory c. Revaluation of fixed asset d. Changing the accounting year

An investor should scrutinize the financial statements to find out the manipulations, if any. The auditors', report and notes to the balance sheet give vital clue to the investor in this regard. Analysis of financial statements should be undertaken only after nullifying the effects of any such manipulation.

5.4 MODE OF ANANLYSIS

Nowadays, investors are aware that relying only on the earning per share and Return on equity to measure the performance of a company do not reflect the value of the company's share. Earnings does not reflect the changes in the risk and inflation. Further, they do take account of additional cost of capital invested in the business in the growth process. Therefore, alternative methods are used to assess the performance of the company. These are follows:

2.1.4 A] Economic Value Added Method

It is a financial performance method to calculate the true economic profit of the company. EVA is an estimate of the amount by which earnings exceeds or fall short of the required minimum rate of return for shareholders or lenders at comparable risk. EVA can be calculated at divisional level. EVA is economic and based on the idea that a business must cover both the operating cost and the capital cost

EVA can be calculated as :

EVA = Net Operating Profit after Tax - (Capital Invested × Weighted Avg. Cost of Capital)

EVA can be used for the following purpose:

- Setting organisational goals
- Performance measurement
- Determining bonus
- Motivating managers
- Capital budgeting
- Corporate valuation

2.1.4 B] Hybrid Valuation Method

The income and asset-based approaches to valuation have relative strengths as well as obvious limitations. For example, the income approach allows for specific and direct estimation of future benefits to the owners, which is consistent with the theory of value. On the other hand, if the estimation of future benefits is directly based on historical income, the precision of the estimate will depend heavily on the persistence embodied in the historical income measure and on the growth assumptions incorporated into the model. If, for example, current or historical income contains large transitory components, the relationship between historical and future income may be distorted. In addition, to the extent an inappropriate discount rate is utilized, value estimates will be adversely affected. Asset-based valuation approaches can be effective in the accurate identification of individual asset and liability values will yield a reliable value estimate. In addition, unlike the income approach, an equity discount rate, the estimation of which can have a significant impact on the valuation conclusion, is not required for an asset-based approach. On the other hand, it is often difficult to accurately restate book value to current value for an array of assets, especially when a significant amount of unrecorded intangible assets exists. This method includes the characteristics of both income and asset based valuation methods.

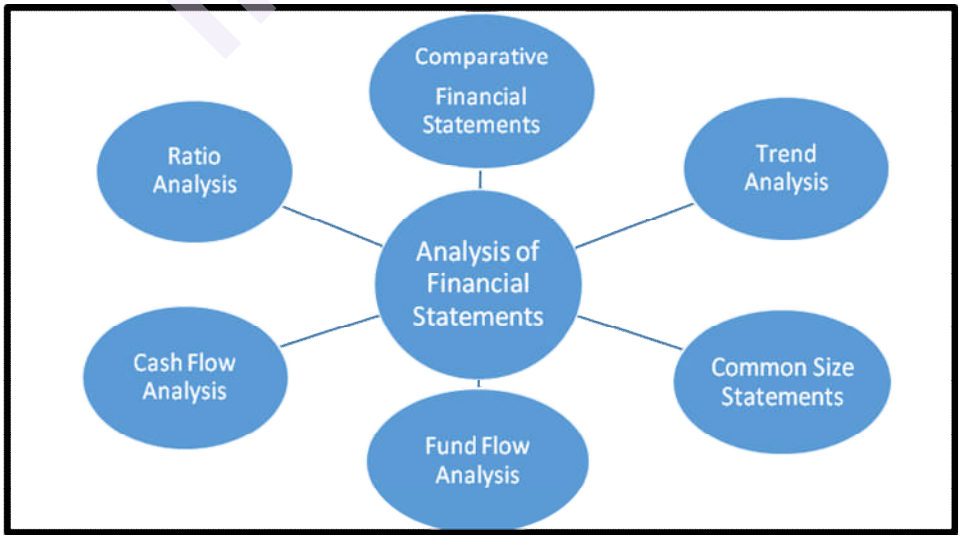
For example, the income approach allows specific and direct estimation of future benefits to the owners, which is consistent with the theory of value. The estimation of future benefits is directly based on historical income. The precision of the estimate will depend heavily on the persistence embodied in the historical income measure and on the growth assumptions incorporated into the model asset-based valuation, approaches can be effective in the accurate identification of individual asset and liability values will yield a reliable value estimate. In addition, unlike the income approach, an equity discount rate, the estimation of which can have a significant impacton the valuation conclusion, is not required for an asset-based approach. Taken collectively, however, income and asset-based valuations generally yield better valuation accuracy and more-effective analysis, which is the real benefit of a hybrid approach.

2.1.4 C]Relative Valuation Model

A relative valuation model is a business valuation method that compares a firm's value to that of its competitors to determine the firm's financial worth. Relative valuation models are an alternative to absolute value models, which try to determine a company's intrinsic worth based on its estimated future free cash flows discounted to their present value. Like absolute value models, investors may use relative valuation models when determining whether a company's stock is a good buy. Relative valuation uses multiples and benchmarks to determine the firm's value. A benchmark is selected by finding an average and that average is used to determine relative value. There are many different types of relative valuation ratios, such as price to free cash flow, enterprise value (EV), operating margin, price to cash flow for real estate and price-to-sales (P/S) for retail. One of the most popular relative valuation multiples is the price-to-earnings (P/E) ratio. It is calculated by dividing stock price by earnings per share (EPS). A company with a high P/E ratio is trading at a higher price per dollar of earnings than its peers and is considered overvalued. Likewise, a company with a low P/E ratio is trading at a lower price per dollar of EPS and is considered undervalued. This framework can be carried out with any multiple of price to gauge relative market value.

5.5 ANALYSIS OF FINANCIAL STATEMENT

The analysis of financial statements reveals the nature of relationship between income and expenditure, and the sources and application of funds. The investor determines the financial position and the progress of the company through analysis. The investor is interested in the yield and safety of his capital. He cares much about the profitability and the management's policy regarding the dividend. For this purpose, one can use the following simple analysis.



2.1.5 A] Comparative Financial Statements

A set of comparative financial statements presents a company's financial performance for two or more consecutive periods in side-by-side columns. The presentation is also referred to as the comparative format because it allows users to easily compare performance results from one period to the next without having to look at multiple financial statements. Both periods' statements are shown on a single report. The main purpose of a comparative statement is, (you guessed it), to compare two or more different accounting periods together. Most of the time only two periods are shown because reports listing too many columns tend to become cluttered and difficult to read. Remember, the entire purpose of issuing comparative statements is to give users something that is useful. A report with ten years of accounting information can be difficult to read.

You can think of the comparative format like two financials that are listed side-by-side on one report. Some comparative statements also have two additional columns for ratios and analyzes. Typically one column is added for the total dollar amount of change between the two periods and another is added for the percentage change. These columns allow users to easily see the difference in performance from one period to the next.

Example

The most common comparative financials are year-end statements. These reports show the activity for both years. For example, a comparative income statement might cover 2019 and 2020 year-end activity. Income and expenses from both years are listed side-by-side with an additional column showing the variance between each year.

Investors and creditors can easily look at the variance column to see why profits were up or down. For instance, net income might be lower in year 2020, but total revenues are similar. By looking at the comparative expenses, users can see that 2020 has much higher expenses resulting in a lower net income.

2.1.5 B] 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 maybe 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.

One year is taken as the base year. Generally, the first year is taken as the base year. The figure of base year is taken as 100. The trend percentages are calculated in relation to this base year. If a figure in other year is less than the figure in base year, the trend percentage will be less than 100 and it will be more than 100 if figure is more than the base year figure. Each year's figure is divided by the base year figure.

$$\text{Trend Percentage} = \frac{\text{Present Year Value}}{\text{Base year Value}} \times 100$$

2.1.5 C] Common Size Statement

The common-size statements, balance sheet and income statement are shown in analytical percentages. The figures are shown as percentages of total assets, total liabilities and total sales. The total assets are taken as 100 and different assets are expressed as a percentage of the total. Similarly, various liabilities are taken as a part of total liabilities.

These statements are also known as component percentage or 100 per cent statements because every individual item is stated as a percentage of the total 100. The short-comings in comparative statements and trend percentages, where changes in items could not be compared with the totals, have been covered up. The analyst is able to assess the figures in relation to total values.

The common-size statements may be prepared in the following way:

(1) The totals of assets or liabilities are taken as 100.

(2) The individual assets are expressed as a percentage of total assets, i.e., 100 and different liabilities are calculated in relation to total liabilities. For example, if total assets are Rs 5 lakhs and inventory value is Rs 50,000, then it will be 10% of total assets (50,000×100/5,00,000)

2.1.5 D] Fund Flow Analysis

The balance sheet gives a static picture of the company's position on a particular date. It does not reveal the changes that have occurred in the financial position of the unit over a period of time.

The investor should know,

a) How are the profit utilized?
b) Financial source of dividend
c) Source of finance for capital expenditures
d) Source of finance for repayment of debt
e) The destiny of the sale proceeds of the fixed assets and
f) Use of the proceeds of the share for debenture issue or fixed deposits raised from public.

These items of information are provided in the funds flow statement. It is a statement of the sources and applications of funds. It highlights the changes in the financial condition of a business enterprise between two balance sheet dates. The investor could see clearly the

amount of funds generated or lost in operations. He could see how these funds have been divided into three significant uses like taxes, dividends and reserves. Moreover, the application of long term funds towards the acquisition of current assets can be found out. This would reveal the real picture of the financial position of the company.

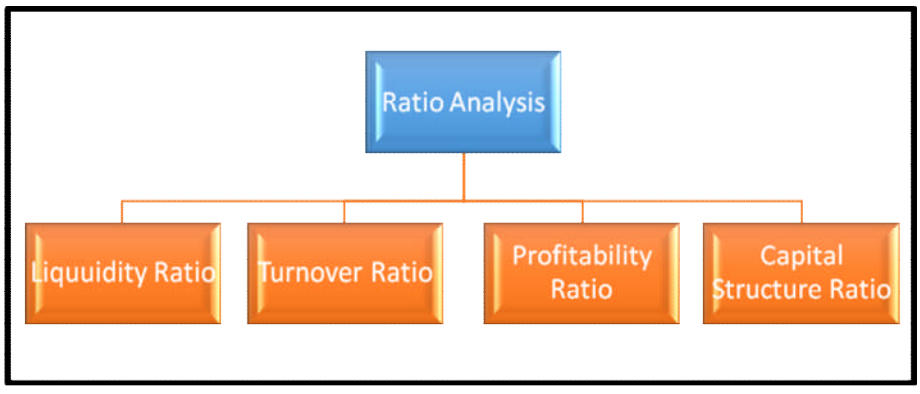
2.1.5 E] Cash Flow Analysis

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.

2.1.5 F] 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.

Because Ratio Analysis is based upon accounting information, its effectiveness is limited by the distortions which arise in financial statements due to such things as Historical Cost Accounting and inflation. Therefore, Ratio Analysis should only be used as a first step in financial analysis, to obtain a quick indication of a firm's performance and to identify areas which need to be investigated further. The ratios are divided in the following group:



2.1.5 F] a) Liquidity Ratios

Liquidity ratios 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. These ratios are:

Sr. No.	RATIOS	FORMULAS
1	Current Ratio	Current Assets/Current Liabilities
2	Quick Ratio	Liquid Assets/Current Liabilities
3	Absolute Liquid Ratio	Absolute Liquid Assets/Current Liabilities

2.1.5 F] b) Profitability Ratio

Earning of more and more profit with the optimum use of available resources of business is called profitability. The investor is very particular in knowing net profit to sales, net profit to total assets and net profit to equity. The profitability ratio measures the overall efficiency and control of firm.

Sr. No.	RATIOS	FORMULAS
1	Gross Profit Ratio	Gross Profit/Net Sales X 100
2	Operating Cost Ratio	Operating Cost/Net Sales X 100
3	Operating Profit ratio	Operating Profit/Net Sales X 100
4	Net Profit Ratio	Operating Profit/Net Sales X 100
5	Return on Investment Ratio	Net Profit After Interest And Taxes/ Shareholders Funds or Investments X 100
6	Return on Capital Employed Ratio	Net Profit after Taxes/ Gross Capital Employed X 100
7	Earnings Per Share Ratio	Net Profit After Tax & Preference Dividend /No of Equity Shares
8	Dividend Pay Out Ratio	Dividend Per Equity Share/Earning Per Equity Share X 100
9	Earning Per Equity Share	Net Profit after Tax & Preference Dividend / No. of Equity Share
10	Dividend Yield Ratio	Dividend Per Share/ Market Value Per Share X 100
11	Price Earnings Ratio	Market Price Per Share Equity Share/ Earning Per Share X 100
12	Net Profit to Net Worth Ratio	Net Profit after Taxes / Shareholders Net Worth X 100

2.1.5 F] c) Turnover Ratios

These ratios show how well the assets are used and the extent of excess inventory. The different type of turnover ratios are as follows:

Sr. No.	RATIOS	FORMULAS
1	Inventory Ratio	Net Sales / Inventory
2	Debtors Turnover Ratio	Total Sales / Account Receivables
3	Debt Collection Ratio	Receivables x Months or days in a year / Net Credit Sales for the year
4	Creditors Turnover Ratio	Net Credit Purchases / Average Accounts Payable
5	Average Payment Period	Average Trade Creditors / Net Credit Purchases X 100
6	Working Capital Turnover Ratio	Net Sales / Working Capital
7	Fixed Assets Turnover Ratio	Cost of goods Sold / Total Fixed Assets
8	Capital Turnover Ratio	Cost of Sales / Capital Employed

2.1.5 F] d) Capital Structure Ratios

Sr. No.	RATIOS	FORMULAS
1	Debt Equity Ratio	Total Long Term Debts / Shareholders Fund
2	Proprietary Ratio	Shareholders Fund/ Total Assets
3	Capital Gearing ratio	Equity Share Capital / Fixed Interest Bearing Funds
4	Debt Service Ratio	Net profit Before Interest & Taxes / Fixed Interest Charges

Following Exercise demonstrates the analysis of financial statements using Ratio Analysis

Balance Sheet				**Income Statement**	
Assets		**Liabilities and Owners' Equity**			
Current Assets		**Current Liabilities**		Sales	3500
Cash	400	Accounts Payable	200	Cost of Goods Sold	500
Accounts Receivable	700	Notes Payable	500	Administrative Expenses	300
Inventory	1000	**Total Current Liabilities**	700	Depreciation	271
Total Current Assets	2100	Long-Term Liabilities		**Earnings Before Interest and Taxes**	2429
		Long-Term Debt	800	Interest Expense	110
Fixed Assets		**Total Long-Term Liabilities**	800	**Taxable Income**	2319
Property, Plant, and Equipment	800	Owners' Equity		Taxes	536
Less Accumulated Depreciation	400	Common Stock (`1 Par)	400	**Net Income**	1783
Net Fixed Assests	400	Capital Surplus	500	Dividends	980
		Retained Earnings	100	Addition to Retained Earnings	803
		Total Owners' Equity	1000	**Other Information**	
Total Assets	2500	**Total Liab. and Owners' Equity**	2500	Number of Shares Outstanding	400
				Price per Share	7.71

Solution :

Ratio	Formula	Explanation	Answer
Current Ratio	$\text{Current Ratio} = \frac{\text{Total Current Assets}}{\text{Total Current Liabilities}}$	Total Current Assets = ₹2100 Total Current Liabilities = ₹700	3
Quick Ratio	$\text{Quick Ratio} = \frac{\text{Total Current Assets} - \text{Inventory}}{\text{Total Current Liabilities}}$	Total Current Assets = ₹2100 Inventory = ₹1000 Total Current Liabilities = ₹700	1.57
Receivables Turnover	$\text{Receivables Turnover} = \frac{\text{Sales}}{\text{Accounts Receivable}}$	Sales = ₹3500 Accounts Receivables = ₹700	5 times
Days' Receivables	$\text{Days' Receivables} = \frac{365}{\text{Receivables Turnover}}$	Receivables Turnover = 5 times (from above).	73 days
Inventory Turnover	$\text{Inventory Turnover} = \frac{\text{COGS}}{\text{Inventory}}$	COGS = ₹500 Inventory = ₹1000	0.5 times
Days' Inventory	$\text{Days' Inventory} = \frac{365}{\text{Inventory Turnover}}$	Inventory Turnover = 0.5 times (from above).	730 days
Fixed Assets Turnover	$\text{Fixed Assets Turnover} = \frac{\text{Sales}}{\text{Net Fixed Assets}}$	Sales = ₹3500 Net Fixed Assets = `400	8.75 times
Total Assets Turnover	$\text{Total Assets Turnover} = \frac{\text{Sales}}{\text{Total Assets}}$	Sales = ₹3500 Total Assets = ₹2500	1.4 times
Times Interest Earned (TIE)	$\text{Times Interest Earned} = \frac{\text{EBIT}}{\text{Interest Expense}}$	EBIT = ₹2429 Interest Expense = `110	22.08 times
Debt Ratio	$\text{Debt Ratio} = \frac{\text{Total Debt}}{\text{Total Assets}} = \frac{\text{Total Assets} - \text{Total Owners' Equity}}{\text{Total Assets}}$	Total Assets = ₹2500 Total Owners' Equity = ₹1000 Note: Total Debt is computed by subtracting Total Owners' Equity from Total Assets	60%
Debt to Equity Ratio	$\text{Debt to Equity Ratio} = \frac{\text{Total Debt}}{\text{Total Owners' Equity}} = \frac{\text{Total Assets} - \text{Total Owners' Equity}}{\text{Total Owners' Equity}}$	Total Assets = ₹2500 Total Owners' Equity = ₹1000 Note: Total Debt is computed by subtracting Total Owners' Equity from Total Assets.	150%
Equity Multiplier	$\text{Equity Multiplier} = \frac{\text{Total Assets}}{\text{Total Owners' Equity}}$	Total Assets = ₹2500 Total Owners' Equity = ₹1000	2.5
Profit Margin	$\text{Profit Margin} = \frac{\text{Net Income}}{\text{Sales}}$	Net Income = ₹1783 Sales = ₹3500	50.94%

Return on Assets (ROA)	$\text{Return on Assets (ROA)} = \frac{\text{Net Income}}{\text{Total Assets}}$	Net Income = ₹1783 Total Assets = ₹2500	71.32%
Return on Equity (ROE)	$\text{Return on Equity (ROE)} = \frac{\text{Net Income}}{\text{Total Owners' Equity}}$	Net Income = ₹1783 Total Owners' Equity = ₹1000	178.3%
Payout Ratio	$\text{Payout Ratio} = \frac{\text{Dividends Paid}}{\text{Net Income}}$	Net Income = ₹1783 Dividends = ₹980	54.96%
Retention Ratio	$\text{Retention Ratio} = \frac{\text{Addition to Retained Earnings}}{\text{Net Income}}$	Net Income = ₹1783 Addition to RE = ₹803 Note: The sum of the Payout Ratio and the Retention Ratio is 100%.	45.04%
Earnings Per Share (EPS)	$\text{Earnings Per Share} = \frac{\text{Net Income}}{\text{Number of Shares Outstanding}}$	Net Income = ₹1783 Number of Shares Outstanding = 400	₹4.46
Book Value Per Share	$\text{Book Value Per Share} = \frac{\text{Total Owners' Equity}}{\text{Number of Shares Outstanding}}$	Total Owners' Equity = ₹1000 Number of Shares Outstanding = 400	₹2.5
Price/Earnings Ratio	$\text{P / E Ratio} = \frac{\text{Price Per Share}}{\text{Earnings Per Share}}$	Price Per Share = ₹7.71 Earnings Per Share (EPS) = ₹4.46 Note: See the EPS/Book Value Per Share calculation for additional information	1.73
Market-to-Book Ratio	$\text{Market - To - Book Ratio} = \frac{\text{Price Per Share}}{\text{Book Value Per Share}}$	Price Per Share = ₹7.71 Book Value Per Share = ₹2.5	3.08

5.6 SUMMARY

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. Based on how the company has done in the past and how it is likely to do in future, the investment analyst use different ratios like EPS, DPS etc.

- Company analysis is the evaluation of the financial performance of the company.
- The business model describes the company's operations
- The competitiveness of the company can be studied with the help of market share, the growth of annual sales, and the stability of annual sale.
- Corporate governance refers to the set of systems and practices that ensure accountability, transparency of the company.
- Corporate culture refers to the collective beliefs, value systems, and procedures in place in the company.
- EPS is the earnings after tax divided by the number of common shares outstanding.
- Economic value added method measures a surplus that is created by investment.
- The hybrid model is a derivative of the income approach and the asset based approach.
- In relative valuation, the value of the company is determined in relation to how similar companies are priced in the market
- Financial statements are analysed through comparative statements, trend analysis, common size statements, fund flow analysis, cash flow analysis and ratio analysis.

5.7 SELF-ASSESSMENT QUESTIONS

1. Briefly explain the factors affecting the value of stock of a company.
2. How does management of a company affect its stock prices?
3. Explain financial analysis of a company.
4. Describe the different techniques of financial analysis and explain the limitations of financial analysis.
5. What are the methods adopted to analyse the financial statements of a company?
6. What are the different types of Ratios to analyse the company's earnings performance.

6

TECHNICAL ANALYSIS - I

Unit Structure

6.0 Learning Objectives

6.1 Introduction to Technical Analysis

6.2 Different Charting Techniques

- Line Chart
- Bar Chart
- Candlestick Chart
- Point & Figure Chart

6.3 Different Chart PATTERN

- Support & Resistance
- Trend lines
- Head & Shoulders
- Double Tops & Bottom
- Triangles

6.4 Summary

6.5 Self-Assessment Questions

6.0 LEARNING OBJECTIVES

After studying this lesson you are able to:

- Understand different charting techniques
- Understand different charting Patterns

6.1 INTRODUCTION TO TECHNICAL ANALYSIS

The technical analysis is based on the doctrine given by Charles H. Dow in 1884, in the Wall Street Journal. He wrote a series of articles in the Wall Street Journal. A.J. Nelson, a close friend of Charles Dow formalized the Dow Theory for economic forecasting. The analysts used charts of individual stocks and moving averages in the early1920's. Later on, with the aid of calculators and computers, sophisticated techniques came into trend.

The share price movement is analysed broadly with two approaches, namely, fundamental approach and the technical approach. Fundamental approach analyses the share prices on the basis of economic, industry and company statistics. If the price of the share is lower than its intrinsic value, investor buys it. But, if he finds the price of the share higher than the intrinsic value he sells and gets profit. The technical analyst mainly studies the stock price movement, of the security market. If there is an uptrend in the price movement investor may purchase the Security. With the onset of fall in price he may sell it and move from the Security. Basically, technical analysts and the fundamental analysts aim at good return on investment.

It is a process of identifying trend reversals at an earlier stage to formulate the buying and selling strategy. With the help of several indicators they analysed the relationship between price - volume and supply-demand for the overall market and the individual stock. Volume is favourable on the upswing i.e. the number of shares traded is greater than before and on the downside the number of shares traded dwindles If it is the other way round, trend reversals can be expected.

Despite all the fancy and exotic tools it employs, technical analysis really just studies supply and demand in a market in an attempt to determine what direction, or trend, will continue in the future. In other words, technical analysis attempts to understand the emotions in the market by studying the market itself, as opposed to its components. If you understand the benefits and limitations of technical analysis, it can give you a new set of tools or skills that will enable you to be a better trader or investor.

Assumptions

1) The market value of the Security is determined by the relation of supply and demand.
2) Security prises behave in a manner that their movement is continuous in a particular direction for some time
3) The market discounts everything. The price of the security quoted represents the hopes, fears and inside information received by the market players. Inside information regarding the issuing of bonus shares and right issues may support the prices. The loss of earnings and information regarding the forthcoming labour problem may result in fall in price. These factors may cause changes in demand and supply.
4) The market always moves in trend. Except for minor deviations, the stock prices move in trends. The price may create definite patterns too. The trend may be either increasing or decreasing. The trend continues for some time and then it reverses.

5) Any layman knows the fact that history repeats itself. It is true to the stock market also. In the rising market investor's psychology have tip beats and they purchase the shares in greater 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.

6.2 DIFFERENT CHARTING TECHNIQUES

Line Chart

The most basic of the four charts is the line chart because it represents only the closing prices over a set period of time. The line is formed by connecting the closing prices over the time frame.

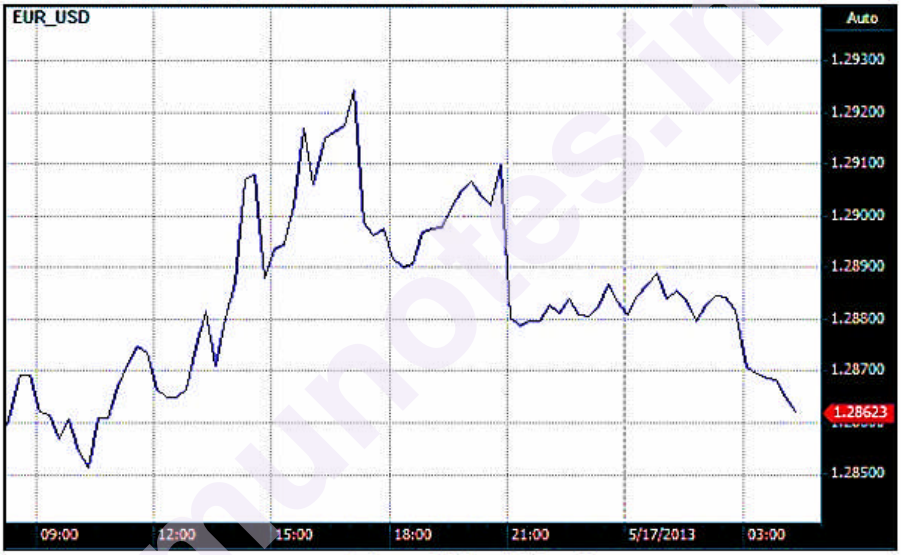


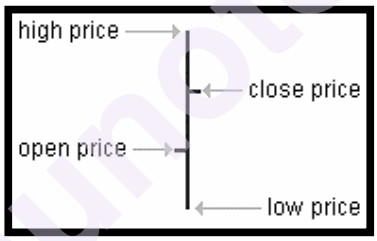
Figure 2.2.1 A Line chart

However, the closing price is often considered to be the most important price in stock data compared to the high and low for the day and this is why it is the only value used in line charts. The line chart is also called a close-only chart as it plots the closing price of the underlying security, with a line connecting the dots formed by the close price. In a line chart the price data for the underlying security is plotted on a graph with the time plotted from left to right along the horizontal axis, or the x-axis and price levels plotted from the bottom up along the vertical axis, or the y-axis. The uncluttered simplicity of the line chart is its greatest strength as it provides a clean, easily recognizable, visual display of the price movement. This makes it an ideal tool for use in identifying the dominant support and resistance levels, trend lines, and certain chart patterns.

However, the line chart does not indicate the highs and lows and, hence, they do not indicate the price range for the session. Despite this, line charts were the charting technique favoured by Charles Dow who was only interested in the level at which the price closed. This, Dow felt, is the most important price data of the session or trading period as it determines that period's unrealized profit or loss.

Line charts or close-only charts are still favoured by numerous traders who agree the closing price is the most important data and are not concerned with the noise created price spikes and minor price movements, or the speculation that characterizes the start of the trading session.

Bar charts Bar Charts are one of the most popular forms of stock charts and were the most widely used charts before the introduction of candlestick charts. Bar charts are drawn on a graph that plots time on the horizontal axis and price levels on the vertical axis. These charts provide much more information than line charts as they consists of a series of vertical bars that indicate various price data for each time-frame on the chart. This data can be either the open price, the high price, the low price and the close price, making it an



OHLC bar chart, or the high price, the low price and the close price, making it an HLC bar chart. The height of each OHLC and HLC bar indicates the price range for that period with the high at the top of the bar and the low at the bottom of the bar. Each OHLC and HLC bar has a small horizontal tick to the right of the bar to indicate the close price for that period. An OHLC bar will also have a small horizontal tick to the left of the bar to indicate the open price for that period. The extra information is one of the reasons why the OHLC charts are more popular than HLC charts. In addition, some charting applications use colours to indicate bullish or bearishness of a bar in relation to the close of the previous bar. This makes the OHLC bar chart quite similar to the candlestick chart, except that the OHLC chart does not indicate bullishness or bearishness of the period of one bar as clearly as the candlestick chart (the colour of an OHLC bar is always in relation to the close of the pervious bar rather than the open and close of the current bar).Most bar charts contain a lower pane

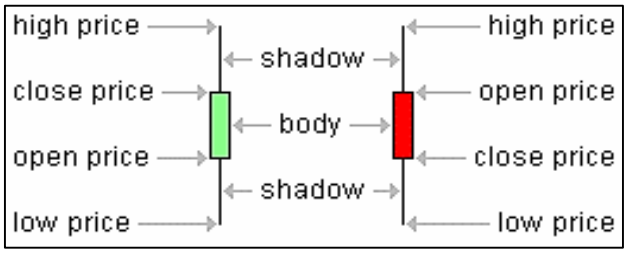
that plots the total volume traded during a particular period. This part of the chart has a separate scale on the vertical axis to illustrate volume levels. It too consists of typical vertical bars.

Figure 2.2.2 A Bar chart

The charts of the EUR/USD shown in figure 2.2.1 and figure 2.2.2 illustrate the line and bar charts in terms of the amount of information each one parts. First is the line chart that only plots the close price of the underlining security and the second is the OHLC bar chart. Both charts have a 15-minute time frame and cover the exact same period.

Japanese Candlestick Charts

Japanese candlestick charts form the basis of the oldest form of technical analysis. They were developed in the 17th century by a Japanese rice trader named Homma and was introduced to the rest of the world in Steve Nison's book, Japanese Candlestick Charting Techniques. Candlestick charts provide the same information as OHLC bar charts, namely open price, high price, low price and close price. However, candlestick charting also provide a visual indication of market psychology, market sentiment, and potential weakness, making it a rather valuable trading tool.



Candlesticks indicate a bullish up bar, when the closing price is higher than the opening price, using a light colour such as white or green, and a bearish down bar, when the closing price is lower than the opening price, using a darker colour such as black or red for the real body of the candlestick. Thus, on a green candlestick, the close price will be at the top of the candlestick real body and the open price at the bottom as the close price is higher than the open price; conversely on a red bar the close price will be at the bottom of the candlestick real body and the open price at the top as the close price is lower than the open price. For both a bullish and a bearish candlestick, the high price and the low and the low price for the session will be indicated by the top and bottom of the thin vertical line above and below the real body. This vertical line is called the shadow or the wick.

The shape and colour of a candlestick can change several times during its formation. Therefore the trader must wait for the candlestick to be formed completely at the end of the time-frame to analyse the candlestick, forcing the trader to wait for the bar to close.

Figure 2.2.3 A Candlestick chart

Candlesticks are also good indicators of market psychology, i.e., the feelings of fear and greed experienced by the buyers and sellers, and the strength of those feelings. Thus a bullish (green or white) candlestick with no shadows (which is called a Marubozu) indicate strong bullishness, and the longer the Marubozu candlestick the stronger the bullishness. A bullish candlestick with a relatively long lower shadow, a relatively small real body and a short or no upper shadow indicates that the buyers were able to drive the price up from the low. This is also a strong bullish candlestick. However, a bullish candlestick with a relatively long upper shadow, a relatively small real body and a short lower shadow indicates

that sellers were able to drive the price down from the high but were not able to defeat the buyers. Although this candlestick is bullish, it is weak; and the longer the upper shadow and the smaller the real body, the weaker the candlestick.

Candlestick charts also indicate potential trend reversal patterns in only one to four candlesticks with subsequent candlestick patterns proving confirmation. When using a candlestick for confirmation of a potential trade signal, it is important to take into account the relative strength or weakness of that candlestick and its location overall in the trend lines on the chart. A weak candlestick should never be taken as a confirmation of a potential trade.

Point and Figure (P&F) charts

Point and Figure (P&F) charts date back to at least 1880's and differ from other charts as it does not plot price movement from left to right within fixed time intervals. It also does not plot the volume traded. Instead it plots unidirectional price movements in one vertical column and moves to the next column when the price changes direction. It represent increase in price by plotting X's in the column and decrease in price by plotting O's. Each X and O represents a box of a set size or price amount. This box size determines how far the price must move before another X or O is added to the chart, depending on the direction of the price movement. Thus if the box sixe is set at 15, the price must move 15 points above the previous box before the next X or O is plotted. Any movement below 15 is ignored. For this reason, very little plotting occurs during stagnant market conditions while a considerable amount of plotting may occur during volatile market conditions.

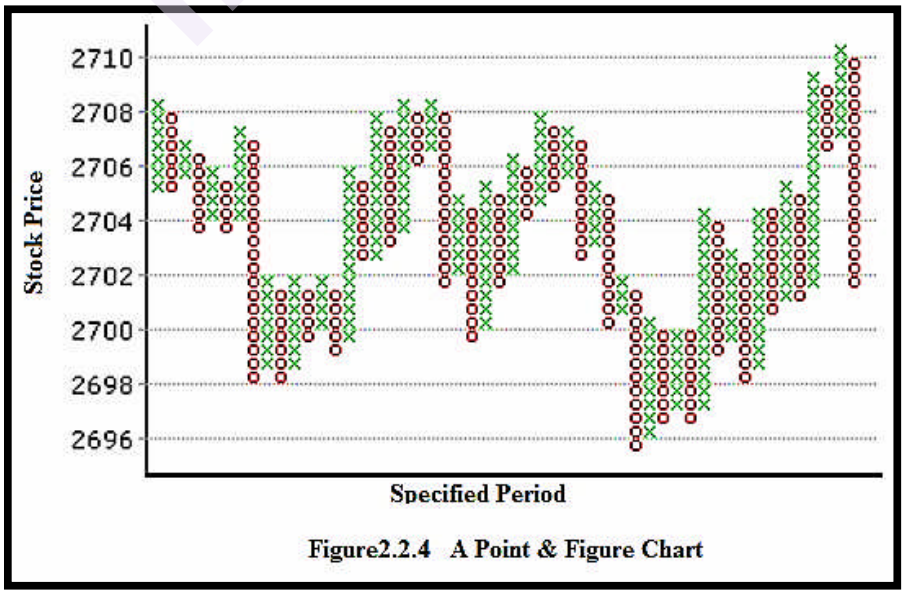


Figure2.2.4 A Point & Figure Chart

The chart also has a box reversal amount that determines how many boxes must occur in the opposite direction before it is seen as a reversal. Only once the price is seen as having reversed, a new column is started. A 3 box reversal requires the price to move three boxes (of 45 points if each box represents 15 points) against the current direction before it is seen as a reversal.

Some traders argue that P&F charts are one of the best charting techniques for accurately determining entry and exit signals as they present a clear indication of support and resistance lines, as well as clear trend lines.

6.3 DIFFERENT CHART PATTERNS

The two basic elements of technical analysis, and the study of chart patterns in particular, are the concepts of support and resistance and trend lines. The Dow Theory of trends, (Chapter 2.3) for example, is based on support and resistance and states that a market is in an uptrend when it makes higher highs and higher lows, and is in a downtrend when it makes lower lows and lower highs. The highs are formed at resistance levels where selling is strong enough to reverse the rally in prices while the lows are formed at support levels where buying is strong enough to reverse the decline in prices. However, support and resistance lines, which are horizontal lines, are often confused with trend lines, which are lines that slope in the direction of the trend.

6.2.3(A)Support and Resistance (S/R) Lines

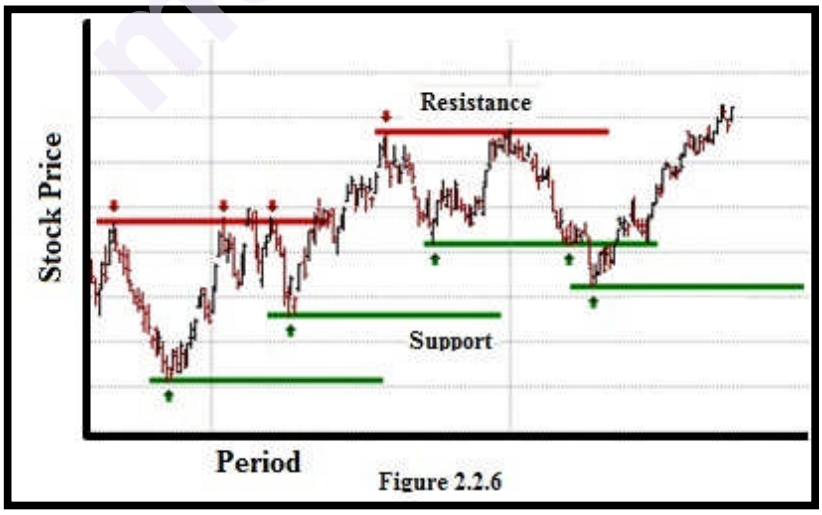


Figure 2.2.6

Support and Resistance lines are often confused with trend lines. However, support and resistance lines are horizontal lines drawn under the minor lows and above the highs, respectively. They indicate where a previous rally met resistance that drove the price back down and where a previous decline met support that pushed the price back up. These are two important levels in terms of trend identification since an uptrend will tend to break through previous resistance levels to make higher highs while a down trend will break through the previous support levels under the market to make lower lows. When the support line below the recent minor low in broken in an uptrend, it indicates that the uptrend is weakening and may reverse soon. Similarly, when the recent resistance line in a down trend is broken, it indicates that the trend is weakening and that a trend reversal may occur. When a support or a resistance line is broken, it often swaps around to become a resistance or support line for future price movements.

When the price moves back to a support or resistance line, it is said to be testing the support or resistance. If the support or resistance line holds, and is not violated or broken, the test is said to have failed. The more failed tests a support or resistance line has, the more significant that line becomes. When a support or resistance line is significant, they provide entry signals when a test of the line fails, as well as when a test succeeds in violating or breaking the support or resistance.Support and resistance lines that are less significant do not provide good entry and exit signals but are more useful for identifying chart patterns and for use in conjunction with technical indicators.

6.2.3 (B) Trend Lines

Trend lines are key elements of chart patterns as they indicate significant price levels. Thus an understanding of trend lines, and what they represent are important for successful technical analysis. In an uptrend, which is characterized by higher highs and lower lows, with the higher lows referred to as correction lows or reaction lows as the market corrects an overbought condition, a trend line can be drawn below the correction lows connecting two or more of the lows. A trend line that connects only two correction lows is a tentative trend line and is only confirmed when the price test the line successfully, i.e., the price touches

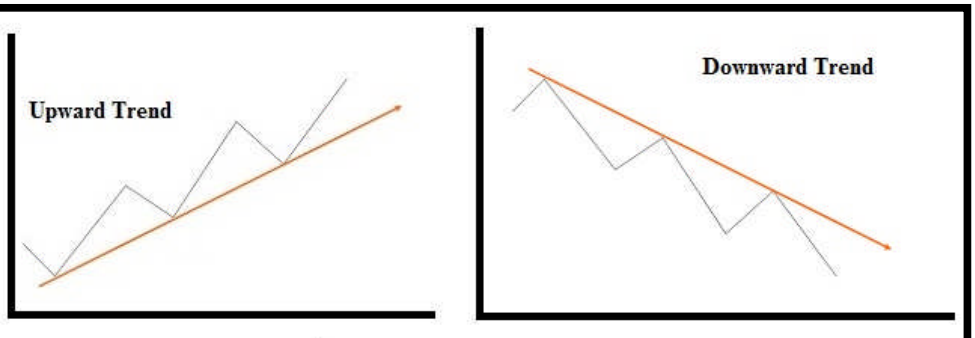


Figure 2.2.7

the line and bounces of it, for a third time. When a trend line has been identified, it can used to identify potential areas of support for subsequent correction lows. Should the price break the trend line, i.e., penetrate or violate the trend line and close below it, then trend could be broken. However, only a lower low will confirm a reversal of the uptrend. In addition, an increase in volume at the break increases the validity of that break while a decrease in volume increases the probability of a false break. Furthermore, the actual drawing of trend lines is more of an art than a science and take a bit of time to get right. As a guideline, drawing the trend lines along areas of congestion rather than at the tip of the spikes is the preferred method for most technical analysts.

The same is true for a downtrend, which are characterized by lower lows and lower highs. The lower highs are referred to as reaction or correction highs as the market attempts to correct oversold conditions. A trend line can be drawn above the trend to connect two or more correction highs. When the trend line connects only two correction highs, it is a tentative trend line and is only confirmed when the price tests the trend line a third time without violating it. These trend lines are potential areas of resistance for subsequent correction highs. When the price penetrates the trend line and close above it, then trend line could be broken but a reversal of the downtrend is only confirmed by a higher high.The strength or significance of a trend line increases every time the price returns to test the trend line without violating it. In addition, trend lines on charts with longer timeframes have a greater significance than trend lines on charts with shorter timeframes.

6.2.3 (C) Head and Shoulders

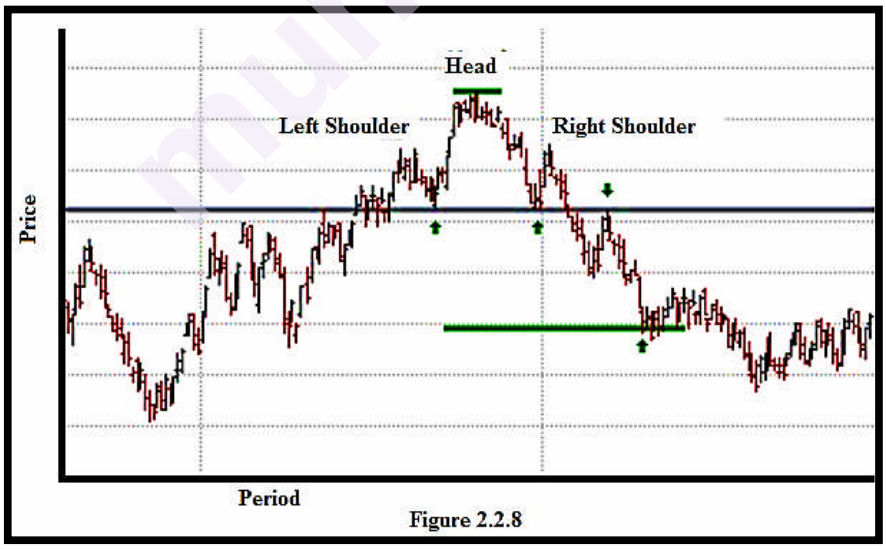


Figure 2.2.8

The Head and Shoulders pattern is one of the most reliable trend reversal patterns and is usually seen in uptrends, where it is also referred to as Head and Shoulders Top, though they can appear in downtrends as well, where they are also referred to as Head and Shoulders Bottom or Inverse Head and Shoulders. As they are trend reversal patterns, the Head and Shoulders patterns require the presence of an existing trend.

Head and Shoulders Top

Head and Shoulders Top is formed when a higher high in an uptrend is followed by a lower high. The result is a series of three peaks where the centre peak, the head, is higher than the two peaks, the shoulders, on either side of it. The two shoulders do not need to be the same size or the same height, but they must be lower than the head.

Head and Shoulders Bottom

Head and Shoulders Bottom or Inverse Head and Shoulders is the opposite of Head and Shoulders Top and is formed in a downtrend when a lower low is followed by a higher low. The result is a series of three lows or dips where the low of the middle dip, which is the head, is lower than the dips, or the shoulders, on either side of it. As with the Head and Shoulders Top, the two shoulders do not need to be the same size or the same height, but their lows must be higher than the low of the head.

6.2.3 (D) Double Top and Double Bottom Patterns

The double tops and double bottoms patterns are two related chart patterns that are some of the easiest trend reversal patterns to identify that appear on line, bar, candlestick charts, and Point-and-Figure charts.

Double Tops

The double tops is a bearish trend reversal pattern that often marks the end of an uptrend and the start of a down trend. It consists of two consecutive peaks that reach a resistance level at more or less the same high value, with a valley separating the two peaks. The low of the valley is important for price projection purposes, but the shape that the peaks take is not important despite some traders talking about Adam and Eve tops. Volume is also of importance, with the volume on the second peak preferably lower than the volume on the first peak.

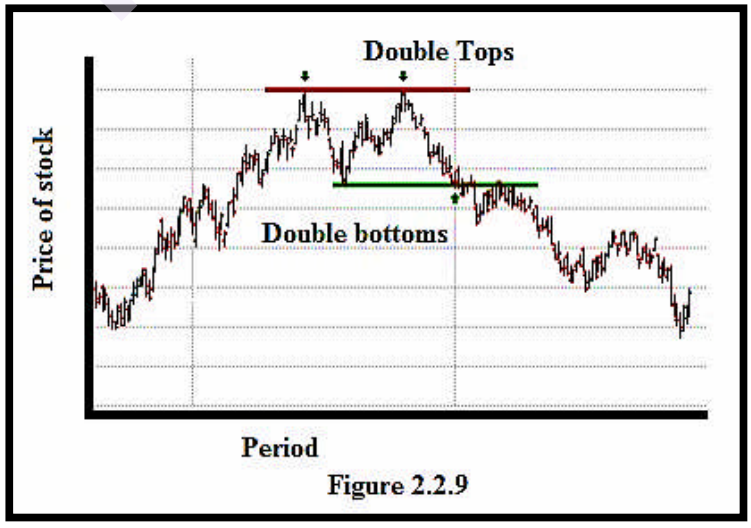


Figure 2.2.9

The double tops pattern has two entry signals to sell short. The first is given when the price fails to break the previous resistance level at first peak. However, this is a tentative entry as the price may rebound before reaching the support level between the two peaks and signal the continuation of the uptrend. The second entry signal is the more reliable signal. It is given when the previous support level created on the retracement from the first peak is violated. This should preferably occur on higher volume as a drop in volume may indicate a false break.

Double Bottoms

The double bottom pattern is a bullish counterpart to the double tops. It often marks the end of a down trend and the possible start of a protracted up trend. It consists of two consecutive troughs or dips that bounce of a support level at more or less the same low value, with a peak separating the two dips. Similar to the valley in the double tops, the high that the interceding peak reaches in the double bottom is important for price projection purposes, and the shape that the two dips is of much importance. Volume is also of importance here, with the ideal pattern having a lower volume on the second dip than the volume on the first dip.

2.2.3(E) Triangles

Ascending Triangles

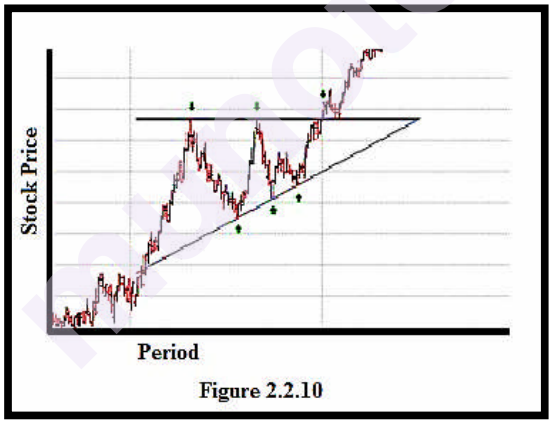


Figure 2.2.10

The ascending triangle pattern is similar to the symmetrical triangle except that its upper trend line is a horizontal resistance line. Ascending triangles are generally bullish in nature and are most reliable when they appear as a continuation pattern in an uptrend. In these patterns, buyers slightly outnumber sellers. The market becomes overbought and prices start to drop. However, buyers then re-enters the market and prices are driven back up to the recent high, where selling occurs once more. Buyers re-enter the market, but at a higher level than before. The result is a steady high at more or less the same level but series of higher lows. Prices eventually break through the resistance level where the high peaks were formed and are propelled even higher as new buying comes in and volume increases.

Descending Triangles

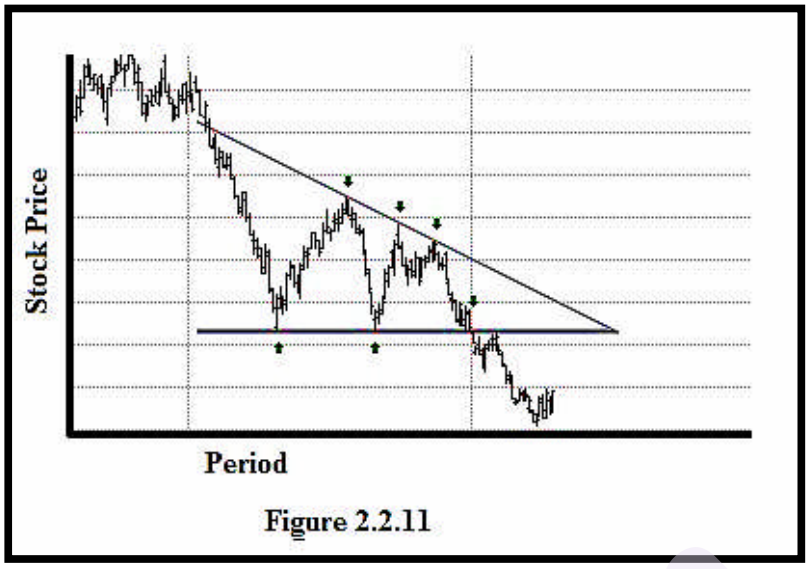


Figure 2.2.11

The descending triangle pattern is similar to the symmetrical triangle except that its lower trend line forms a horizontal support line. Descending triangles are bearish in nature and are most reliable when they appear as a continuation pattern in a downtrend. In these patterns, sellers slightly outnumber buyers. The market becomes oversold and prices start to climb. However, sellers then re-enter the market and prices are driven back down to the recent low, where buying occurs once more. Sellers re-enter the market, but at a lower level than before. The result is lower highs with a steady low. Prices eventually break through the support line where the lows were formed and are propelled even lower as selling increases along with an expansion in volume.

Flag Pattern

The flag pattern is one of the short-term continuation patterns. It is quite similar to the pennant pattern with the "flag" representing a relatively short consolidation period following a sharp price movement and marks the mid-point of a longer price movement. It is not a reversal pattern. The flag pattern occurs when the chart tracks a rapid, near vertical price movement that is followed by a short period of congestion or consolidation that is characterized by lower volumes. The initial near vertical movement forms the "flagpole" while the congestion area forms the actual flag and is caused by the profit taking of traders that were fortunate enough to be in the correct position before the flagpole formed, and by traders who missed the initial movement who are now entering the market.

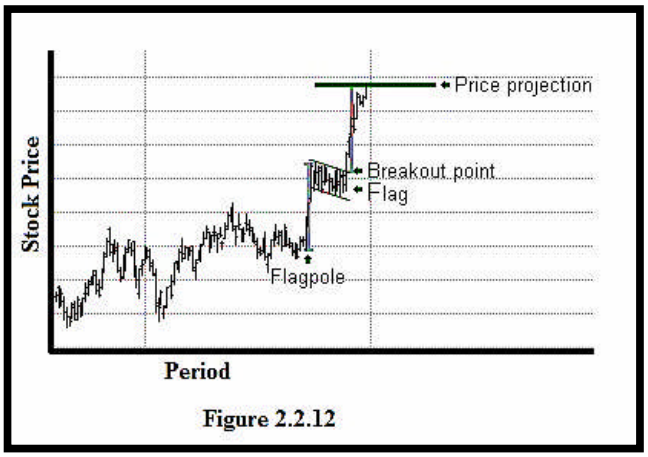


Figure 2.2.12

The congestion area of the flag usually takes either the shape of a parallelogram that tilts in the opposite direction of the flagpole or the shape of a rectangle. Usually the consolidation period is accompanied by a decline in volumes until the beak out occurs. A valid break out would be in the same direction of the initial price movement that formed flagpole, and usually occurs after approximately 8 bars but definitely within a maximum of 20 bars. If the consolidation phase lasts longer than 20 bars then the probability that the momentum that created the initial price movement has dissipated increase and the consequent probability that the flag pattern itself will fail increases. This is particularly true of bearish flag patterns.

6.4 SUMMARY

This chapter analyses the behaviour of the security prices through different charting techniques and different chart patterns. According to the technical analysts, their method is simple and gives an investor a bird's eye on the future of security price by measuring the past moves of prices. They predicted the stock prices through Line Chart, Bar Chart, And Candlestick Charts and other. Technical analysis includes the study of various chart patterns such as Support and Resistance, Head and Shoulders, Triangles and Flag Pattern which helps to predict the upward and downward swing in the market. Following are few concepts used in charting techniques:

- Resistance — a price level that may prompt a net increase of selling activity
- Support — a price level that may prompt a net increase of buying activity
- Trending — the phenomenon by which price movement tends to persist in one direction for an extended period of time
- Average true range — averaged daily trading range, adjusted for price gaps

- Chart pattern — distinctive pattern created by the movement of security prices on a chart
- Momentum — the rate of price change
- Point and figure analysis — a priced-based analytical approach employing numerical filters which may incorporate time references, though ignores time entirely in its construction.
- Cycles - time targets for potential change in price action (price only moves up, down, or sideways)

6.5 SELF-ASSESSMENT QUESTIONS

1. Explain the technical analysis and its assumptions.
2. What are the charts? How are they interpreted in technical analysis?
3. Chart patterns are helpful in predicting the stock price movement'. Comment.
4. Explain the different types of charting techniques.
5. Explain the different chart patterns.
6. Briefly explain the Line Chart and Bar Chart.
7. Briefly explain the ascending and descending triangles.
8. What is a point and figure chart, and how is it used?

7

TECHNICAL ANALYSIS - II

Unit Structure

7.0 Learning Objectives
7.1 Introduction
7.2 Dow Theory
- Assumptions
- Market Trend or Price Movements
- The Three Stages of Primary Bull Markets and Primary Bear Markets
- Signal Confirmation

7.3 Technical Indicators
- Volume Indicators
- Market Sentiment Indicators
- Confidence Index

7.4 Summary
7.5 Self-Assessment Questions

7.0 LEARNING OBJECTIVES

After studying this lesson you are able to:

- Understand The Dow Theory
- Use volume indicators, market sentiment indicators
- Understand confidence index

7.1 INTRODUCTION

However fundamental analysts examine earnings, dividends, new products, research and the like, technical analysts examine what investors fear or think about those developments and whether or not investors have the ability to back up their opinions; these two concepts are called psychology and supply/demand. Technicians employ many techniques, one of which is the use of charts which we have already studied in the earlier chapter. Using charts, technical analysts seek to identify price patterns and market trends in financial markets and attempt to exploit those patterns. Technicians using charts search for typical price chart patterns, such as the well-known head and shoulders or double top/bottom reversal patterns, study technical indicators, moving averages, and look for forms such as lines of support, resistance, and more obscure formations

such as flags patterns. Technical analysts also widely use market indicators of many sorts, some of which are mathematical transformations of price, often including up and down volume, advance/decline data and other inputs. Adherents of different techniques (for example, candlestick charting,) may ignore the other approaches, yet many traders combine elements from more than one technique. Some technical analysts use subjective judgment to decide which pattern(s)a particular instrument reflects at a given time, and what the interpretation of that pattern should be. Others employ a strictly mechanical or systematic approach to pattern identification and interpretation. Technical analysis is frequently contrasted with fundamental analysis, the study of economic factors that influence the way investor's price financial markets. Technical analysis holds the prices that already reflect all such trends before investors are aware of them. Some traders use technical or fundamental analysis exclusively, while others use both types to make trading decisions which conceivably is the most rational approach. Users of technical analysis are often called technicians or market technicians. Some prefer the term technical market analyst or simply market analyst. An older term, chartist is sometimes used, but as the discipline has expanded and modernized, the use of the term chartist has become less popular, as it is only one aspect of technical analysis. In this chapter, we are going to study the Dow Theory and Different Technical Indicators.

7.2 DOW THEORY

The Dow Theory has been around for almost 100 years. Developed by Charles Dow and refined by William Hamilton, many of the ideas put forward by these two men have become axioms of Wall Street. Dow Theory is widely considered as one of the earliest forms of technical analysis. It was originally publicised by Charles H. Dow who noticed that stocks tended to move up or down in trends, and they have a habit of to move together, although the extent of their movements could vary. He used this knowledge to develop the Dow-Jones Averages that are still in use today. Charles Dow did not use his observations to forecast potential price movements but saw it as a barometer of the general business climate. William P. Hamilton, who succeeded Charles Dow as the Editor of The Wall Street Journal, refined Dow's principles and developed them into a theory, which he explained in his book, The Stock Market Barometer: A Study of Its Forecast Value of 1922. Both Dow's work and Hamilton's work were analysed and studied by Robert Rhea who refined Dow Theory further into the theory we know today, in his book, The Dow Theory of 1932.

Assumptions of the Dow Theory

- The Market Value of a Security or stock is related to demand and supply factors functioning in the market.
- Stock prices behave in a manner that their movement is continuous in a particular direction for some period.

- Demand and supply of a security surrounded by the same rational and irrational factors.
- Whenever there are shift in demand and supply, this can be detected through chart patterns specially to show the market action.
- The Movement of a stock price if going upward will continue to do so for a while barring certain minor fluctuations in stock prices.
- Trends in a stock prices have been seen to change when there is a shift in Demand and Supply factors.

Market Trends or Price Movements :

The market as a whole has a trend and that this trend is conveniently measured in terms of two sets of Dow Jones Averages, Transports and Industrials. Dow Theory has for one of its fundamental concepts the existence of not one, but three movements of the Averages. They are known as:

A. Primary movements

B. Secondary movements

C. Daily fluctuations

A. Primary moves last from a few months to many years and represent the broad underlying trend of the market.

B. Secondary or reaction movements last for a few weeks to many months and move counter to the primary trend.

C. Daily fluctuations can move with or against the primary trend and last from a few hours to a few days, but usually not more than a week.

Primary movements

As mentioned, represent the broad underlying trend. These actions are typically referred to as BULL or BEAR trends. Bull means buying or positive trends and Bear means negative or selling trends. Once the primary trend has been identified, it will remain in effect until proven otherwise. Hamilton believed that the length and the duration of the trend were largely undeterminable. Many traders and investors get hung up on price and time targets. The reality of the situation is that nobody knows where and when the primary trend will end. The objective of Dow Theory is to utilize what we do know, not to randomly guess about what we do not. Through a set of guidelines, Dow Theory enables investors to identify the primary trend and invest accordingly. Trying to predict the length and duration of the trend is an exercise in futility. Success according to Hamilton and Dow is measured by the ability to identify the primary trend and stay with it.

Secondary movements

Secondary movements run counter to the primary trend and are reactionary in nature. In a bull market, a secondary move is considered a correction. In a bear market, secondary moves are sometimes called reaction rallies. Hamilton characterized secondary moves as a necessary phenomenon to combat excessive speculation. Corrections and counter moves kept speculators in check and added a healthy dose of guess work to market movements. Because of their complexity and deceptive nature, secondary movements require extra careful study and analysis. He discovered investors often mistake a secondary move as the beginning of a new primary trend.

Daily fluctuations

While important, when viewed as a group can be dangerous and unreliable individually. Getting too caught up in the movement of one or two days can lead to hasty decisions that are based on emotion. To invest successfully, it is vitally important to keep the whole picture in mind when analysing daily price movements. In general, they agreed the study of daily price action can add valuable insight, but only when taken in greater context.

The Three Stages of Primary Bull Markets and Primary Bear Markets : Hamilton identified three stages to both primary bull and primary bear markets. The stages relate as much to the psychological state of the market as to the movement of prices.

Primary Bull Market

Stage 1. Accumulation

Hamilton noted that the first stage of a bull market was largely indistinguishable from the last reaction rally in a bear market. Pessimism, which was excessive at the end of the bear market, still reigns at the beginning of a bull market. In the first stage of a bull market, stocks begin to find a bottom and quietly firm up. After the first leg peaks and starts to head down, the bears come out proclaiming that the bear market is not over. It is at this stage that careful analysis is warranted to determine if the decline is a secondary movement. If it is a secondary move, then the low formed above the previous low for a quiet period will ensue as the market firm and then an advance will begin. When the previous peak is surpassed, the beginning of the second leg and a primary bull will be confirmed.

Stage 2. Movement with Strength

The second stage of a primary bull market is usually the longest, and sees the largest advance in prices. It is a period marked by improving business conditions and increased valuations in stocks. This is considered

the easiest stage to make profit as participation is broad and the trend followers begin to participate.

Stage 3. Excess

Marked by excess speculation and the appearance of inflationary pressures. During the third and final stage, the public is fully involved in the market, valuations are excessive and confidence is extraordinarily high.

Primary Bear Market

Stage 1. Distribution

Just as accumulation is the hallmark of the first stage of a primary bull market, distribution marks the beginning of a bear market. As the "smart money" begins to realise that business conditions are not quite as good as one thought, and thus they begin to sell stock. There is little in the headlines to indicate a bear market is at hand and general business conditions remain good. However, stocks begin to lose their lustre and the decline begins to take hand. After a moderate decline, there is a reaction rally that retraces a portion of the decline. Hamilton noted that reaction rallies during a bear market were quite swift and sharp. This quick and sudden movement would invigorate the bulls to proclaim the bull market alive and well. However the high reaction of the secondary move would form and be lower than the previous high. After making a lower high, a break below the previous low, would confirm that this was the second stage of a bear market.

Stage 2. Panic Phase

As with the primary bull market stage, two of a primary bear market provides the largest move. This is when the trend has been identified as down and business conditions begin to deteriorate. Earnings estimates are reduced, shortfalls occur, profit margins shrink and revenues fall.

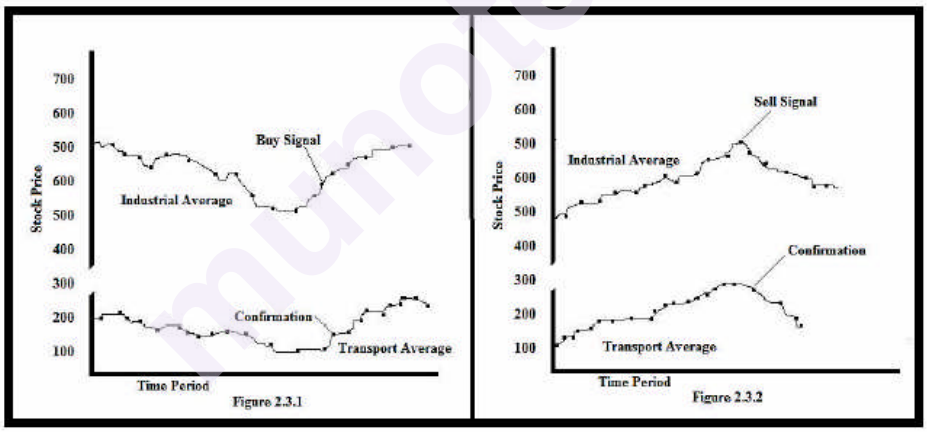
Stage 3. Despair

At the final stage of a bear market all hope is lost and stocks are frowned upon. Valuations are low, but the selling continues as participants seek to sell no matter what. The news from corporate America is bad, the economic outlook is bleak and no buyers are to be found. The market will continue to decline until all the bad news is fully priced into the stocks. Once stocks fully reflect the worst possible outcome, the cycle begins again.

Signal Confirmation

The Dow Theory employs the two of the Dow Jones Averages i.e. the industrial average and transportation average. The Dow Theory is built upon the assertion that measures the stock prices that tend to move together. If the industrial average is rising then the transportation average should also be rising. Such simultaneously occurring price movements suggest the strong bull market. If one of the averages start declining after a period of rising stock prices, then the two are odds. For Example, the industrial average may be rising while the transportation average is falling. This suggests the industrialist may soon start to fall. Hence, the market investors will use this signal to sell securities and convert it into cash. The Converse occurs when after a period of falling a security prices one of the averages start to rise while the other continue to fall. According to Dow Theory, this divergence suggest that this phase is over and that the security prices in general will soon start to rise.

These signals are illustrated in figure 2.3.1 which illustrate the buy signal. In the given figure, both industrial and transportation averages have been declining when the industrial average start to rise. Although the transportation average is still declining, the increase in the industrial average suggest that the decline market is over. This change is then confirmed when the transportation average also starts to rise.



The Figure 2.3.2 shows the opposite case in which both the averages have been rising the industrial average starts declining while the transportation average continues to rise. This suggest that the market is going through some uncertainty and until they start moving together again there is uncertainty as to the future direction of stock prices.

7.3 TECHNICAL INDICATORS

Indicators are the keystones of technical analysis and play an important role in giving and confirming entry and exit signals in stock trading systems. There are quite a number of different types of indicators but they all fall into two categories:

- **Leading Indicators**
- **Lagging Indicators**

Leading Indicators

Leading indicators are designed to lead price movements. Benefits of leading indicators are early signalling for entry and exit, generating more signals and allow more opportunities to trade. They represent a form of price momentum over a fixed look-back period, which is the number of periods used to calculate the indicator. In other words, they indicate the probability of a trend reversal in advance. Some of the popular leading indicators include the Commodity Channel Index (CCI), the Relative Strength Index (RSI).

Lagging Indicators

Lagging Indicators, which follow the price movement, are usually trend-following indicators, such as the moving averages (MA). These indicators turn only after the price action has already turned and therefore lag price action. These indicators work well when prices move in relatively long trends. They don't warn you of upcoming changes in prices, they simply tell you what prices are doing (i.e., rising or falling) so that you can invest accordingly. These trend following indicators make you buy and sell late and, in exchange for missing the early opportunities, they greatly reduce your risk by keeping you on the right side of the market.

Leading indicators are usually considered better than lagging indicators as they probable direction before they occur; however, their predictive nature does not necessarily increase their accuracy or validity. Indicators also measure different aspects of the market action regardless of whether they are lagging and leading indicators.

In addition, depending on how they are calculated, indicators can oscillate above and below a zero line. These are called oscillating indicators. Other types of indicators can be trend indicators, momentum indicators, volatility indicators, market strength indicators and cycle indicators.

A) MARKET SENTIMENT INDICATORS

The price move of any security is due in part to market sentiment. When there is little or no news about a security, then market sentiment may be the biggest factor in any price moves in the short run. Even when important news about a particular company or security is published, the resultant price moves are often enhanced or diminished by whether the market is bullish or bearish at that time.

There are many attempts to accurately measure market sentiment and so there are many different kinds of sentiment indicators. While some

sentiment indicators, such as volume indicators, can be used for individual securities, most market sentiment indicators are based on broad market data.

Contrarian Indicators

Some older market indicators are based on the idea, right or wrong, that uninformed traders usually make the wrong decision, buying at market tops and selling at market bottoms. For example, an old sentiment indicator is based on odd-lot trading statistics, which measures the number of shares of stock being bought or sold in odd lots, which are less than the 100 shares composing a round lot. Based on the odd-lot theory, most of these buyers are presumed to have little money to trade and are, therefore, presumed to be the least sophisticated market players, and so they buy when the optimism has peaked, and they sell when pessimism has peaked and the market has bottomed out. Informed traders see odd-lot buying as a sell signal and odd-lot selling as a buy signal, so they do exactly opposite of what the uninformed traders are doing.

Odd-Lot Short Sale Ratio

However, the odd-lot theory has not been a very good indicator, probably because most odd-lot buyers are not traders, but are buying for the long term and only when they have the money, and, thus, are not good indicators of market sentiment. Somewhat more reliable, since short sellers are traders, is the odd-lot short sale ratio, which is the number of odd-lot short sales divided by the number odd-lot sales. Presumably, a higher odd-lot short sale ratio indicates a market bottom.

Put / Call Volume Ratio

Another sentiment indicator considered more reliable is the put/call volume ratio, which is the ratio of the total number of puts to the total number of calls traded in 1 day. A put is an option that increases in value if the underlying security decreases in value. So you would buy a put if you expected that the price of the underlying security was going to decline in the near future. A call is an option that increases in value as the underlying security increases in value, so you would buy a call if you expected the price of the underlying was expected to go up soon. The put/call volume ratio is a contrarian indicator, because it is generally at a maximum at market bottoms. Hence, it would seem that uninformed players buy puts when the market has already declined.

Market Volatility

Another popular measure of market sentiment is market volatility, which is the amount that prices of an index or security at a particular time deviates from the mean price as measured over a specified time period. The greater the volatility, it is reasoned, the greater the anxiousness of the traders, and traders feel more anxious when the market is declining or at the bottom than when it is rising. Low volatility implies that the uninformed traders are complacent and therefore is a sell signal while high volatility is more frequent at market bottoms when uninformed traders are most pessimistic about the market.

B) VOLUME INDICATORS

Since market sentiment is the sentiment of the masses, it makes sense that tracking volume could be useful in divining market sentiment or the sentiment about a particular security. One sensible way of tracking sentiment is by noting the volume on uptrends or downtrends. High volume serves as a confirmation of the trend. Price moves based on low volume have much less significance.

On-Balance Volume (OBV)

On Balance Volume (OBV) was developed to determine positive and negative volume flow for a given security by comparing volume to price movements. It is a simple indicator that adds a time-frame's volume when the closing price is up and subtracts the time-frame's volume when the closing price is down. The OBV line is a running cumulative total of this volume. The time-frame can be monthly, weekly, hourly, 15 minutes, etc.

As already stated, OBV is calculated by adding the timeframe's volume to a running cumulative total when the security's closing price is up, and subtracting the volume from the running cumulative total when security's closing price is down.

If the closing price is higher than the previous closing price for the time-frame, then the new OBV is calculated using the formula:

OBV= current OBV + Volume

If the closing price is lower than previous closing price, then the new OBV is calculated using the formula:

OBV = current OBV - Volume

The direction of the OBV line is more important than the value of the OBV as the OBV line indicates buying or selling strength. A rising OBV indicates increased demand for a security, which is a requirement of a strong uptrend, and a rise in the security's price can be expected. Conversely, divergence between the OBV and a rising security price suggests that the uptrend is weak and will not persist. In a ranging market, a rising OBV indicates a potential bullish breakout while a falling OBV indicates a bearish breakout.

Accumulation/Distribution (A/D)

Accumulation/Distribution (A/D) was developed for trading stocks but it can also be applied to futures and other securities. Accumulation/Distribution (A/D) is an enhancement over On Balance Volume (OBV) as it considers price and volume. However, it takes the relationship between the opening and the close, and the price range into account rather than just the close. For A/D volume is considered bullish when the price close is higher than the open and bearish when the price close is lower than the open. However, the amount of volume assigned to

the indicator is dependent on the distance between the open and the close, and distance between the high and the low, or the price range.

Accumulation/Distribution (A/D) is calculated in two steps. First, the difference between the close and the open is calculated and divided by the difference between the high and the low of the price range. The result is then multiplied by the volume. The formula is:

A/D = (Close – Open) / ((High - Low) x Volume)

As with the OBV, the direction of the A/D line indicates buying or selling strength with a rising A/D indicating increased demand for the underlying security, while a decline in A/D indicating a decline in the demand for the underlying security. When A/D increases the price of the underlying security is expected to rally and when the A/D decreases the price is expected to drop. However, when this price continues to rally while A/D declines or continues to fall when A/D increases divergence between A/D and the price occurs. This is the key signal that A/D provides and indicates that a price reversal is probable.

Money Flow Index (MFI)

The Money Flow Index (MFI) is an oscillating momentum and market strength indicator. It is also a leading indicator, which means it tends to lead price action. The ultimate aim of the MFI is to determine whether money is flowing in or out of a security over a specified look-back period, with the default being 14 days or periods. As a general rule, when the MFI indicator rises, it implies that there is buying pressure as money is flowing into the security and when the indicator drops, it implies that there is selling pressure as money is flowing out of the security.

The calculation for the MFI is rather complex and consists of a number of steps:

First, calculate the Typical Price (TP) for each period that makes up the look-back period using the formula:

Typical Price = (High + Low + Close) / 3

Second, calculate the Raw Money Flow for each period by multiplying the Typical Price of each period by the volume of that period:
Raw Money Flow = Typical Price x Volume

Third, calculate the Positive Money Flow for the look back period by calculating the sum of the positive Raw Money Flow values:

Positive Money Flow = Sum of positive Raw Money Flow over look-back period

Fourth, calculate the Negative Money Flow for the look back period by calculating the sum of the negative Raw Money Flow values:

Negative Money Flow = Sum of negative Raw Money Flow over look-back period

Fifth, calculate the Money Flow Ratio for the look back period by dividing the Positive Money Flow by the Negative Money Flow:

Money Flow Ratio = Positive Money Flow / Negative Money Flow

Finally, calculate the MFI using the formula:

MFI = 100 – 100 / (1 + Money Flow Ratio)

The result is a range-bound line that oscillates between zero and one hundred.

C) CONFIDENCE INDEX

The technical analysis is that it analyse the market through a calculation of the confidence index. This index shows the ratio of yields between the types of bonds. These bonds are the high grade bounds and the low grade bonds and the confidence index shows the willingness of the investor to invest in the market. This technique shows that the purchase and sale of investment from high grade to low grade bonds depends on the kind of confidence that the investors gains about the stock market price movements. When the investor is confident that the company is stable and the stock market is reflecting peek period, then they would like to take a risk in the market and try to gain high yields in the purchase of bonds. The investors would make a gain by shifting their investment in such a manner that they are high yielding. Usually, large institutional investors make portfolio choice in the bond market but it is the influence of the small investor and the change In the prices which is marketed by the technical chartists to find out the confidence index. The confidence index is limited to point to the upper limit being limited to one. When the confidence index is rising, it indicates optimism and the technical analyst predicts that the money market is showing a chance for making speculative profit. At this time, most of the investors do not mind taking heavy risks and buying even low grade bonds. The assumptions is that the yields which are received on a high quality bond will be low than the yield on low quality bond at all times. The technical analyst analyses the indicator of the confidence index to measure in time period from two months to a maximum of eleven months.

The confidence index also indicates a fall in the stock prices and shows that the low grade yields rises faster and fall slower than the high grade yields. A depression in the moment causes the investors to become risk averse and short time speculators do not take an advantage to shift in prices from high grade to low grade bonds. This is so because they expect a downward trend in the economy to follow. Research has shown that confidence index is not always positively correlated with the stock market. Although this give some indications and signal about the stock market

trend because it is called as leading indicator, yet the signals which reformed by it show errors.

7.4 SUMMARY

- The technical analysts studies the behaviour of the price of the stock to determine the future price of the stock.
- According to Charles Dow, stock price movements are divided into three: the primary movement, the secondary movement and the daily fluctuations.
- A primary trend may be a bull market moving in a steady upward direction, or a bear market steadily dropping.
- A secondary trend or secondary reaction is the movement of the market contrary to the primary trend.
- Support level is the barrier for further decline. It provides a base for an up move. The resistance level is the level in which advances are temporarily stopped and the sellers overcome the demand.
- Volume of the trade confirms the trend. Fall of volume with the rise in price indicates trend reversal and vice-versa.
- Moving averages are used as a technical indicator. It smoothens out the short-term fluctuations, helpful in comparing the stock price movement with the index movement and discovering the trend.

7.5 SELF-ASSESSMENT QUESTIONS

1. How does technical analysis differ from the fundamental analysis?
2. Explain in detail the Dow Theory and how is it used to determine the direction of stock market?
3. Explain the stages of primary bull market and primary bear market.
4. Write a note on signal confirmation.
5. Explain various volume indicators.
6. Explain various market sentiment indicators.
7. What is mean by confidence index?
8. Write a note on different price movements.

8

PORTFOLIO THEORY AND RISK & RETURN

Unit Structure

8.0 Learning Objectives
8.1 Introduction of Portfolio
8.2 Portfolio Selection
8.3 Efficient Portfolio & Optimal Portfolio
8.4 Risk and Return
8.5 Summary
8.6 Solved Problems
8.7 Self-Assessment Questions

8.0 LEARNING OBJECTIVES

After studying this lesson you are able to:

- Understand the concept of portfolio
- Explain the concept of efficient & optimal portfolios
- Understand the meaning of Risk, Return
- Explain Types of Risk
- Measure the two asset portfolio risk

8.1 INTRODUCTION OF PORTFOLIO

Each and every security have risk return features. The expected return on security is flexible. This flexibility (change) is a risk of that particular security. No investor invest his/her entire wealth in a single security, because of an aversion to risk. It is hoped that if money is invested in several securities, simultaneously, the loss in one will be compensated by the gain in others. Thus, holding more than one security at a time is an attempt to spread and minimize risk. Most investors thus tend to invest in a group of securities rather than a single security.

Such a group of securities/ assets held together as an investment is known as a portfolio.

For Example,

Mr. A Invested his `20,00,000 in following manner

shares of Tata Power	` 4,50,000
Government Bonds	` 8,00,000
NSC & NSS	` 2,50,000
Real Estate	` 5,00,000

The process of creating such a portfolio is called diversification. It is an attempt to spread and minimize the risk in investment. This is required to be achieved by holding different types of securities across different industry groups. From a given set of securities, any number of portfolios can be constructed. A rational investor attempts to find the most efficient of these portfolios. The efficiency of each portfolio can be evaluated only in terms of the expected return and risk of the portfolio as such. Thus, determining the expected return and risk of different portfolios is a primary step in portfolio management. This step is designated as portfolio analysis.

Many time the investors go on acquiring these assets in an ad hoc and unplanned manner and the result is high risk, low return profile which they may face. Such different assets would constitute a portfolio and wise investor not only plans his/ her portfolio as per his/her risk return profile but also manages his portfolio efficiently which results in highest return at low level of risk. In other words, it is called as portfolio management.

8.2 PORTFOLIO SELECTION

Selection of Portfolio

The selection of portfolio depends on the various objectives of the investor. The selections of portfolio under different objectives are dealt subsequently.

Objectives and Asset Mix

If the main objective is getting adequate amount of current income, 60% of the investment is made on debts and 40 % on equities. The proportions of investments on debt and equity differ according to the individual's preferences. Money is invested in short term debt and fixed income securities. Here the growth of income becomes the secondary objective and stability of principal amount may become the third. Even within the debt portfolio, the funds invested in short term bonds depend on the need for stability of principal amount in comparison with the stability of income. If the appreciation of capital is given third priority, instead of

short term debt the investor opts for long term debt. The maturity period may not be a constraint.

Growth and Income and Asset Mix

Here the investor requires a certain percentage of growth in the dividend received from his investment. The investor's portfolio may consist of 60 to 100 % equities and 0 to 40 % debt instrument. The debt portion of the portfolio may consist of concession regarding tax exemption. Appreciation of principal amount is given third priority. For example, computer software, hardware and non-conventional energy producing company shares provide good possibility of growth in dividend.

Capital Appreciation and Asset Mix

Capital appreciation and asset mix Capital appreciation means that the value of the original investment increases over the years. Investment in real estates like land and house may provide a faster rate of capital appreciation but they lack liquidity. In the capital market, the values of the shares are much higher than their original issue prices. For example, Satyam Computers share value was ₹ 306 in April 1998 but in October 1999 the value was ₹ 1658.

Likewise, several examples can be cited. The market capitalisation also has increased. Next to real assets, the stock markets provide best opportunity for capital appreciation. If the investor's objective is capital appreciation, 90 to 100 per cent of his portfolio may consist of equities and 0-10% of debts. The growth of income becomes the secondary objective.

Safety of Principal and Asset Mix

Usually, the risk averse investors are very particular about the stability of principal.

According to the life cycle theory, people in the third stage of life also give more importance to the safety of the principal. All the investors have this objective in their mind. No one likes to lose his money invested in different assets. But, the degree may differ. The investor's portfolio may consist more of debt instruments and within the debt portfolio more would be on short term debts.

Markowitz Theory

Many investors have agreed that holding 2 securities is less risky than holding 1. For example, holding stocks from pharma, banking, and electronic companies is better than investing all the money on the banking

company's stock. But building up the optimum portfolio is very difficult. Markowitz provides an answer to it with the help of risk and return relationship. The variability of each security and covariance for their returns reflected through their inter-relationships which should be taken into account. Thus, as per the Modem Portfolio Theory, expected returns, the variance of these returns and covariance of the returns of the securities within the portfolio are to be considered for the choice of a portfolio. A portfolio is said to be efficient, if it is expected to yield the highest return at the lowest risk. A set of efficient portfolios can be generated by using the above process of combining various securities whose combined risk is lowest for a given level of return for the same amount of investment.

Assumptions of Markowitz Theory

The theory of Markowitz as stated above is based on a number of assumptions, these are:

1. Investors seek to maximize the expected return of total wealth.
2. All investors have the same expected single period investment horizon.
3. All investors are risk-adverse, that is they will only accept greater risk if they are compensated with a higher expected return.
4. Investors base their investment decisions on the expected return and risk.
5. All markets are perfectly efficient (e.g. no taxes and no transaction costs).

The unsystematic and company related risk can be reduced by diversification into various securities and assets whose variability is different and offsetting or put in different words which are negatively correlated or not correlated at all.

8.3 EFFICIENT PORTFOLIO & OPTIMAL PORTFOLIO

Efficient Portfolio

An investor can combine securities or assets to form several portfolios. However all portfolios may not be efficient in terms of risk & return relationship. An efficient portfolio is one that has the highest expected returns at a given level of risk, The efficient frontier is the frontier form by the set of efficient portfolios. In Figure 3.1.1, the curve starting from portfolio P, which is the minimum variance portfolio, & extending to the portfolio R is the efficient frontier. All portfolios on the efficient frontier are efficient portfolios and the portfolios outside the efficient frontier are inefficient portfolios. For example, portfolio Q has the same return as portfolio B but it has a higher risk.

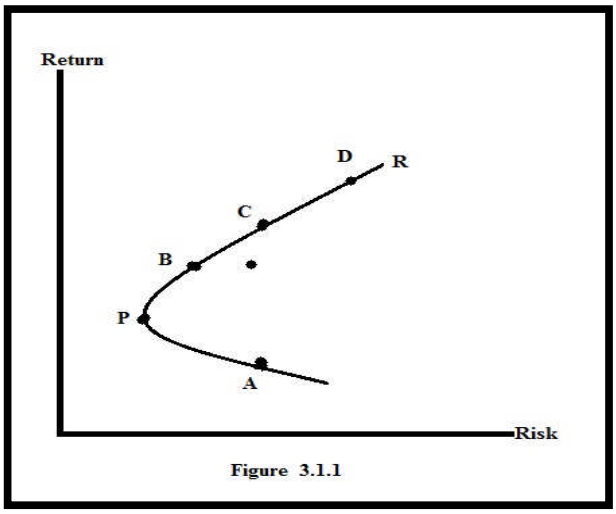


Figure 3.1.1

Optimal Portfolio

The optimal portfolio concept falls under the modern portfolio theory. The theory assumes (among other things) that investors fanatically try to minimize risk while striving for the highest return possible. The theory states that investors will act rationally, always making decisions aimed at maximizing their return for their acceptable level of risk.

The optimal portfolio was used in 1952 by Harry Markowitz, and it shows us that it is possible for different portfolios to have varying levels of risk and return. Each investor must decide how much risk they can handle and then allocate (or diversify) their portfolio according to this decision.

The chart below illustrates how the optimal portfolio works. The optimal-risk portfolio is usually determined to be somewhere in the middle of the curve because as you go higher up the curve, you take on proportionately more risk for a lower incremental return. On the other end, low risk/low return portfolios are pointless because you can achieve a similar return by investing in risk-free assets, like government securities.

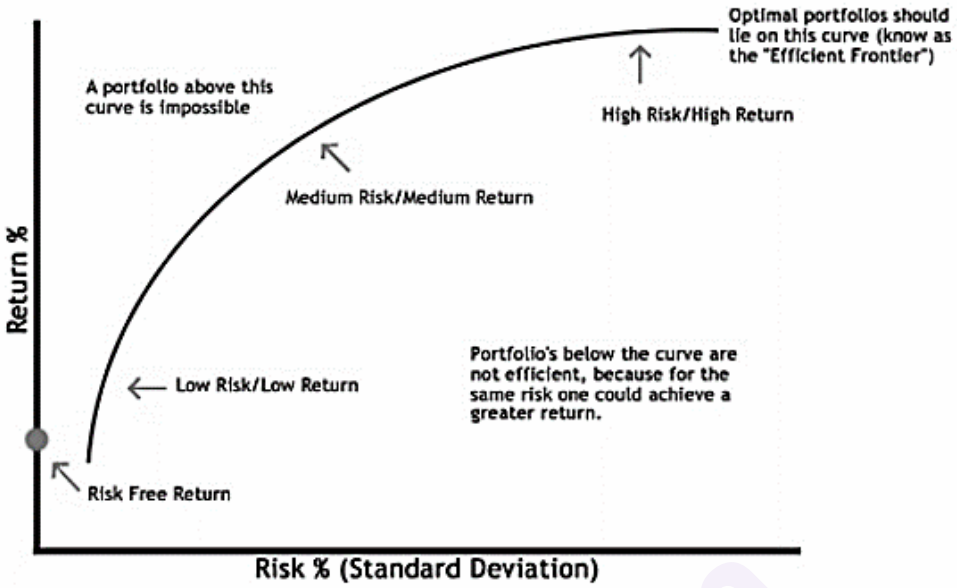


Figure 3.1.2

8.4 RISK & RETURN

Risk

Risk can be defined as the chance that the expected or prospective (not materialize) actual outcome of investment may be less than the expected outcome. The greater the variability or dispersion of the possible outcomes, or the broader the outcomes, the greater the risk. Risk is inherent in any investment. This risk may relate to loss of capital, delay in repayment of capital, non-payment of interest, or variability of returns. While some investments like government securities and bank deposits are almost riskless, others are more risky. The risk of an investment depends on the following factors.

1. The longer the maturity period, the larger is the risk.

2. The lower the credit worthiness of the borrower, the higher is the risk.

3. The risk varies with the nature of investment. Investments in ownership securities like equity shares carry higher risk compared to investments in debt instruments like debentures and bonds.

Risk and return of an investment are related. Normally, the higher the risk, the higher is the return.

Types of Risk:

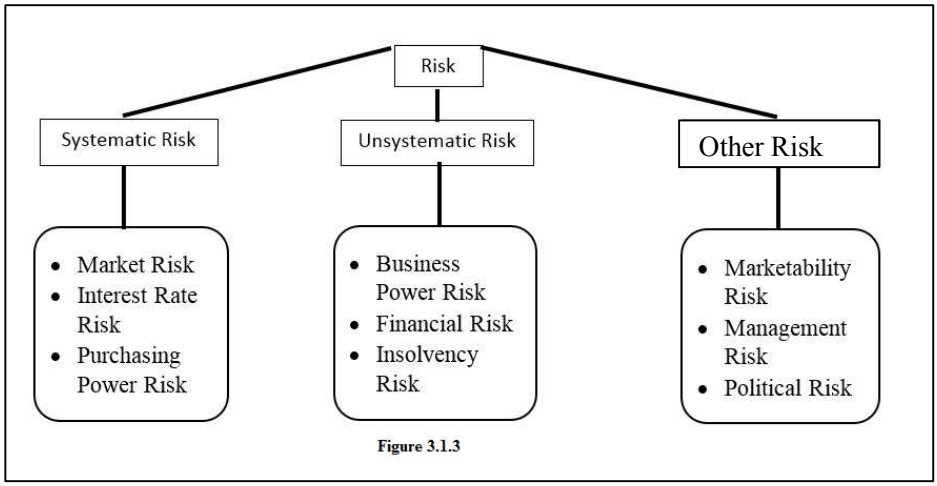


Figure 3.1.3

Systematic Risks

Non diversifiable risk is called systematic risk. It arises on account of economy wide uncertainties & the investor's tendency and is also called as Market Risk. Some examples are Government changes, interest rate policy, corporate tax rate increased etc.

i) Market Risk

Market risk arises out of changes in Demand and Supply of goods and service in the markets. Market risk is unpredictable. It is not controllable. It is uncontrollable factor of the risk. Investors have failure due to lack of knowledge of market.

ii) Interest Rate Risk

Investment is always expected to return in terms of interest rate. Interest rate changes from time to time. The loan borrowed by companies and stock brokers generally depend on interest rates. When interest rate is changed, the market activity and investor perceptions change with the changes in interest rates. The monetary and fiscal policy that is not controllable by the investor affects the riskiness of investment due to their effects in terms of returns, expectations and total principal amount.

iii) Purchasing Power Risk

Purchasing power risk is the uncontrollable risk. Inflation means it rises the prices of the commodities and service. Cost push inflation is caused due to wage rise or rise in input prices. Price of the commodities increase due to inadequate supplies and rising demand.

Unsystematic Risks

All diversifiable risks are called unsystematic risk. These arises from the unique uncertainties of individual securities. These type of risk can be totally reduced through diversification.

i) Business Risk

Business risk refers to the variability of the business, sales, income, profits etc. It can depend on the market conditions for the product mix, input supplies, strength of competitors etc. Business risk is internal risk due to fall in production, labour problems, raw material problems or inadequate supply of electricity etc. It leads to fall in revenues and in profit of the company.

ii) Financial Risk

Financial risk refers 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. Financial problems observed are in terms of earnings, profits, dividends.

iii) Default or Insolvency Risk

The borrower/issuer of securities may become insolvent due to default or delay in the payment in terms of instalments or principal repayments.

Other Risks

i) Political Risks

Political risks refer to changes in the government tax rate, monetary policy, fiscal policy, impositions control and administrative regulations etc.

ii) Management Risk

Management risk refers to error and inefficiencies of management, causing losses to the company.

iii) Marketability Risks

It refers to the involved loss of liquidity or loss of value in conversions from one asset to another.

Expected Return on a Portfolio

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

or standard deviation of the return. The expected return of a portfolio of assets is simply the weighted average of the return of the individual securities held in the portfolio. The weight applied to each return is the fraction of the portfolio invested in that security.

Let us consider a portfolio of two equity shares X and Y with expected returns of 15 % and 20 % respectively. If 40 % of the total funds are invested in share X and the remaining 60 %,
in share Y, then the expected portfolio return will be:

E(Rp) = W x E(Rx) + (1-W) x E(Ry)
= (0.40 x 15) + (0.60 x 20)
= 18 %

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

$$r_p = \sum_{i=1}^{n} x_i r_i$$

Where

r_p = Expected return of the portfolio

xi = Proportion of funds invested in security i.

ri = Expected return of security i.

n = Number of securities in the portfolio $\sum_{i=1}^{n}$

Risk of a Portfolio

The variance of return and standard deviation of return are alternative statistical measures that are used for measuring risk in investment. These statistics measure the extent to which returns are expected to vary around an average over time. The calculation of variance of a portfolio is a little more difficult than determining its expected return.

The variance or standard deviation of an individual security measures the riskiness of a security in absolute sense. For calculating the risk of a portfolio of securities, the riskiness of each security within the context of the overall portfolio has to be considered. This depends on their interactive risk, i.e. how the returns of a security move with the returns of other securities in the portfolio and contribute to the overall risk of the portfolio.

Covariance is the statistical measure that indicates the interactive risk of a security relative to others in a portfolio of securities. In other

words, the way security returns vary with each other affects the overall risk of the portfolio.

The covariance between two securities X and Y may be calculated using the following formula:

$$Cov_{xy} = \frac{[Rx - Rx][Ry - Ry]}{N}$$

Where:

Cov_{xy} = Covariance between x and y.
R_x = Return of security x.
R_y = Return of security y
R_x = Expected or mean return of security x.
R_y = Expected or mean return of security y.
N = Number of observations.

The calculation of covariance is illustrated below:

Calculation of Covariance

Year	Rx	Deviation Rx – Rx	R...3 y	Deviation Ry – Ry	Product of deviations (Rx – Rx) (Ry – Ry)
1	10	-4	17	5	-20
2	12	-2	13	1	-2
3	16	2	10	-2	-4
4	18	4	8	-4	-16

$$Cov_{xy} = \sum_{i=1}^{n} \frac{[Rx - Rx][Ry - Ry]}{N}$$

$$= -42 / 4 = -10.5$$

The covariance is a measure of how returns of two securities move together. If the returns of the two securities move in the same direction consistently, the covariance would be positive. If the returns of the two securities move in opposite direction consistently the covariance would be negative. If the movements of returns are independent of each other, covariance would be close to zero. Covariance is an absolute measure of interactive risk between two securities. To facilitate comparison, covariance can be standardized. Dividing the covariance between two securities by product of the standard deviation of each security gives such a standardised measure. This measure is called the coefficient of correlation. This may be expressed as:

$$r_{xy} = \frac{Cov_{xy}}{\sigma_x \sigma_y}$$

where

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

Cov_{xy} = Covariance between x and y.

σ_x = Standard deviation of x.

σ_y = Standard deviation of y.

It may be noted from the above formula that covariance may be expressed as the product of correlation between the securities and the standard deviation of each of the securities. Thus,

$$Cov_{xy} = r_{xy}\ \sigma_x\ \sigma_y$$

The correlation coefficients may range from - 1 to 1. A value of -1 indicates perfect negative correlation between security returns, while a value of +1 indicates a perfect positive correlation. A value close to zero would indicate that the returns are independent. The variance (or risk) of a

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

Where

σ^2_p = Portfolio variance.

x_1 = Proportion of funds invested in the first security.

x_2 = Proportion of funds invested in the second security.

σ_1^2 = Variance of first security.

σ_2^2 = Variance of second security.

σ_1 = Standard deviation of first security.

σ_2 = Standard deviation of second security.

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

portfolio is not simply a weighted average of the variances of the individual securities in the portfolio. The relationship between each security in the portfolio with every other security as measured by the covariance of return has also to be considered. The variance of a portfolio with only two securities in it may be calculated with the following formula.

Portfolio standard deviation can be obtained by taking the square root of portfolio variance.

Example - calculation of portfolio variance and portfolio standard deviation.

Two securities P and Q generate the following sets of expected returns, standard deviations and correlation coefficient: A portfolio is constructed with 40 per cent of funds invested in P and the remaining 60 per cent of funds in Q.

	P	Q
r =	**15 percent**	**20 percent**
σ =	**50 percent**	**30 percent**
r_{pq} =	**-0.60**	

Solution

The expected return of the portfolio is given by:

$$r_p = \sum_{i=1}^{n} x_i r_i$$

$$= (0.40 \times 15) + (0.60 \times 20) = 18 \text{ percent}$$

The variance of the portfolio is given by:

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

$$= (0.40)^2 (50)^2 + (0.60)^2 (30)^2 + 2(0.40)(0.60)(-0.60)(50)(30)$$

$$= 400 + 324 - 432 = 292$$

The standard deviation of the portfolio is:

$$s_p = \sqrt{292} = 17.09 \text{ per cent.}$$

The return and risk of a portfolio depends on two sets of factors (a) the returns and risks of individual securities and the covariance between securities in the portfolio, (b) the proportion of investment in each security. The first set of factors is parametric to the investor in the sense that he has no control over the returns, risks and covariance of individual securities. The second sets of factors are choice variables in the sense that the investor can choose the proportions of each security in the portfolio.

Security Returns Perfectly Positively Correlated

When security returns are perfectly positively correlated the correlation coefficient between the two securities will be +1. The returns of the two securities then move up or down together.

The standard deviation then becomes simply the weighted average of the standard deviations of the individual securities.

$$\sigma_p = X_1\sigma_1 + X_1\sigma_2$$

Taking the same example that we considered earlier for calculating portfolio variance, we shall calculate the portfolio standard deviation when correlation coefficient is +1.

Standard deviation of security P = 50
Standard deviation of security Q = 30
Proportion of investment in P = 0.4
Proportion of investment in Q = 0.6
Correlation coefficient = +1.0

Portfolio standard deviation may be calculated as:

$$\sigma_p = X_1\sigma_1 + X_1\sigma_2$$
$$= (0.4)\ (50) + (0.6)\ (30)$$
$$= 38$$

Being the weighted average of the standard deviations of individual securities, the portfolio standard deviation will lie between the standard deviations of the two individual securities. In our example, it will vary between 50 and 30 as the proportion of investment in each security changes.

For example, if the proportion of investment in P and Q are 0.75 and 0.25 respectively, portfolio standard deviation becomes:

$$= (0.75)\ (50) + (0.25)\ (30)$$
$$= 45$$

Security Returns Perfectly Negatively Correlated

When security returns are perfectly negatively correlated, the correlation coefficient between them becomes -1. The two returns always move in exactly opposite directions.

The portfolio variance may be calculated as:

$$\sigma_p = X_1\sigma_1 - X_1\sigma_2$$

For the illustrative portfolio considered above, we can calculate the portfolio standard deviation when the correlation coefficient is —1.

$$= (0.4)\ (50) - (0.6)\ (30)$$
$$= 2$$

The portfolio risk is very low. It may even be reduced to zero. For example, if the proportion of investment in P and Q are 0.375 and 0.625 respectively, portfolio standard deviation becomes:

= (0.375)(50) - (0.625)(30)

= 0

Here, although the portfolio contains two risky assets, the portfolio has no risk at all. Thus, the portfolio may become entirely risk free when security returns are perfectly negatively correlated. Hence, diversification becomes a highly productive activity when securities are perfectly negatively correlated, because portfolio risk can be considerably reduced and sometimes even eliminated. But, in reality, it is rare to find securities that are perfectly negatively correlated.

8.5 SUMMARY

- Markowitz developed algorithms to minimise portfolio risk. Diversification reduces the unsystematic risk component of the portfolio.

- Many portfolios may be attainable. But some portfolios are attractive because they give more return for the same level of risk or same return with lesser level of risk. These portfolios form the efficient frontier.

- The total risk of an asset can be divided into two parts: systematic risk that cannot be eliminated by diversification, and unsystematic risk that can be eliminated by diversification. It follows that the only risk that remains in a well-diversified portfolio is systematic risk.

- If securities with less than perfect positive correlation between their price movements are combined risk can be reduced considerably. The risk would be nil or the standard deviation would be zero if two securities have perfect negative correlation. Risk cannot be reduced if the securities have perfect positive correlation.

- Expected Return = $R_p = \sum i_{=}^{n} 1 X_1 R_1$
- portfolio variance = $x_1^2\sigma_1^2 + x_2^2\sigma_2^2 + 2x_1x_2CoV_{1,2}$ OR

$$\sigma^2 P = x_1^2\sigma_1^2 + x_2^2\sigma_2^2 + 2x_1x_2\left(r_{12}\sigma_1\sigma_2\right)$$

Where, $x =$ the weight of the asset

$\sigma^2 =$ the variance of the asset

$CoV_{1,2} =$ the covariance between assets 1 and 2

8.6 SOLVED PROBLEMS

1. Calculate the expected return and variance of a portfolio comprising two securities, assuming that the portfolio weights are 0.75 for security 1 and 0.25 for security 2. The expected return for security 1 is 18 per cent and its standard deviation is 12 per cent, while the expected return and standard deviation for security 2 are 22 per cent and 20 per cent respectively. The correlation between the two securities is 0.6.

Solution

Calculation of expected return of portfolio:

$$R_p = \sum_{i=1}^{n} X_1 R_1$$

= (0.75 x 18) + (0.25 x 22)

= 13.5 + 5.5

=19 %

Calculation of portfolio variance: $\sigma_p^2 = x_1^2\sigma_1^2 + x_2^2\sigma_2^2 + 2x_1.x_2(r_{12}\sigma_1\sigma_2)$

= $(0.75)^2$ $(12)^2$ + $(0.25)^2$ $(20)^2$ + 2 (0.75) (0.25) (0.6 x 12 x 20)

= 81 + 25 + 54

= 160 %

2. Consider two securities, P and Q, with expected returns of 15 per cent and 24 per cent respectively, and standard deviation of 35 per cent and 52 per cent respectively.

Calculate the standard deviation of a portfolio weighted equally between the two securities if their correlation is -0.9.

Solution

Calculation of portfolio standard deviation:

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

= $(0.5)^2$ $(35)^2$ + $(0.5)^2$ $(52)^2$ + 2 (0.5) (0.5) (-0.9 x 35 x 52)

= 306.25 + 676 - 819

= 163.25

$\sigma = \sqrt{163.25}$

= 12.78 %

3. A portfolio is constituted with four securities having the following characteristics:

Security	Return (per cent)	Proportion of investment
P	17.5	0.15
Q	24.8	0.25
R	15.7	0.45
S	21.3	0.15

Calculate the expected return of the portfolio.

Solution

Expected return of the portfolio is calculated with the following formula:

$$R_p = \sum i=1^n X_1 R_1$$

= (0.15 x 17.5) + (0.25 x 24.8) + (0.45 x 15.7) + (0.15 x 21.3)

= 2.625 + 6.200 + 7.065 + 3.195

= 19.085 %

3.1.5 Self Assessment Questions

(a)Theory

1 Explain the concept and process of portfolio analysis?

2 Explain efficient portfolio.

3 Explain Optimal Portfolio.

4 Define the Markowitz diversifications.

5 Explain the assumptions of Markowitz theory.

6 What are the simple diversification (a) will it reduce total risk (b) will it reduce

7 unsystematic risk?

8 Explain risk and return concept.

9 Explain the types of risks.

(b)Problems

1. An investor places 30 per cent of his funds in Security X and the balance in Security Y. The expected returns on X and Y are 12 and 18 per cent, respectively. The standard deviations of returns on X and Y are 20 and15 per cent, respectively.(a) Calculate the expected return on the portfolio.(b) Calculate the variance of returns on the portfolio assuming that the correlation between the returns on the two securities is:(i) +1.0 (ii) +0.7(iii) 0 (iv) –0.7

2. An investor holds a portfolio that comprises 20 per cent X, 30 per cent Y and 50 per cent Z. The standard deviations of returns on X, Y and Z are22, 15 and 10 per cent, respectively, and the correlation between returns on each pair of securities is 0.6. Prepare a variance covariance matrix for these three securities and use the matrix to calculate the variance and standard deviation of returns for the portfolio.

3. Stocks X and Y display the following returns over the past three years.

Year	Return of X	Return of Y
1994	14 %	12%
1996	16%	18%
1996	20%	15%

a) What is the expected return on portfolio made up of 40% of X and 60% of Y.

b) What is the standard deviation (risk) of each stock X and Y.

c) What is the portfolio risk of a portfolio made up of 40% of X and 60% of Y.

d) Determine the correlation coefficient of stock X and Y.

4. Calculate the co-variance and coefficient of correlation from the following data. Stocks X and Yand their returns and expected returns are given below

	Return	Expected Return
Stock X	14	18
Stock Y	26	18
Stock X	22	18
Stock Y	10	18

5. Stocks P and Q display the following returns over the past three years.

Year	Return of P	Return of Y
1994	28 %	24%
1996	32%	36%
1996	40%	30%

a) What is the expected return on portfolio made up of 40% of X and 60% of Y.

b) What is the standard deviation (risk) of each stock X and Y.

❖❖❖❖

9

CAPITAL ASSET PRICING MODEL (CAPM)

Unit Structure

9.0 Learning Objectives
9.1 Introduction of CAPM
9.2 Assumptions & Limitations of CAPM
9.3 Capital Market Line
9.4 Security Market Line
9.5 Difference between Capital Market Line & Security Market Line
9.6 Summary
9.7 Solved Problems
9.8 Self-Assessment Questions

9.0 LEARNING OBJECTIVES

After studying this lesson you are able to:

- Understand the concept of CAPM
- Explain Assumptions & Limitations of CAPM
- Understand Capital Market Line & Security Market Line

9.1 INTRODUCTION

The Capital Asset Pricing Model (CAPM) is the model that provides a framework to determine the required rate of return on an asset or investment and it indicates the relationship between risk & return on asset. Investors are interested in knowing the systematic risk when they search for efficient portfolios. They would like to have assets with systematic risk. Investors would take a high risk only if they provide high rate of returns. The essential rate of return specified by CAPM helps in valuing an asset / investment. With the help of CAPM investor can compare estimated rate of return and required rate of return on investment. Capital Market Line determine the actual relationship between risk & return for securities in efficient portfolios. CAPM also explains how assets should be priced in securities market.

3.2.2 (A) ASSUMPTIONS OF CAPM

Capital market theory involves a set of predictions concerning equilibrium expected return on risky assets. John Lintner, Markowitz, Jan Mossin and William Sharpe provided the basic structure for the CAPM model. CAPM is an economic model which describes how the securities are priced in the securities market.It is a model of linear general equilibrium return. Capital market theory builds on Markowitz portfolio theory to diversify his or; her portfolio, according to the Markowitz model, choosing a location on the efficient frontier that matches his or her return-risk references. CAPM is based on many important assumptions these are:

1) An individual seller or buyer cannot affect the price of a stock.
2) Investors are assumed to have homogenous expectations about the expected return and risks of securities during the decision-making period.
3) The investor can lend or borrow any amount of funds at the risk less rate of interest. All investors form portfolios from publically traded securities like shares, treasury bills or Government securities.
4) Investors make their decisions only on the basis of the expected returns, standard deviations and co-variances of all pairs of securities.
5) All investors have the same one-period time horizon.
6) Total asset quantity is fixed and all assets are marketable & divisible.
7) There is no transaction cost i.e. no cost involved in buying and selling of stocks.
8) There is no personal income tax. Hence, the investor is indifferent to the form of return, either capital gain or dividend.

3.2.2 (b) LIMITATIONS OF CAPM

1) It is based on unrealistic assumptions. For example, it is very difficult to find risk-free security. CAPM may not accurately explain the investment behaviour of investors.
2) It is difficult to test the validity of CAPM.
3) Betas do not remain stable over time.

The CAPM is an equilibrium model that encompasses two important relationships. The first, the capital market line specifies the equilibrium relationship between expected return and risk for efficient

portfolios. The second, the security market line specifies the equilibrium relationship between expected return and systematic risk. It applies to individual securities as well as portfolios.

9.3 THE CAPITAL MARKET LINE

The market portfolio is a portfolio comprised of all stocks in the market. Each asset is held in proportion to its market value to the total value of all risky assets. At this stage, the investor has the ability to borrow or lend any amount of money at the riskiness rate of interest. The efficient frontier of the investor is given in **figure.9.2.1**

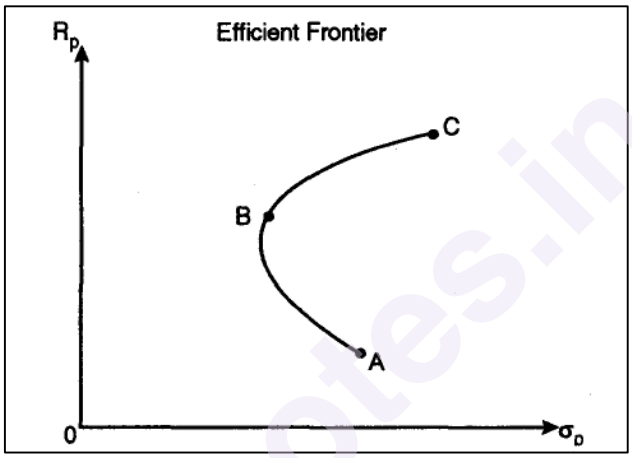


Figure 9.2.1

The figure shows the efficient frontier of the investor. The investor prefers any point between B and C because, with the same level of risk they face on line BA, they are able to get superior profits. The ABC line shows the investor's, portfolio of risky assets. The investors can combine riskless asset either by lending or borrowing.

The line R_fS represents all possible combination of riskless and risky asset. The 'S' portfolio does not represent any riskless asset but the line RS gives the combination of both. The portfolio along the path RS is called lending portfolio that is some money is invested in the riskless asset or may be deposited in the bank for a fixed rate of interest. If it crosses the point S, it becomes borrowing portfolio. Money is borrowed and invested in the risky asset. The straight line is called capital market line (CML). Thus, all efficient portfolios will lie on the capital market line.

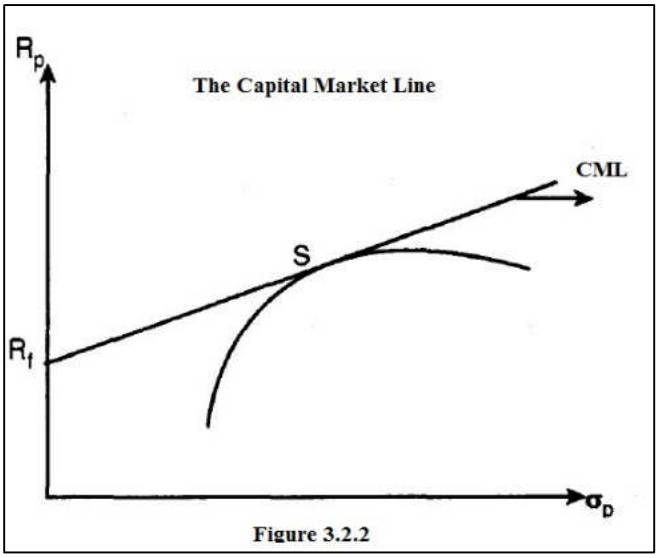


Figure 3.2.2

The slope of the CML can be regarded as the reward per unit of risk borne. This equals to the difference between the expected return on the market portfolio (E_m - T) & that of the riskless security divided by the difference in their risk (σ_m - 0).

The Capital Market Line represents linear relationship between the required rates of return for efficient portfolios and their standard deviations.

The equation for capital market line is:

$$\mathbf{Rp} = \mathbf{Rf} + \frac{R_m - R_f}{\sigma_m} \times \sigma_p$$

Where,

R_p = portfolio's expected rate of return
R_m = expected return on market portfolio
σ_m = standard deviation of market portfolio
σ_p = standard deviation of the portfolio
R_f = risk free rate

Separation Theorem

Because we are assuming homogeneous expectations, in equilibrium all investors will determine the same tangency portfolio. Further, under the assumptions of capital market theory all investors agree on the risk-free rate. An investor can mix lending and borrowing with an efficient portfolio of risky assets. Borrowing and lending possibilities, combined with one portfolio of risky assets, offer an investor whatever risk-expected return combination he or she seeks that is, investors can be anywhere they choose on this line depending on their risk-return

preferences, but they will choose the same combination of risky securities as denoted by the tangency point.

For example,

An investor could:

1. Invest 100 percent of investable funds in the risk-free asset, providing an expected return of R_F and zero risk.
2. Invest 100 percent of investable funds in risky-asset portfolio-M, offering E (R_M), with its risk σ_m
3. Invest in any combination of return and risk between these two points, obtained by varying the proportion w_{rf} invested in the risk-free asset.
4. Invest more than 100 percent of investable funds in the risky-asset portfolio M by borrowing money at the rate R_F, thereby increasing both the expected return and the risk beyond that offered by portfolio M.

9.4 SECURITY MARKET LINE

The risk-return relationship of an efficient portfolio is measured by the capital market line. But, it does not show the risk-return trade off for other portfolios and individual securities. Inefficient portfolios lie below the capital market line and the risk return relationship cannot be established with the help of the capital market line. Standard deviation includes the systematic and unsystematic risk. Unsystematic risk can be diversified and it is not related to the market. If the unsystematic risk is eliminated, then the matter of concern is systematic risk alone. This systematic risk could be measured by beta. The beta analysis is useful for individual securities arid portfolios whether efficient or inefficient.

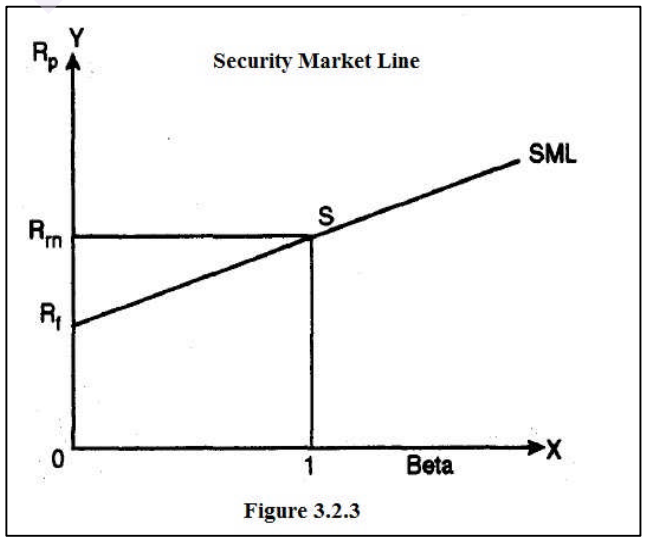


Figure 3.2.3

When an additional security is added to the market portfolio, an additional risk is also added to it. The variance of a portfolio is equal to the weighted sum of the co-variances of the individual securities in the portfolio.

If the security 'i' is included, the covariance is between the security and the market measures the risk. Covariance can be standardized by dividing it by standard deviation of market portfolio coy_{im}/σ_m. This is a standardise measure of a systematic risk of the security.

Then, the expected return of the security 'i' is given by the equation:

$R_s - R_f = Coy\ i_m/\sigma_{2m}\ (R_m - Rf)$

This equation can be rewritten as follows:

$$E(R_s) = R_f + \beta_j [E(R_m) - R_f]$$

Where,

$E(R_s)$ = expected return on security s

R_f = risk free rate

$E(R_m)$ = expected return on market portfolio

β_s = undiversifiable risk of security s

Example:

If we assume the expected market risk premium to be 8% and the risk free rate of return to be 17%, we can calculate expected return for A, B and C securities having beta 0.60, 1.00 and 1.20 respectively by using above mentioned formula.

Therefore,

Security A	Security B	Security C
Formula : $E(Rj) = Rf + \beta j[E(Rm) - Rf]$		
$E(R) = 0.08 + (0.17 - 0.08) \times 0.60$ = 0.134 i.e. 13.40%	$E(R) = 0.08 + (0.17 - 0.08) \times 1.00$ = 0.170 i.e. 17.00%	$E(R) = 0.08 + (0.17 - 0.08) \times 1.20$ = 0.188 i.e. 18.80%

The beta coefficient of the equation of SML is same as the beta of the market model. In equilibrium, all efficient and inefficient portfolios lie along the security market line. The SML line helps to determine the expected return for a given security beta. In other words, when betas are given, we can generate expected returns for the given securities.

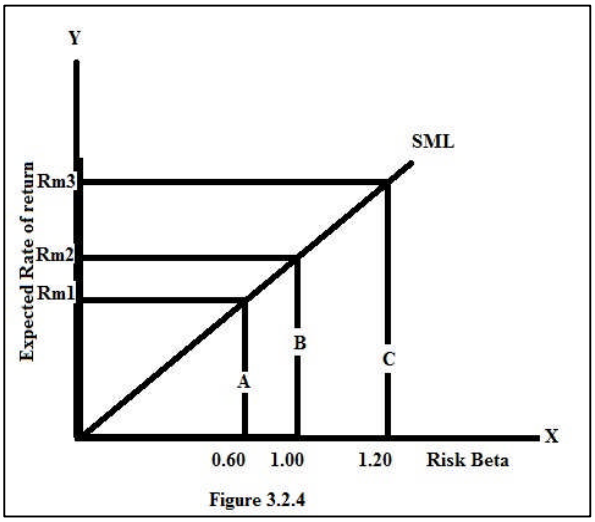


Figure 3.2.4

The same can be found out easily from the figure too. All we have to do is, to mark the beta on the horizontal axis and draw a vertical line from the relevant point to touch the SML line. Then from the point of intersection, draw another horizontal line to touch the Yaxis. The expected return could be very easily read from the Y axis. The securities B and C are aggressive securities, because their beta values are greater than one. When beta values are less than one, they are known as defensive securities. In our example, security A has the beta value less than one.

Level of the security beta indicates:

- **If β = 1** It indicates systematic risk, equal to the aggregate market risk and the required rate of return on the security will be equal to the market rate of return.
- **If β > 1,** It indicates its systematic risk is greater than the aggregate market. In this situations, there are more fluctuations in the securities return than the market returns.
- **If β < 1,** It indicates its systematic risk is lower than the aggregate market risk. In this situations, securities are less sensitive for returns compare to the market returns.

9.5. DIFFERENCE BETWEEN CAPITAL MARKET LINE & SECURITY MARKET LINE

- **Both specify a relation between risk and Expected returns:**
  Expected Return = "Time Premium" + "Risk Premium"
  Where "Risk Premium" = "quantity of risk", "price of risk"
- **Measure of risk.**
  –In the CML, risk is measured by standard deviation.
  –In the SML, risk is measured by beta.

• **Applicability:**

–CML is applicable only to an investor's final (combined) portfolio (which is efficiently diversified, with no Unique risk) In the CAPM world, everybody holds portfolio which lie on the CML.

–SML is applicable to any security, asset or portfolio (which may contain both components of risk). In a CAPM world, every asset lies on the SML.

9.6 SUMMARY

- ➢ The CAPM model is based on specific assumptions. The investor could borrow or lend any amount of money at riskiness rate of interest.
- ➢ All investors hold only the market portfolio and the riskless securities.
- ➢ The capital market line represents the relationship between the expected return and standard deviation of the portfolio.
- ➢ The risk of the security is indicated by its covariance with the market portfolio.
- ➢ Security market line shows the linear relationship between the expected returns and betas of the securities.
- ➢ The objective of the asset pricing model is to identify the equilibrium asset price for expected return and risk. If the asset prices are not equal, there is a scope for arbitrage.

9.7 SOLVED PROBLEMS

1. Security Z has a beta of 0.75 while security S has a beta of 1.45. Calculate the expected return for these securities, assuming that the risk free rate is 5 per cent and the expected return of the market is 14 per cent.

Solution

The expected return can be calculated using CAPM

$$Ri = Rf + \beta i\ (Rm = Rf)$$

For Security Z

$$Ri = 5 + 0.75\ (14 - 5)$$
$$= 5 + 6.75$$
$$= 11.75 \text{ per cent}$$

For Security S

$$Ri = 5 + 1.45\ (14 - 5)$$
$$= 5 + 13.05$$
$$= 18.05 \text{ per cent}$$

2. A security pays a dividend of `3.85 and sells currently at `83. The security is expected to sell at `90 at the end of the year. The security has a beta of 1.15. The risk free rate is 5 per cent and the expected return on market index is 12 per cent. Assess whether the security is correctly priced.

Solution

To assess whether a security is correctly priced, we need to calculate

(a) the expected return as per CAPM formula,

(b) the estimated return on the security based on the dividend and increase in price over the holding period.

Expected return

$$\begin{aligned} Ri &= Rf + \beta i\,(Rm = Rf) \\ &= 5 + 1.15\,(12 - 5) \\ &= 5 + 8.05 \\ &= 13.05 \text{ per cent} \end{aligned}$$

Estimated return

$$Ri = \frac{(P1 - P0) + D1}{P_0}$$

$$= \frac{(90 - 83) + 3.85}{83}$$

$$= \frac{7 + 3.85}{83}$$

$$= 13.07\%$$

As the estimated return on the security is more or less equal to the expected return, the security can be assessed as fairly priced.

3. The following data are available to you as portfolio manager:

Security	Estimated return (per cent)	Beta	Standard deviation (per cent)
A	30	2.0	50
B	25	1.5	40
C	20	1.0	30
D	11.5	0.8	25
E	10.0	0.5	20
Market index	15	1.0	18
Govt. security	7	0	0

In terms of the security market line, which of the securities listed above are Under-priced?

Solution

We can use CAPM to determine which of the securities listed are under-priced.

For this we have to calculate the expected return on each security using CAPM equation:

$$R_i = R_f + \beta_i (R_m = R_f)$$

Given that R_f (Govt. security return rate) = 7 and
R_m = 15

Now,

Security A	= 7 + 2.0 (15 - 7)	= 23 per cent
Security B	= 7 + 1.5 (15 - 7)	= 19 per cent
Security C	= 7 + 1.0 (15 - 7)	= 15 per cent
Security D	= 7 + 0.8 (15 - 7)	= 13.4 per cent
Security E	= 7+ 0.5 (15-7)	= 11 percent

The expected return as per CAPM formula and the estimated return of each security can be tabulated.

Security	Expected return (per cent)	Estimated return (per cent)
A	23.0	30.0
B	19.0	25.0
C	15.0	20.0
D	13.4	11.5
E	11.0	10.0

A security whose estimated return is greater than the expected return is assumed to be under priced because it offers a higher return than that expected from securities with the same risk.

9.8 SELF-ASSESSMENT QUESTIONS

(a)Theory Questions

1) What is Capital Asset Pricing Model.
2) What are the basic assumptions & limitation of CAPM?
3) Explain Capital Market Line.
4) Define Security Market Line.
5) Distinguish between the security market line and capital market line?

(b)Problems:

1. Suppose the market premium is 9%, market volatility is 30% and the risk-free rate is 3%.

a) Suppose a security has a beta of 0.6. According to the CAPM, what is its expected

return?

b) A security has a volatility of 60% and a correlation with the market portfolio of 25%.

According to the CAPM, what is its expected return?

c) A security has a volatility of 80% and a correlation with the market portfolio of -25%. According to the CAPM, what is its expected return?

Ans: a) 8.40% b) 7.50% c) -3%

2. Stock A has a beta of 1.20 and Stock B has a beta of 0.8. Suppose R_f = 2% and R_m = 12%.

(a) According to the CAPM, what are the expected returns for each stock?

(b) What is the expected return of an equally weighted portfolio of these two stocks?

(c) What is the beta of an equally weighted portfolio of these two stocks?

Ans: a) A= 14%, B= 10% b) 12% c) 1

3. Suppose you estimate that stock A has a volatility of 32% and a beta of 1.42, whereas stock B has a volatility of 68% and a beta of 0.75.

(a) Which stock has more total risk?

(b) Which stock has more market risk?

Ans: a) 13.36% b) 8%

Stock B has more total risk. Stock A has more market risk.

4. The following table gives an analysts expected return on 2 stocks for particular market returns.

Market return	Aggressive stock
Defensive stock	
6%	2%
8%	
20%	30%
16%	

a) What are the β's of the two stocks

b)What is the expected return on each stock if the market return equally likely to be 6% or 20%

5. The following table gives an analysts expected return on two stocks for particular market returns.

Market return	Aggressive stocks
Defensive stock	
5%	-5%
8%	
25%	40%
18%	

a) What are the β's of the two stocks

b) What is the expected return on each stock If the risk free rate is 8% what is SML?

10

EFFICIENT MARKET THEORY (EMT)

Unit Structure

10.0 Learning Objectives
10.1 Introduction
10.2 Concept of Efficient Market Theory
10.3 Assumptions of Efficient Market Theory
10.4 Random Walk Theory
3.3.5 Efficient Market Hypothesis (EMH)
- Weak Form
-Semi Strong Form
- Strong Form
10.6 Different Empirical Tests
10.7 Anomalies to EMH
10.8 Comparison of Random Walk
10.9 Summary
10.10 Self-Assessment Questions

10.0 LEARNING OBJECTIVES

After studying this lesson you are able to:

- Familiar with the Efficient Market Theory
- Understand different forms of market.
- Explain Random Walk Theory
- Understand Different Empirical Tests

10.1 INTRODUCTION

Financial markets, particularly the stock markets attract investors as well as academicians. Investors want to predict the market to earn more returns on their investments. Academicians want to predict it in order to test the effectiveness of their predictive models. In fact, financial markets put a great challenge before the researchers who are interested in the development of predictive models. Not only financial economists, but researchers from other streams including statistics, mathematics, physics, psychology and social sciences, leveraged with the expertise of the irrespective domains, have attempted to build predictive models for stock

prices. But all of these efforts seem to yield little success. Why are the prices of financial assets unpredictable? The Efficient Market Theory provides the answer to this question. The financial market has direct influence of the money along with information therein. The prices of financial assets at a point of time reflect the expectations of investors which are shaped mainly by the available information. Accuracy and the quickness in which market translated the expectation into prices are termed as market efficiency.

Fama (1970) stated, 'A market in which prices always fully reflect available information is called efficient.' In an efficient market, price rapidly translate in to the available information.

Here, the term market efficiency is used in context to the 'informational efficiency' rather than the 'operational efficiency' and the 'allocative efficiency'. The market efficiency hypothesis deals with the information processing on stock market and provides an idea of how the information flow can affect the valuation of firms. Based on the background of the globalisation and mobilisation of the world, this hypothesis becomes increasingly important as the information flow is getting steadily faster with the new technologies which make it possible to have access to information all over the world.

10.2 CONCEPT OF MARKET EFFICIENCY

An efficient market can be defined as one where the current market price and the fair value resemble as all pertinent information which is incorporated immediately. Concept of market efficiency have to be specific not only about the market which is being considered but also about the investor group which is covered. It is extremely unlikely that all markets are efficient to all investors, but it is entirely possible that a particular market (e.g. the Bombay Stock Exchange) is efficient with respect to the average investor. It is possible that some markets are efficient while others are not, and that a market is efficient with respect to some investors and not to others. This is a direct consequence of different tax rates and transaction costs which confer advantages on some investors relative to others. Definitions of market efficiency are also linked up with assumptions about what information is available to investors and reflected in the price. For instance, a strict definition of market efficiency that assumes that all information, public as well as private, is reflected in market prices would imply that even investors with precise inside information will be unable to beat the market.

10.3 ASSUMPTIONS OF EFFICIENT MARKET THEORY

For the capital market efficiency theory to operate following assumptions are made.

- Information is free & quick to flow.
- All investors have same access to information.
- Transaction cost, taxes are not there and not hampering the free force of market.
- Investors are rational.
- Investors behave in a cost effective competitive manner for optimisation of returns.
- Every investors has a access to lending and borrowing at a same rate.
- Market prices are not sticky and absorbs the market information quickly.
- Market responds to new technology, trends, changes in tastes and habits etc. of consumers efficiently and quickly.

10.4 RANDOM WALK THEORY

Stock price behaviour is explained by the theory in the following manner. A change occurs in the price of a stock only because of certain changes in the economy, industry or company. Information about these changes alters the stock prices immediately and the stock moves to a new level, either upwards or downwards, depending on the type of information. This rapid shift to a new equilibrium level whenever new information is received is recognition of the fact that all information which is known is fully reflected in the price of the stock. Further change in the price of the stock will occur only as a result of some other new piece of information which was not available earlier. Thus, according to this theory, changes in stock prices show independent behaviour and are dependent on the new pieces of information that are received but within themselves are independent of each other. Each price change is independent of other price changes because each change is caused by a new piece of information.

The basic premise in random walk theory is that the information on changes in the economy, industry and company performance is immediately and fully spread so that all investors have full knowledge of the information. There is an instant adjustment in stock prices either upwards or downwards. Thus, the current stock price fully reflects all available information on the stock. Therefore, the price of a security two days ago can in no way help in speculating the price two days later. The price of each day is independent. It may be unchanged, higher or lower from the previous price, but that depends on new pieces of information being received each day. The random walk theory presupposes that the stock markets are so efficient and competitive that there is immediate price adjustment. This is the result of good communication system through which information can be spread almost anywhere in the country instantaneously. Thus, the random walk theory is based on the hypothesis that the stock markets are efficient. Hence, this theory later came to be

known as the efficient market hypothesis (EMH) or the efficient market model.

10.5 EFFICIENT MARKET HYPOTHESIS (EMH)

The efficient market hypothesis (EMH) deal with informational efficiency and strongly based on the idea that the stock market prices or returns are unpredictable and do not follow any regular pattern; so it is impossible to "beat the market". According to the EMH theory, security prices immediately and fully reflect all available relevant information. The EMH theory suggests that the asset prices are determined by the demand and supply in the competitive market with rational investors. Rational investors gather information very rapidly and immediately incorporate this information into stock prices. Only new information, i.e. news, cause change in prices but the news, by definition, is unpredictable; therefore stock market which is immediately influenced by the news is also unpredictable. James Lorie has defined the efficient market as "Efficient markets means the ability of the capital market to function efficiently, so that prices of securities react rapidly to new information. Such efficiency will produce prices that are appropriate in term of current knowledge and investors will be less likely to make unwise investments."

The efficient market hypothesis does not by any means deny the profitability of investing. It merely states that the rewards obtainable from investing in highly competitive markets will be fair, on the average, for the risks involved. Importantly, however, the three forms of the efficient market hypothesis hold that acting on publicly available information cannot improve one's performance beyond the market's assessment of a fair rate of return. The weak form of the efficient market hypothesis describes a market in which historical price data are efficiently digested and, therefore, are

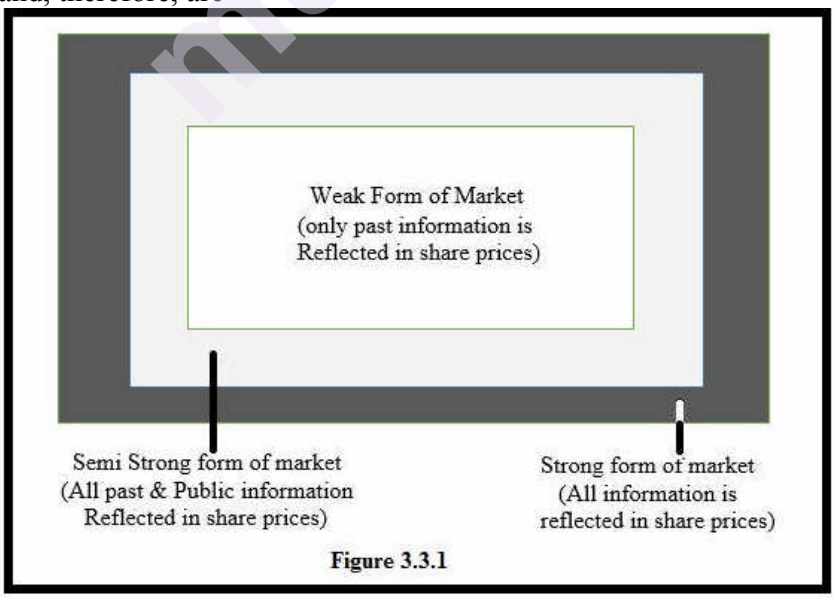


Figure 3.3.1

useless for predicting subsequent stock price changes. This is distinguished from a semi strong form under which all publicly available information is assumed to be fully discounted in current securities prices. Finally, the strong form describes a market in which not even those with privileged information can obtain superior investment results. In 1970, Fama classified efficient market hypothesis in three categories according to the level of information reflected in market prices – weak form, semi-strong form and strong form; a summarized description of these different forms of market efficiency is presented below:

The Weak Form of the Market

The weak form efficiency is based on 'random-walk'. In weak form of market efficiency, stock prices reflect 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 form, 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. The weak form of the efficient market hypothesis is a valid description of the market for anyone who is interested in developing profitable investment strategies from historical price or volume information. There is neither a theoretical foundation nor empirical support for technical analysis based on historical price and volume data. Although number of empirical studies support weak form of efficient market, there are still number of financial researchers who 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'.

Semi-Strong Form of the Market

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. In short, semi – strong form of efficient market implies that:

- 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.

Strong Form of the Market

In strong form 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 are :

- 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.

10.6 DIFFERENT EMPIRICAL TESTS

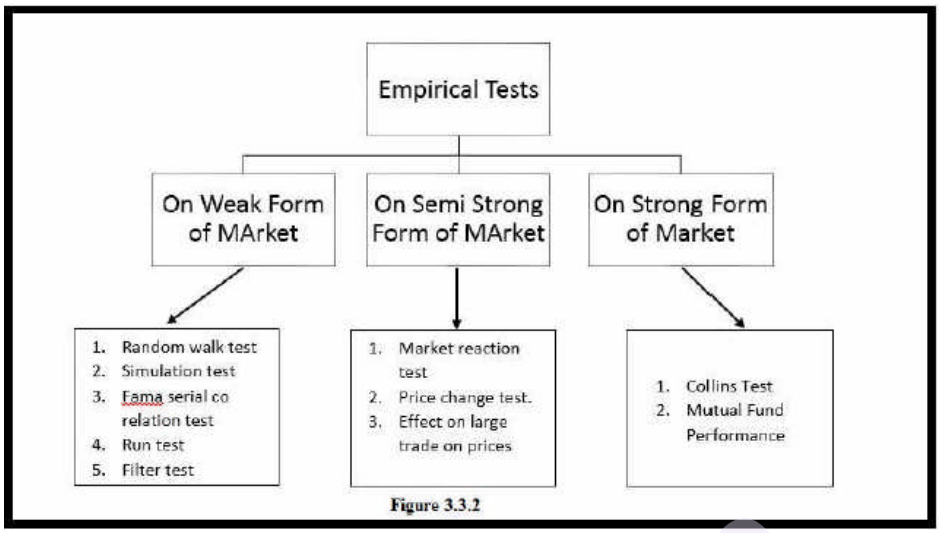


Figure 3.3.2

Random Walk Test

There were many researches and test carried on to the weak form of efficient market hypothesis. Majority studies pointed a questioned 'whether security prices follows a random walk'. A random walk when it is applied to security prices means that all the price changes which have occurred today are completely independent of the prices prior to this day. The weak form of the efficient market considers only the average change of today's prices of security. It clarifies that the large price changes are followed by larger price changes. This observation violates the random walk behaviour but it does not violate the weak form of the efficient market.

Simulation Test

In 1959, Robert & Osborne took the Dow Jones Industrial Average and compared its level with a variable generated by a random walk mechanism. They concluded from test that the mechanism of a random walk showed patterns which were very similar to the movements of stock prices. The another finding from test is that a series of cumulative random numbers were closely similar to actual stock price series. This Research is also called as Simulation Test.

Fama Serial Co Relation Test

After of Dow Jones study (1962) in 1965 Fama also tested the serial correlation of daily price changes. He studied 30 firm's correlation which shows an average correlation of -0.03. This test was very weak because it was very close to zero and therefore it could not indicate any correlation between price changes in successive period.

Run Test

This test ignores the absolute values of the numbers in the series and took into the research only the positive and negative signs. The Run Tests are made by counting the number of signs or Runs in the same direction. The Actual Runs are observed and compared with the number that are expected from the price changes that are randomly generated.

Filter Test

Alexander made this Filter Rule Test in 1961 to find out 'if any abnormal return could be eared using past price data.' This test works in the following manner when security price was administrated by a certain % over a previous point of its purchase. If the price falls from the previous high point, then it should be sold when the decline is in excess of the specified percentage. According to Alexander, the Filter Test gives the large rates of return.

Market Reaction Test

Fama, Fischer, Jensen and Roll tested the semi-strong form of efficient market in 1969.

Announcement of stock splits contains an economic information. Their Research considered the abnormal returns of a security at the announcement of stock split. The behaviour of the security prices in the market after the announcement of stock split showed exactly the predictions of the efficient market hypothesis. After the public announcement, an investor could gain abnormal returns on the basis of information of the stock split. The average cumulative abnormal return which was going higher and increasing just before the announcement stopped increasing or decreasing in any significant manner in the next period after the split announcement was made.

Price Change Test

A study was conducted by the Scholes in 1972, to observe the reactions of the security prices to the offer of secondary stock issues. A Study shows that the prices of securities decreases when the issuer was a company which indicated to market that offer contained some bad news. But the secondary offering by an investor bank and insurance companies were not viewed in a negative manner and the security prices did not significantly fall. The price behaviour of a secondary issues lent support with the market just to a new piece of information in an unbiased manner and almost immediately.

Effect on Large Trade on Prices

Kraus and Stoll conducted a research study to examine the effect of large trades on the behaviour of a security prices. According to them

there was a temporary effect on security prices which were associated with the large trade block. The trades which were known to effect large transactions were shown by a decrease in prices but the price rose almost immediately and was totally reactionary by the end of the day.

Collin's Test

In 1975, Collin tested the strong form of efficient market in which he shows that the consolidated earnings of a multi-product firm could be accurately predicted by using segment and profit data rather than by using consolidated historical data. He formulated a test by adopting a strategy of two sets of estimates of annual earnings for a multi product firm numbering 92 for 3 years - 6, 8, 9, and 70. One set used historical segmented data and the other historical consolidated number. In 1968 and 1969, he founded that he could earn a statistically significant abnormal return. But in 1970, results were repudiated. In this way he showed that the market was not efficient to know the public segment review and profit data of multi-product firms.

Mutual Fund Performance

Efficient market hypothesis is separated by the performance of mutual funds. The performance of the mutual funds are tasted in 1972,1966 and 1969. The research hypothesis was that 'the mutual funds could earn extra ordinary return and constantly achieve a higher than average performance because they have the excess inside information which is not otherwise publically known'. The study shows that the mutual funds were not better in performance than an individual who purchases the same securities with the same risk. Mutual fund performance is not an indication of inside information. Alternatively suggested that no mutual funds has consistent access to non – public information.

10.7 ANOMALIES TO EMH

Consistent abnormal patterns in asset return in the market are called anomalies. In other world, anomalies are empirically observed consistent patterns in the asset prices and returns which are inconsistent with EMH. Researchers believe that anomalies are the result of the shortfalls in the models applied for testing market efficiency, rather than of inefficiency of market. EMH theory says that nobody can make excess profit or outperform in market whereas anomalies are all about 'How to make profit in the market'. These indicate market inefficiency or in another words inadequacies in the underlying asset-pricing model. After its documentation and analysis in the academic literature, anomalies often seem to disappear, reverse, or soothe. It raises a question, whether profit opportunities existed in the past, but have since been arbitraged away, or whether the anomalies were simply statistical peculiarity that engrossed the attention of academics and practitioners. There are a large number of

anomalies documented by researchers and still continues to grow in which some important or famous market anomalies are:

Size Effect (Small Firm Effect):

Researchers such as Banz, (1981), Reinganum (1981) etc. found that the stock of small firms (small capitalized firm) provide higher return than the stocks of the large firms. Banz (1981) examined 10 small and 10 large companies of New York stock exchange for the period of 1931 to 1975 and he found that returns are highly correlated with size of firms. Fama and Frence (1992, 1993)in their famous studies, confirmed that the small capitalization firms provide higher returns than large capitalization firms.

The Value Effect:

Stocks with a low valuation and low price-to-book ratio earn on average higher returns than growth stocks with a high valuation and high price-to book ratios. Fama and French (1992) analyzed data for the period 1963-1990 from across-section of companies and found that the premium for investing in value stocks instead of growth stocks was about three and half to four percent.

The Momentum Effect (Past price movement Effect):
It consists of two kinds of effects:

Contrarian Effect:

De Bondt and Thaler (1985) and Guin (2005) observed in their empirical results that past loser (stock which has low return in past 3 - 5years) overtake winners (stock with high return of the past 3 - 5years). This suggests that in long run market tends to over-react to information which is subsequently corrected producing the reversal effect.

Continuation Effect:

Jegadeesh and Titman, (1993) found high returns are obtained by recent past winner than past losers. This effect is found highly effective for short term winners in several studies; even Fama and French (1996) could not explain the short term momentum effect. Guin, (2005) comments - “Stocks that have outperformed the market usually continue to do so for an intermediate period of time, three to five years on average”. This effect suggests that the market under-react to information in short run. The information gets reflected in price gradually (not instantaneously as claimed by the supporters of EMH) producing returns which are positively auto correlated in the short run.

Neglected Firm Effect:

Stocks with a relatively small analyst following have higher risk-adjusted returns on average than stocks with many analysts.

Liquidity Effect:

According to Amihud and Mendelson (1986), higher returns compensate for low liquidity of small firm stocks than high liquidity stock.

Speculative Economic Bubbles Effect:

Economic bubbles are typically followed by an overreaction of hysterical selling, allowing shrewd (wise) investors to buy stocks at bargain prices.

Buyback of Shares:

Studies have found that after announcement of stock repurchases, stock outperform in the market in competition to the stocks of the companies who have come with their new issues. This evidence seems to confirm the theory that managers tend to have inside information regarding the value of their company's stock and their decisions whether to issue or buyback their stock may signal over or undervaluation.

Announcement Effect:

Ball (1978) discovered in his empirical study that announcement related to financial health, made by the company reflects on the movement of the stock of the related company. Stocks with positive surprises tend to go upward those with negative surprises tend to go downward. Some refer to the likelihood (possibility) of positive earnings surprises to be followed by several more earnings as the "cockroach" theory which says when you find one, there are likely to be more in hiding.

Low P/E Ratio:

Basu (1977) documented the use of price/earnings ratios (P/E) to forecast stock returns. In a study of 1400 firms over the period 1956-71, he observed that low P/E securities outperforming their high P/E counterparts by more than seven percent per year. Basu regards his results as indicative of market inefficiency.

Day-of-the-Week Effect:

The most common calendar anomaly is day-of-the-week effect. This anomaly states that expected returns are not same for all the week days. It is well noticed that the average return on Monday is significantly negative and is lower than average returns of other week days. On the other hand, Friday returns are found abnormally high. The returns on

Mondays are found to be negative in many studies, which are commonly referred to as the weekend effect. There are variations in some countries as in Australia and Japan negative Tuesday effect, instead of Monday-effect, is observed. The use of daily data makes it possible to examine the relationship between the changes that occur in stock prices from one trading day to the next and over weekends or, in other words, to study the weekend effect. In particular, it is possible tots whether the rapidity of the process whereby stock prices are formed changes when the market is closed, i.e. whether the process is defined in terms of market time or real time.

Turn-of-the-Month Effect:

The turn-of-the-month effect could not gain as much popularity in the literature as other calendar anomalies such as the day-of-the-week effect and the month-of-the-year effect. It has been observed that a positive rate of return occurs only in the first half of the month beginning from the last few days of the previous month. This implies that average daily returns of stocks on turn of the month are different from the average daily returns in rest of the month.

Month-of-the-Year Effect:

This effect states that return on common stock is not the same for all the months of the year. Empirical studies conducted in various countries have found that the statistically significant positive returns to common stocks occur in January. Month-of-the year effect is not same for all countries e.g. for USA returns are obtained high in December while the strongest month in the UK and Tokyo stock market is January. However, in most countries returns are found significantly higher in month of January than rest of the months of the year that's why this effect is also called 'January effect'. In India, empirical research found high return in month of March. So we will use the term "month-of the-year" instead of January effect further for our empirical research to check whether this effect is found in the month of March or in other month in India.

Holiday Effect:

Another important seasonal anomaly commonly found in the markets is 'holiday effect'. This effect is related to the behaviour of stock prices around a public holiday. Higher returns are observed around holidays, mainly in the pre-holiday period as compared to returns of the normal trading days. Holiday effect is segmented in to pre-holiday and post-holiday effects. Pre holiday refers days before holidays and post-holiday refers days pertaining immediately after holidays. Returns are found higher in pre-holiday in comparison to post holiday when market goes comparatively down. Some researchers think that the day-of-the-week effect is a special case of the holiday-effect. In this study, we will examine the existence of these calendar anomalies in Indian stock market; and try to link them with market micro-structure and behavioural factors.

10.8 COMPARISON OF RANDOM WALK AND RANDOM WALK MODEL WITH TECHNICAL ANALYSIS

The Random Walk Hypothesis is contrary to the technical analyst's view of behaviour of stock prices. It does not believe that the past historical prices have any indication to the future stock prices. According to the technical analyst, history repeats itself and by studying the past behaviour of stock prices, future prices can be predicted. The Random Walk hypothesis is in direct oppositions to the analysis of the technical School of thought.

Random Walk Model with Fundamental Analysis

The random walk hypothesis is in conjunction and to some extent believes in fundamental analysis. It believes that changes in information help the superior analyst who has the capability of using inside information to outperform other investors of the buy and hold strategy during the short runs. This is entirely possible because of some super analytical power. Therefore Random Walk Theory in its semi strong form supports the fundamental school of thought. It also states that fundamental analysis which is superior in nature will definitely lead to superior profits.

10.9 SUMMARY

Efficient Market Theory

- Efficient market theory states that the share price fluctuations are random and do not follow any regular pattern.
- The expectations of the investors regarding the future cash flows are translated or reflected on the share prices.
- The accuracy and the quickness in which the market translates the expectation into prices are termed as market efficiency.

Weak Form of EMH

Current prices reflect all information found in the volumes.

Future prices cannot be predicted by analysing the prices from the past.

Buying and selling activities of the information traders lead the market price to align with the intrinsic value.

Semi-Strong Form

- The security price adjusts rapidly to all publicly available information.
- The prices not only reflect the past price data, but also the available information regarding the earnings of the corporate, dividend, bonus issue, right issue, mergers, acquisitions and so on.

- The market has to be semi-strongly efficient, timely and correct dissemination of information.

Strong Form

- All information is fully reflected on security prices.
- It represents an extreme hypothesis which most observers do not expect it to be literally true.
- Information whether it is public or inside cannot be used consistently to earn superior investors' return in the strong form.

10.10 SELF-ASSESSMENT QUESTIONS

1. What is an efficient market?
2. Write a note on market efficiency.
3. What is efficient market and what are the assumptions of EMT?
4. Explain efficient market hypothesis.
5. Explain different forms of efficient market.
6. Explain the various Empirical Tests.
7. What are the different anomalies of efficient market?
8. Compare the random walk model with technical analysis and fundamental analysis.

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11

FUTURES : THE BASICS

Unit Structure

11.0 Learning Objectives
11.1 Introduction
11.2 Future Contract: Meaning and Definition
11.3 Features, Merits & Demerits of Future Contracts
11.4 Types of Futures Contracts
11.5 Summary

11.0 LEARNING OBJECTIVES

After studying this lesson you are able to:

- Understand the basic concept of future.
- Define future contracts
- Know the various features, merits & demerits of a future contract.
- Know about the various types of futures like stock index futures, interest rate futures, foreign currency futures, bond index futures and commodity futures.

11.1 INTRODUCTION

In simple words, future refers to financial contracts that obligate a seller to sell an asset or a buyer to buy an asset at a predetermined price and at a predetermined time in the future. Today, most common assets which are traded in the futures market are equities, commodities like metals (gold, silver, platinum), agriculture products (wheat, soya bean, cotton etc.), and stock index and so on.

The future contract is an agreement between two parties where each party agrees to transact with respect to an underlying asset at a predetermined price (future price) and at a specified future date. They are traded on future exchange, so, the exchange becomes counter party. Future contract includes the settlement date, description of asset on which futures are sold, size of contract and settlement cycle. Future contracts are marked to market and so the settlement cycle is on daily basis.

11.2 FUTURE CONTRACT: MEANING AND DEFINITION

A futures contract is an agreement between two parties to buy or sell a particular asset on a specified future date. These are traded on recognised exchanges like NCDEX, MCX, NSE and BSE etc. The terms and conditions of a futures contract like contract size (quantity/ amount of the asset), price and price limits, delivery terms (delivery place and time) and position of a trader (long or short) are standardised by the exchanges where they trade. Thus, futures are an exchange traded derivatives.

Definition:

"Futures are exchange traded contracts to sell or buy financial instruments or physical commodities for future delivery at an agreed price"

- ***Website of Bombay Stock Exchange***

  "Futures contracts are organised/ standardised contracts, which are traded on the exchange

- ***www.derivativesindia.com***

Examples

Currently onions are selling at ₹4 per kg. You are sure that due to bad weather, the prices might go up after 3 months – and that's when you'll need a lot of onions for your wedding. So you enter into a contract with me to buy 20kg onions at ₹4 per kg after 3 months.

Now after 3 months, the price of onions is either ₹6 or ₹2 per kg. In any case you pay me ₹4 per kg (because we entered into a futures contract) and I deliver 20kg onions to you.

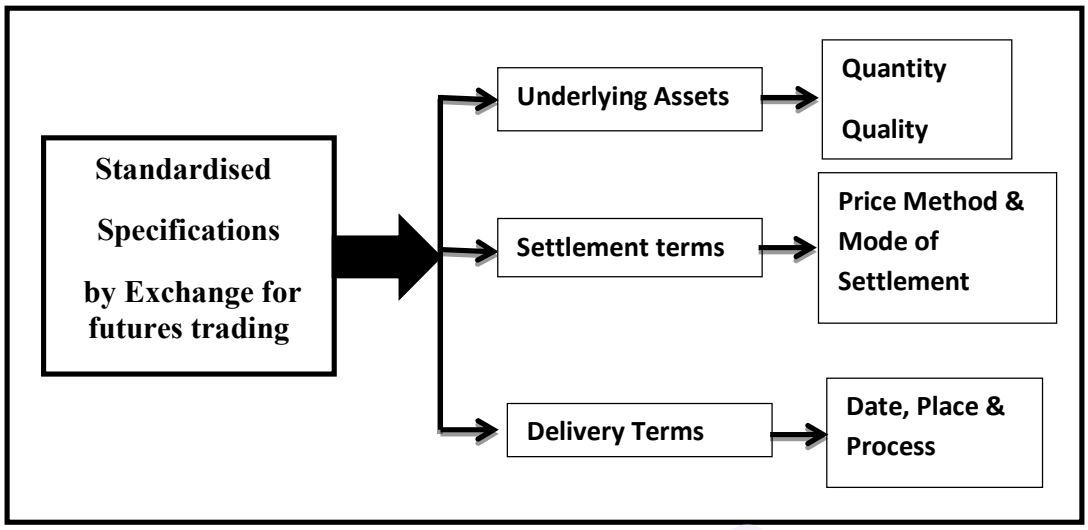
If the current price is ₹6, you have saved ₹2 per kg or ₹40 overall.
If the current price is ₹2, you have lost ₹2 per kg or ₹40 overall.

11.3 FEATURES OF FUTURE CONTRACT

The Futures have the following salient features

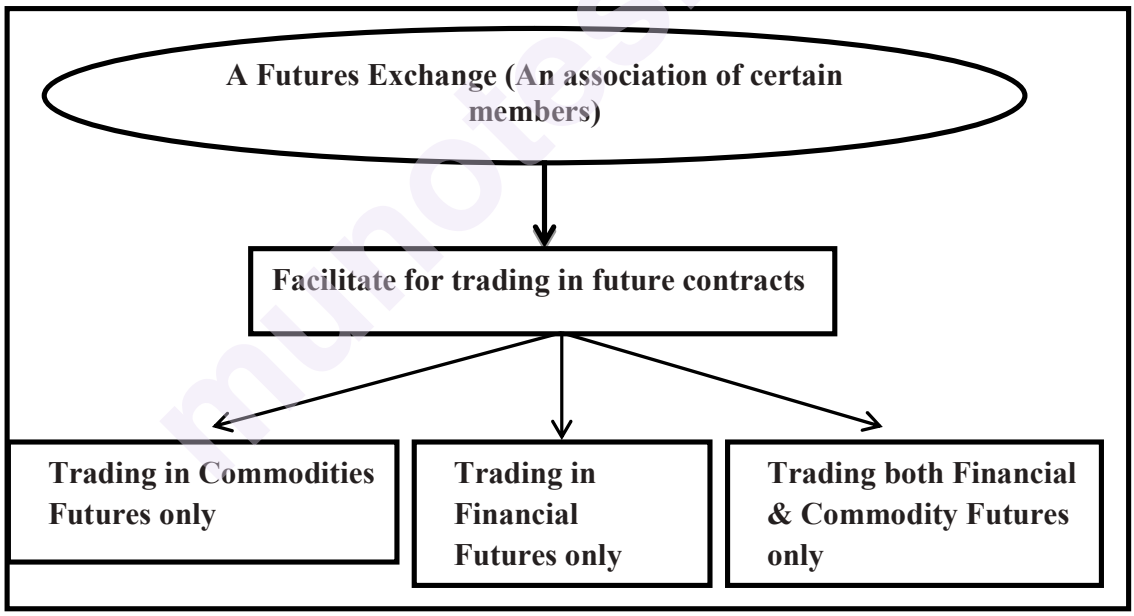
1) Standardised Specification

Futures contracts are exchange traded contracts to sale or buy financial assets of commodities. All the terms and conditions of these contracts such as quantity of the asset, quality of the asset, price methods & settlement terms, the delivery date, the place of delivery, the process of delivery are standardised by the Exchange and all the parties must have to abide by these specification and performs the future contracts.



2) Exchange Traded

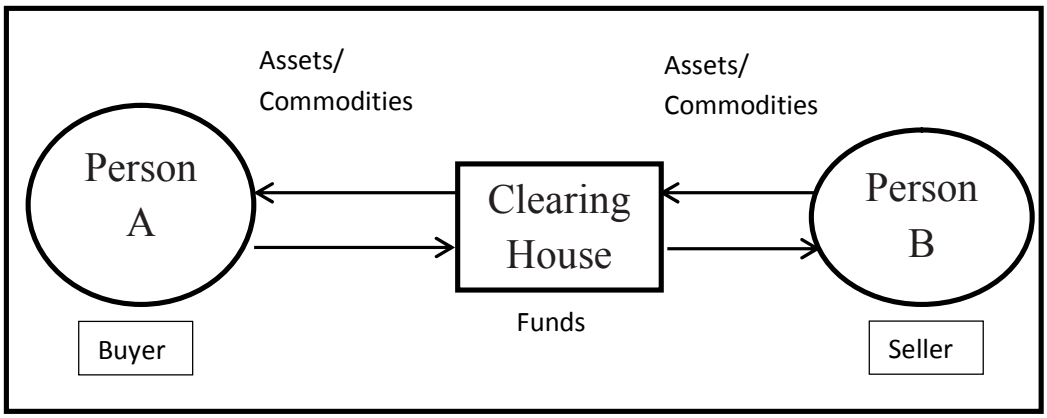
Future contracts are organised/ standardised contract, which are always traded on exchange.



3) Performance of the Contract through an associated Clearing House of the Future Exchange

Each Futures Exchange has an associated Clearing House. The seller has to deliver the asset to the clearing house and the clearing house deliver the same to the buyer. Similarly, the buyer has to make payment to the clearing house and the clearing house has to pay to the seller. The clearing house acts as a middleman between the buyer and seller in all futures contracts. In one way, the clearing house is the counterparty to the buyer for delivery of asset and in another way, it is the counterparty to the seller for making payment against delivery. Thus, the clearing house

facilitates the smooth operation of future trading because it guarantees fulfilment of the final term of a future contract.



The Middleman Role of Clearing House

4) Margin Money

A clearing house collects margin money from the participants of a future contract. Both the Parties- i.e., the seller and the buyer of a future contract pay a margin to the clearing house. This margin is called the initial margin (IM).

Thus, a clearing house undertakes the following two types of default risks:

i. Buyer's Default: The clearing house has to buy the Asset/ Commodities from the seller and pay the money.

ii. Seller's Default: The clearing house has to buy the commodities from the open market, give delivery to the buyer and collect money from him.

In both the cases, the clearing house bears the performance risk as well as credit risk. In order to minimise or eliminate such risks, the clearing house prescribes a margin money system for trading in future contracts. There are different margins payable by the participants in future contracts such as Initial margin, Mark to marked, Daily margin, Delivery margin etc.

5) Basis

It is normally calculated as CASH PRICE minus FUTURE PRICE of an asset

Mathematically, Basis = Cash Price – Future

It can be either positive or negative. A positive number indicates a future discount (Backwardation) and a negative number indicates a future premium (Contago). Basis may change its sign several times during the life of the contract. It turns to zero at maturity of the futures i.e., both cash and future prices converge at maturity

6) Mark to Market System

Future contracts are based on the practice of mark to market accounting system. The mark to market is a system by which the price of the exchange traded asset/ commodities are valued each day and the losses and gains are settled between the buyer and seller daily through the recognised exchange.

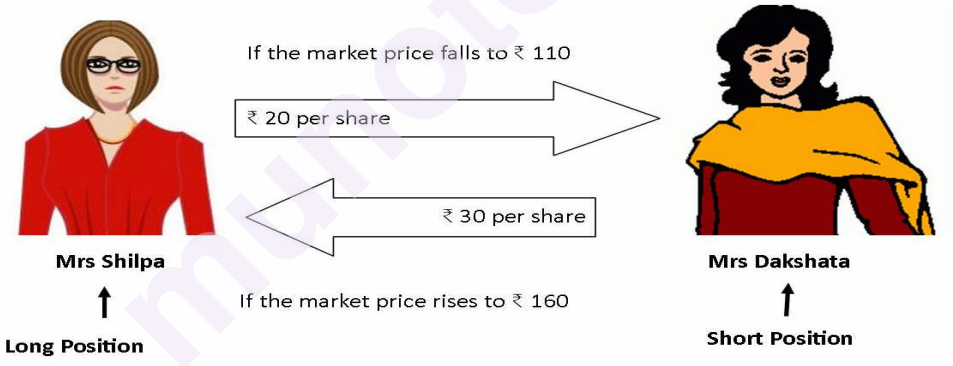
7) Delivery

A future contract is an exchange traded forward contract. As a principle, at maturity the seller delivers the underlying and the buyer makes the payment. Some of the Future Contracts are closed out before maturity and some of the contracts are performed by delivery and payment at maturity.

8) Settlement in Cash for Difference

A party in short (seller) or long (buyer) position has to settle in cash for the difference between the agreed price at which the contract was entered and the cash price at expiration date. This cash settlement is encouraged due to inconvenience or impossibility in delivery of underlying assets.

Example: On 1st January, Miss Shilpa enters into a Future contract to buy 500 shares of 'K Ltd' at an agreed price of `130/- per share in March. If on maturity date(as determined by the Stock Exchange during the month of December), the price of the Equity share rise to `160/-per share, Miss Shilpa will receive `30 per share and otherwise if the price of share falls to `110/-, Miss Shilpa will pay `20/- per share.



4. Advantages & Disadvantages of Future Contract

There are numerous benefits of trading in future contracts

- Future contracts can be used to hedge the risk involved in price fluctuations of commodities, currencies, interest rates & stock prices.
- An investor can get into futures contract by using a small amount as the initial margin. This enables a speculator to take positions in assets and take the benefits of price fluctuations in the market.
- There is no counter party risk; there is no risk of default as futures contracts are traded on exchanges. Investors can take full benefits from both upward and downward movement in the prices of assets. This is because investors can take short or long positions on the

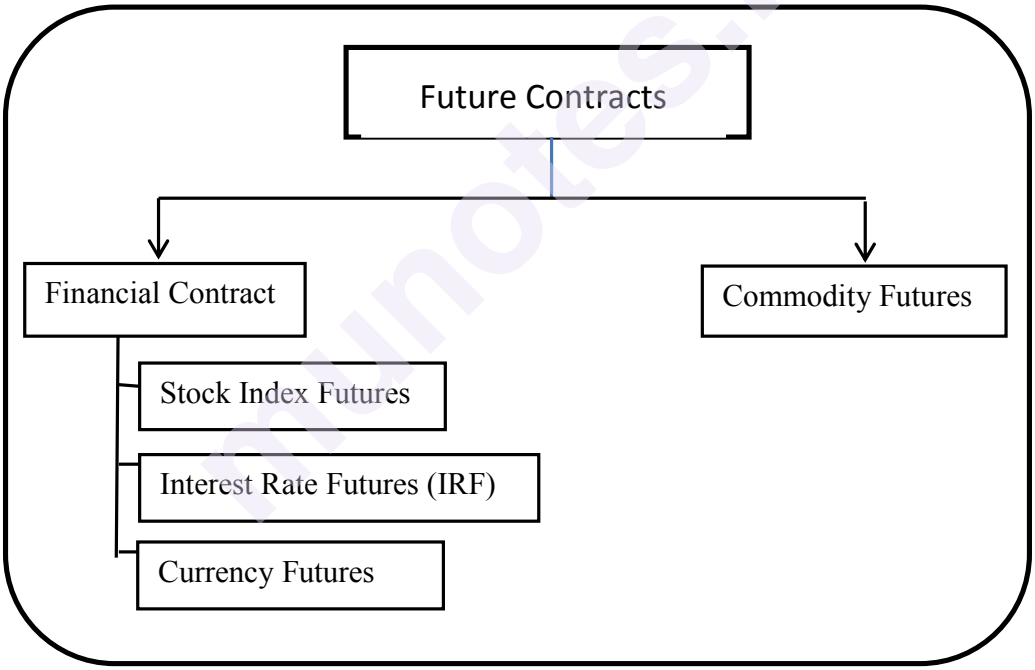
futures contract depending upon the investors' perceptions about market movement.

- Futures contracts are traded on exchange, an investor doesn't have to wait till the maturity of the contract and so can sell the contract before the date of maturity, provided the investors want to get out the position before the maturity of the contracts.

Futures contracts also have disadvantages

- These contracts trade on leverage, i.e., only up to 15% of the total investment amount is required to initiate future contract. At times, an investor can lose more money than he has invested in a future contracts.
- Future contracts are standardised, i.e., not customised to satisfy the needs of the investor, and so the investor has to work on finding the best future contract to hedge his/her risk.

11.4 TYPES OF FUTURE CONTRACT



A) Future Contract : A futures contract is an agreement that requires a party to be involved in the agreement either to buy or sell something at a designated future date at a predetermined price. The basic economic function of futures markets is to provide an opportunity for market participants to hedge against the risk of adverse price movements. Future Contracts are categorized as either financial futures or commodity futures.

I) Financial Futures

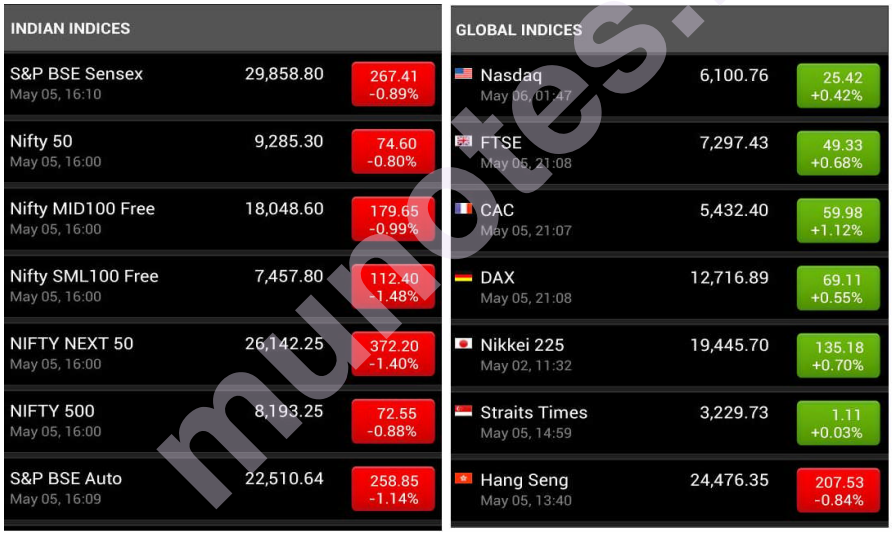
Future contract based on a financial instrument or financial indexes are known as financial futures. Financial Futures can be classified as:-

1) Stock Index Futures

In India, popular indices are Sensex and Nifty. Special type of stock indices are available in India like BSE PSU (Bombay Stock Exchange Public Sector Undertakings) Index, S & P BSE Consumer Durables, S & P BSE Capital Goods, NIFTY IT, NIFTY Bank etc. Essentially, a stock index is used to measure the change of direction and magnitude of the general stock market.

Examples: Stock Index Futures

Indian Indices	Global Indices
1) S&P BSE sensex 2) Nifty 50 3) Nifty MID100 Free	1. FTSE in UK 2. DAX in Germany 3. Straits Times 4. Taiwan Index



2) Interest Rate Futures (IRF)

An interest rate future is a futures contract with an underlying instrument that pays interest. An interest rate future is a contract between the buyer and seller agreeing to the future delivery of any interest-bearing asset. The interest rate future allows the buyer and seller to lock in the price of the interest-bearing asset for a future date. Interest rate future contracts can be classifies by the maturity of their underlying security. Thus,

(a) Short term interest rate futures: It has an underlying security that matures in less than 1 year. For ex.- 91 days Treasury Bills, Commercial paper (CP), Company deposits (CDs). Etc.

(b) Long term interest rate futures: The maturity of the underlying security of long term futures contracts exceeds 1 year. For ex.- Corporate bonds and debentures, Government loans and public sector undertaking (PSU) bonds

3) Currency Futures

A currency future contract is a contract that allows market participants to trade underlying exchange rate for a period of time in the future.

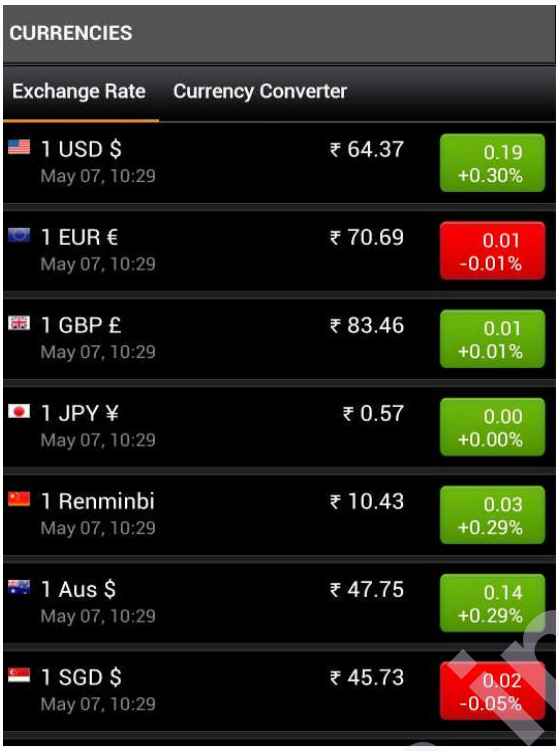
Currency Futures were first traded in CME (The Chicago Mercantile Exchange) in 1972. In India, trading in futures was launched on 29th Aug, 2008. To facilitate the operational framework, the RBI has prescribed the policies while SEBI handle, the trading, settlement, and execution aspect.

Foreign currency exchange is a relative price exchange rate. It may be quoted as direct or indirect. A direct quote gives the home currency price of a certain amount of foreign currency. In case of indirect quoting, the value of one unit of home currency is presented in terms of foreign currency.

Example:

Direct Rate	Indirect Rate
`64.37 = 1$	`1= 0.01$

When a client deals with a future contract, he has to operate through the commission agents. The commission agent may be a bank or financial institution. The client has to deposit the margin money with the clearing house. Daily settlement starts and continues till final settlement on maturity. In the majority of futures contract, delivery of currencies is not made but is offset by a reversing deal. The client gets only the difference between the two deals.



II. Commodity Futures

The Commodity Futures market in India dates back to more than a century. The first organized futures market was established in 1875, under the name of 'Bombay Cotton Trade Association' to trade in cotton derivative contracts. This was followed by institutions for futures trading in oilseeds, foodgrains, etc. The futures market in India underwent rapid growth between the period of First and Second World War. As a result, before the outbreak of the Second World War, a large number of commodity exchanges trading futures contracts in several commodities like cotton, groundnut, groundnut oil, raw jute, jute goods, castorseed, wheat, rice, sugar, precious metals like gold and silver were flourishing throughout the country.

Out of 17 recognized Exchanges, MCX, NCDEX, NMCE, ACE, UCX and ICEX, contributed 99% of the total value of the commodities traded during the year 2013-14. Out of the 113 commodities, regulated by the FMC(Forward Market Commission), in terms of value of trade, Gold, Crude oil, Silver, Copper, Natural Gas, Lead, Soy Oil, Zinc, Soybean and Castorseed are the prominently traded commodities. The total volume of trade across all Exchanges in 2013-14 was 8,832.76 lakh MT at a value of Rs. 101 lakh Crores. The total of deliveries of all commodities on Commodity Exchange platform is 9,23,893 MT during the year 2013-14.

Commodity	Price	Change
Naturalgas - 25 May 25-May-2017	210.20 Vol:40.38k	5.90 +2.89%
Nickel - 31 May 31-May-2017	589.70 Vol:28.84k	9.70 +1.67%
Crudeoil - 19 May 19-May-2017	2,969.00 Vol:292.74k	38.00 +1.30%
Zinc - 31 May 31-May-2017	166.70 Vol:17.34k	1.50 +0.91%
Copper - 30 Jun 30-Jun-2017	361.45 Vol:27.63k	2.90 +0.81%
Gold - 05 Jun 05-Jun-2017	28,072.00 Vol:9.84k	0.00 0.00%
Cotton - 31 May 31-May-2017	20,710.00 Vol:2.02k	0.00 0.00%

11.5 SUMMARY

Future Contracts are exchange traded contracts between two parties to trade (buy/ sell) standardised financial instruments or physical commodities. The terms of the contracts such as quality, quantity, delivery time, delivery place and settlement procedure are standardised by an Exchange.

This unit discussed the various characteristics of future contracts. The Features are:

1) Standardised Specification
2) Exchange Traded
3) Performance of the Contract through an associated Clearing House of the Future Exchange
4) Margin Money
5) Basis
6) Mark to Market System
7) Delivery
8) Settlement in Cash for Difference

Further, it explains advantages & disadvantages and types of future contracts

Review Questions:

1. Explain the concept Future Contract. Discuss the characteristics of futures contracts
2. What are Future Contracts? Explain its merits
3. Define “Future Contract”. Discuss its demerits
4. Discuss various types of futures contracts

12

OPTIONS : THE BASICS

Unit Structure

12.0 Learning Objectives
12.1 Introduction
12.2 Option Contract: Meaning and Definition
12.3 Types of Option
12.4 Basic Terms used in Option Trading
12.5 F & O Trading System
12.6 Advantages of Option Trading
12.7 Clearing and Settlement System for Option Trading

12.0 LEARNING OBJECTIVES

After studying this lesson you are able to:

- Understand the basic concept and different types of option contract.
- Know the terms used in option trading.
- Understand the Option trading system and its advantages

12.1 INTRODUCTION

An option is the right to buy or sell a particular asset for a limited time at a specified rate. These contracts give the buyer a right, but do not impose an obligation, to buy or sell the specified asset at a set price on or before a specified date.

An option is a special type of contract which gives its holder the right (but not obligation) to buy or sell an asset at a fixed price at some future price at some future date. There are only two basics types of options, i.e., ***Call option and Put Options.*** A call option is the right to buy an underlying asset at a specified price over a given time period, while a put option is a right to sell an underlying asset at a specified price over a given time period. According to the language of option contract, the owner who obtains (buys) the right to trade (buy/sell) an asset is known as ***option holder***. The counterparty who grants (sells) the right as ***option writer.***

Conceptually, the option contract is shown below:

a) Right to Buy Option

Parties ⟶	Buyer of the Asset	Seller of the Asset
Status ⟶	Option Holder	Option Writer
Right ⟶	Yes	No
Obligation ⟶	No	Yes

b) Right to Sell Option

Parties ⟶	Buyer of the Asset	Seller of the Asset
Status ⟶	Option Writer	Option Holder
Right ⟶	No	Yes
Obligation ⟶	Yes	No

Thus, the option holder is the buyer of the option and the option writer is the seller of the option

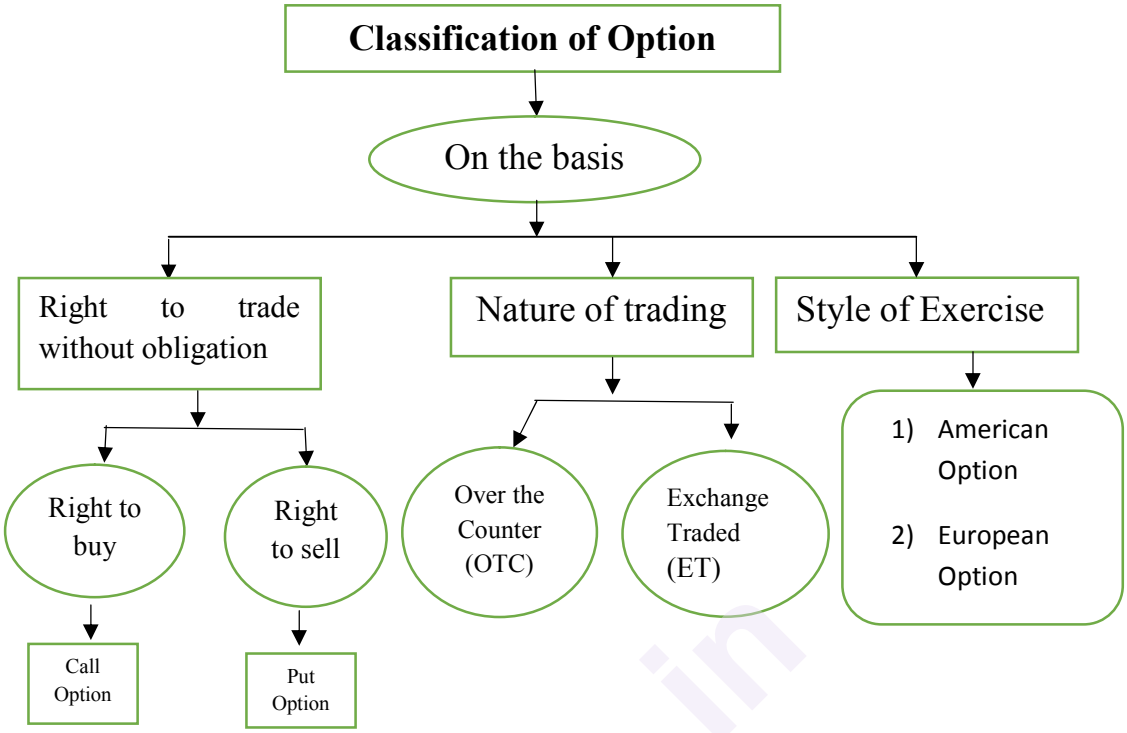
12.2 DEFINITIONS:

1) Option is a financial derivative that represents a contract sold by one party (option writer) to another party (option holder). The contract offers the buyer the right, but not obligation to buy (call) or sell (put) a security or other financial asset at an agreed upon price (the strike price) during a certain period of time or on a specified date.

2) "An option is a derivative contract or instrument that gives the option holder the right, but not obligation, to trade an underlying asset for a specific price on or before a specified time price.

12.3 TYPES OF OPTION

Options may be classified on the basis of right to trade without obligation, styles of exercise and nature of trading.



1.1. Types of Option on the Basis of Right

On the basis of "right to trade without obligation", options may be classifies as call options and put options:

- A call option: An option which conveys the right to buy something is called a Call. A call option gives the holder the right but not obligation to buy an underlying asset at specified price on or before a certain date. i.e., over a given time period.

- A put option: An option which conveys the right to sell something is called a Put. A put option gives the holder the right to sell an asset at a specified price on or before a certain date, i.e., over a given time period

Conceptually, these two types of options are shown below:

Option type	Buyer of the right	Seller of the right
Call	Right to buy at the specified price	Obligation to sell at the specified price.
Put	Right to sell at the specified price	Obligation to buy at the specified price.

1.2. Types of Option Trading Practice

There are two types of option trading, i.e., Exchange traded options and Over the Counter traded options.

The option can be traded on an organised or on the over the counter (OTC) market. An exchange traded option contract is very similar with futures while an OTC option is like a Forward Contract. However, these two types of options are different in following points.

Points	Exchange Traded Options	Over the Counter Traded Option
Sort of Market	Exchanges	OTC Market
Norms	Specified and Standardised	Negotiated between two counterparties
Restricted terms	Uniform underlying assets, limited number of strike prices, limited maturity dates. Etc.	No restriction in underlying quantity, strike price and maturity dates. Etc.
Default risk	Very low	Very high
Deposit of margin Money	Obligatory on part of the option writer	Not required
Transaction Cost	Very low	Moderate and high

3.3 Types of Option on the Basis of Style of Exercise

In finance, the style of an option denotes the date on which the option may be exercised. Depending on when an option can be exercised, it is classified in to the following two categories :

1) American Style Option or American Option: In this style, the option can be exercised by the option holder during any time during the life of the contract i.e., on or before the expiration date. Thus, in an American style, the option holder has right to exercise his right to buy/ sell any time before the expiry date.

2) European style Option or European option: In this style, the option may be exercised only on the expiry date of an option, i.e, at a single pre-defined point of time.

12.4 BASIC TERMS USED IN OPTION TRADING

Options markets are quite complicated and risky. Options are used to eliminate the risks. But if one party makes money then the other party must loose money. But the holder of an option contract must understand the following basics or fundamentals so that he can bet against the seller or writer of the option.

1. The Option Contract: An option is a contract. It gives the buyer the right, but not obligation, to buy or sell, an underlying asset at a specific price on or before a certain date.

2. Underlying Asset: The underlying asset of an option contract may be stock, commodity, currency, index or debts. Thus, the specific asset which is exchanged if the option is exercised is called underlyings.

3. The agreed Contract Price: The price at which the option may be exercised and the underlying assets bought or sold is called Strike Price or Exercise Price. The exchanges decide the strike price at which call and put options are traded.

4. Style of Options: An option style refers to whether the option contract can be exercised before the expiration date or not. On the basis of the timing of the possible exercise, an option contract may have any one of the following style :

- **American Style:** In this style, the option can be exercised by the option holder any time duing the life of the contract, i.e., on or before the expiration date.

- **European Style:** In this style, the option can be exercised only on the expiration date of the option contract

5. Expiration Date: All options have a maturity or expiry date after which the option to trade cannot be exercised. The date when the option expires or matures is refered to as expiration date. In case an option is not exercised, it expires automatically.

6. Exercise Date: The date on which the option holder exercises his option is called Exercise date. In case of European style of option, both expiration date and exercise date are same. But in case of American style, the exercise date may be any date on or before the date of maturity.

7. Exchange traded Options and Over the Counter Option: Options which are traded on exchanges are called Exchange traded Options. These options are standardised in terms of quantity, trading cycle, expiration date, strike prices, type of option, style of option and mode of payments etc.

Options which are not traded on exchanges are called over the counter option.

8. Option Premium: In an option contract, the option holder buys the right from the option writer. To buy such right, he has to pay certain amount to the option writer as consideration. The price which is paid by the option holder to the option writer for acquiring the right to trade (buy/sell) is known as option premium. Once, it is paid, it remains with the option writer whether the option is exercised or not.

9. Position of an Option Participants

There are four types of option participants depending on the positions the take. They are

i. Buyers of calls, i.e., call option buyers
ii. Sellers of calls, i.e., call option sellers
iii. Buyers of puts, i.e., put option buyers
iv. Sellers of puts, i.e., put option sellers

12.5 OPTION TRADING SYSTEM

5.1 National Exchange for Automated Trading (NEAT –F&O):

Futures and option trading system of NSE called NEAT-F&O trading system provides a fully automated screen based trading for index futures and options, stock futures and options and futures on interest rate on a nationwide basis as well as an online monitoring and surveillance mechanism. It supports an order driven market and provides complete transparency of trading operations. It is similar to that of trading of equities in the cash market segment.

The software for the F & O market has been developed to facilitate efficient and transparent trading in futures and option instruments. Keeping in view the familiarity of trading members with the current market trading system, modifications have been introduced in the existing capital market trading system so as to make it suitable for trading futures and options.

5.2 Trading Mechanism:

The NEAT-F&O system supports an order driven market, wherein orders match automatically. Order matching is essentially on the basis of security, its price, time and quantity. All quantity fields are in units and price in rupees. The lot size on the futures and option market is 75 for Niftty50. The exchange notifies the regular lot size and tick size for each security traded on this segment from time to time. Orders, as and when they are received, are first time stamped and then immediately processed for potential match. When any order enters the trading system, it is an active order. If it finds a match, a trade is generated. If a match is not found, then the orders are stored in different books. Orders are stored in price- time priority in various books in the following sequence:

- Best price
- Within price, by time priority

5.3 Entities in the Trading System:

There are four entities in the trading system

i. Trading Member

Trading members are members of NSE. They are trade either on their own account or on behalf of their clients including participants. The

exchange assigns ID to each trading member. Each trading member can have more than one user.

ii. Clearing Members

Clearing members are members of NSCCL. They carry out risk management activities and confirmation/ inquiry of trades through the trading system.

iii. Professional Clearing Members

Professional clearing members are clearing members who are not trading members. Typically, banks and custodians become professional clearing members and clear and settle for their trading members.

iv. Participants

A participant is a client of trading members like financial institutions. These clients may trade through multiple trading members but settle through a single clearing member.

5.4. Corporate Hierarchy

In the F & O trading software, a trading member has the facility of defining a hierarchy amongst users of the system. This hierarchy comprises corporate manager, branch manager and dealer.

- Corporate Manager: The term corporate manager is assigned to a user placed at the highest level in a trading firm. Such a user can perform all the functions such as order and trade related activities, receiving reports for all branches of the trading members firm and also all dealers of the firm. Additionally, a corporate manager can define exposure limits for the branches of the firm. This facility is available only to the corporate manager.

- Branch Manager: The branch manager is a term assigned to a user who is placed under the corporate manager. Such a user can perform and view order and trade related activities for all dealers under that branch.

- Dealers: Dealers is a user at the lower level of the hierarchy. A dealer can perform; doesn't have assess to information on other dealer under either the same branch or other branches.

5.5. Order Types and Conditions

The system allows the trading members to enter orders with various conditions attached to them as per their requirements. These conditions are broadly divided into the following categories:

A. Time Conditions

- Day order: A day order, as the name suggests, is an order which is valid for the day on which it is entered. If the order is not executed during the day, the system cancels the order automatically at the end of the day.

- Immediate or Cancel (IOC): An IOC order allows the user to buy or sell a contract as soon as the order is released into the system, failing which the order is cancelled from the system. Partial match is possible for the order, and the unmatched portion of the order is cancelled immediately.

B. Price Conditions

- Stop Loss: This facility allows the user to release an order into the system, after the market price (Last Traded Price- LTP) of the security reaches or crosses a threshold price, e.g. if for the stop loss buy order, the trigger is 1027, the limit price is 1030 and the market (last traded) price is 1023 then this order is released into the system once the market price reaches or exceeds 1027. This order is added to the regular lot book with time of triggering as the time stamp, as a limit order of 1030. For the stop loss sell order, the trigger price has to be greater than the limit price.

C. Other Conditions

- Market Price: Market orders are orders for which no price is specified at the time the order is entered (i.e. price is market price). For such order, the system determines the price.

- Limit price: Price of the order after triggering from stop loss book.

- Trigger Price: It is the price at which an order gets triggered from stop loss book.

5.6 Market Watch

The purpose of market watch is to allow continuous monitoring of contracts or securities that are of specific interest to the user. It displays trading information for contracts selected by the user. The user also gets a broadcast of all the cash market securities on the screen. This function is also available if the user selects the relevant securities for display on the market watch screen.

5.7 Placing Orders on the Trading System

While entering orders on the trading system for both future and option market, members are required to identify orders as being proprietary or client orders. Proprietary orders should be identified as *Pro* and those of clients should be identified as *Cli.* Apart from this, in the case of *Cli* trades, the client account number should also be provided. The future and options market is zero sum game, i.e. the total number of long in contracts always equals to total number of short in contracts. The total number of outstanding contracts (long/short) at any time is called open interest. This open interest figure is a good indicator of the liquidity in the contracts

12.6 ADVANTAGES OF OPTION TRADING

A. Risk Management: Put options allow investors holding shares to hedge against fall in their value. This can be considered similar to taking out insurance against a fall in the share price.

B. Time to decide: By taking a call options the purchase price for the shares is locked-in. This gives the call option holder, until the expiry day, to decide whether or not to exercise the option and buy the shares. Likewise, the taker of a put option has time to decide whether or not to sell the shares.

C. Speculation: The ease of trading in and out of an option makes it possible to trade options with no intention of ever exercising them. If an investor expects the market to rise, he may decide to buy call options. If expecting a fall, he may decide to buy put options. Either way the holder can sell the option prior to expiry to take a profit or limit a loss.

D. Leverage: Leverage provides the potential to make a higher return from a smaller initial outlay than investing directly. However, leverage usually involves more risks than a direct investment in the underlying shares. Trading in options can allow investors to benefit from a change in the price of the shares without having to pay the full price of the shares.

E. Income Generation: Shareholders can earn extra income over and above dividends by writing call options against their shares. By writing an option they receive the option premium upfront. While they get to keep the option premium, there is a possibility that they could be exercised against and have to deliver their shares to the taker at the exercise price.

F. Strategies: By combining different options, investors can create a wide range of potential profit scenarios.

12.7 CLEARING AND SETTLEMENT SYSTEM FOR OPTION TRADING

The clearing and settlement process comprises of the following three main activities:

a. Clearing
b. Settlement
c. Risk Management

7.1 National Securities Clearing Corporation Limited (NSCCL)

NSCCL undertakes clearing and settlement of all trades executed on the futures and options segement of the NSE. It also acts as legal counterparty to all trades on the Option segment and guarantees their

financial settlement. Clearing and settlement activities in the Option segment are undertaken by NSCCL with the help of the following entities:

- Clearing Members (CMs): Primarily, the CMs perform the following functions:

i) Computing obligation of all their TMs i.e. determining positions to settle.

ii) Performing actual settlement

iii) Setting position limits based on upfront deposits/ margins for each TM and monitoring positions on a continuous basis. Currently, all the options contracts are cash settled

- **Clearing Mechanism**

The first step is clearing process is working out open position and obligations of clearing. The open positions of a CM is arrived at by aggregating the open positions of all the trading members (TMs) and all custodial participants (CPs) clearing through him, in the contracts which they have traded. The open position of a TM is arrived at by summing up his proprietary open position and open position of client, in the contracts which when they have traded. While entering orders on the trading system, TMs identify orders as either proprietary or client through Pro/ Cli indicators are provided in the order entry screen. Proprietary positions are calculated on net basis (buy/sell) for each contract and that of client, i.e. a buy trade is off set by a sell trade and a sell trade is off set by a buy trade. A TMs open position is the sum of proprietary open position, client open short position.

7.2 Settlement Mechanism

Option contracts have three types of settlement:

a) Daily Premium Settlement
b) Interim exercise settlement in case of option contract
c) Final settlement

a) **Daily Premium Settlement:** Buyer of an option is obligated to pay the premium towards the options purchased by him. Similarly, the seller of an option is entitled to receive the premium for the option sold by him. The premium receivable amount are netted to compute the net premium payble or receivable amount for each client for each option contract.

Although most option buyer and sellers close out their options positions by an offsetting closing transactions, an understanding of exercise can help an option buyer determine whether exercise might be more advantageous than an offsetting sale of an option. There is always a possibility of the option seller being assigned an exercise. Once an exercise of an option has been assigned to an option seller, the option seller is bound to fulfil his obligation (meaning, pay the cash settlement

amount in the case of a cash settled option) even though he may not yet have been notified of the assignment

b) Interim Exercise Settlement: Interim exercise settlement takes place only for option contracts on securities. An investor can exercise his in the money options at any time during trading hours, through his trading member. Interim exercise settlement is effected for such options at the close of the trading hours, on the day of exercise. Valid exercised option contracts with the same series (i.e. having the same underlying, same expiry date and same strike price) on a random basis, at the client level. The CM who has exercised the option receives the exercise settlement value per unit of the option from the CM who has been assigned the option contracts

c) Final Exercise Settlement: Final exercise settlement is effected for all open long in the money strike price options existing at the close of trading hours, on the expiration day of an option contract. All such long positions are exercised and automatically assigned to short positions in option contracts with the same series, on a random basis. The investor who has long in the money options on the expiry date will receive the exercise settlement value per unit of the option from the investor who has been assigned the option contract.

12.8 SUMMARY

An option is a special type of contract between two parties where one party grants the other party the right to buy or sell a specific asset or commodity (or instrument) at a specified price within a specific time period. There are only two basic type of option i.e., call option and put option.

Call option means right to buy without obligation while put option means right to sell without obligation. To get the right, the buyer has to pay premium to the seller of the option. The buyer of the option is known as option holder while the seller of the option is known as writer. There are two distinctive styles of option contract., i.e., European style and American style.

This unit has highlighted the various terminologies which are commonly used in option contract. There are the option contract, Underlying asset, Strike (Exercise Price), Expiration date, Option Premium, etc.

Further, it discussed about the Option trading system and settlement

12.9 SELF ASSESSMENT QUESTION

1) What is an Option? Briefly discuss the various types of options
2) Distinguish between Exchange Traded Options and Over the Counter Traded Option
3) Explain the following terms in the language of option finance:

a) Option Premium
b) Underlying Asset
c) Exercise Date
d) Expiration Date
e) Option Contract
f) Agreed Contract Price

4) Explain Option Trading System in detail
5) Discuss the Clearing and Settlement System for Option Trading

13

PRICING OF OPTION & FUTURES

Unit Structure

13.0 Learning Objectives

13.1 Option Pricing

(a) An Introduction to Option pricing

(b) Value of Option

(c) Deter minants of Option Pricing

(d) Option Pricing Model

13.2 Binomial Option Pricing Model(BOPM)

13.3 Summary

13.4 Self Assessment Question

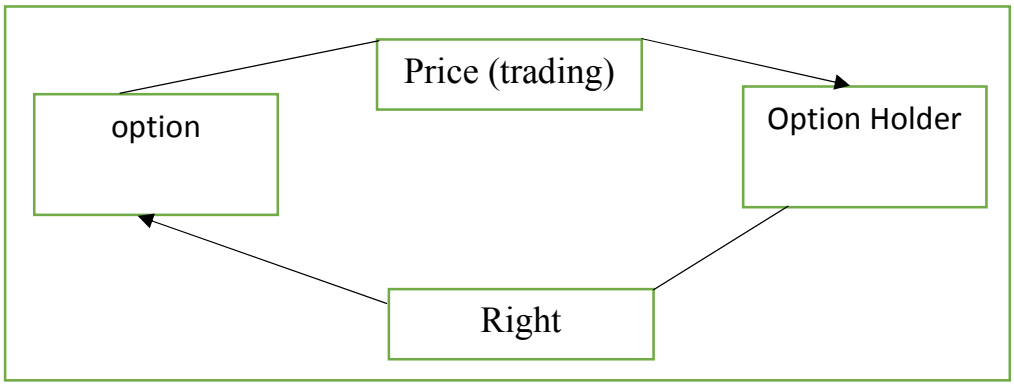
13.0 LEARNING OBJECTIVES

After studying this lesson you are able to:

- Know the basics of option pricing.
- Know about the six determinants of option pricing
- Express the upper limit and lower limit of call option as well as put option price Know the fundamentals of put-call parity
- Know the clearing and settlement system for option trading

13.1 (A) AN INTRODUCTION TO OPTION PRICING

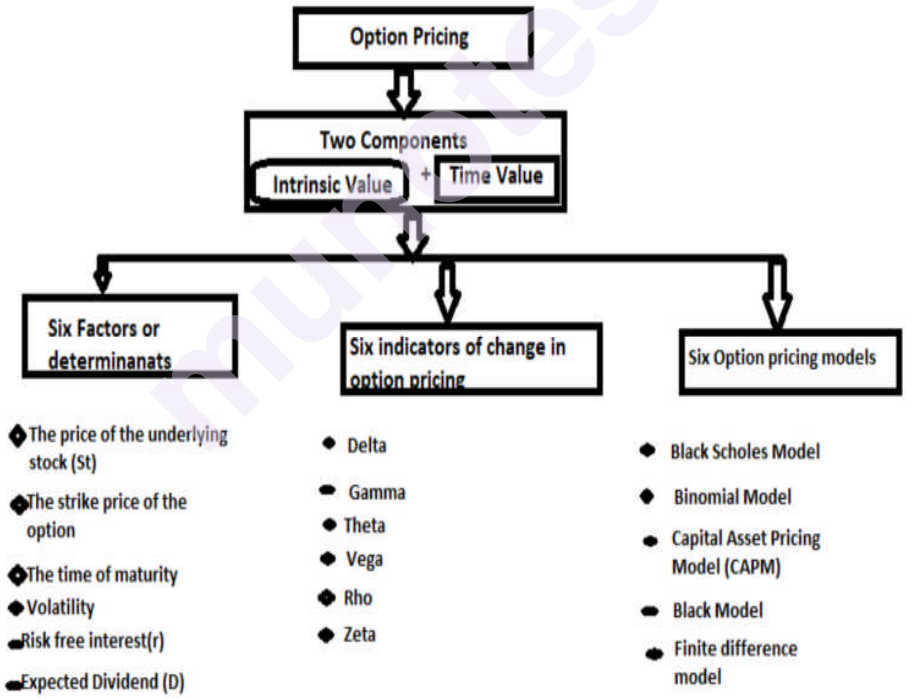
A call option gives the holder the right to buy an asset at a fixed (strike) price while the put option gives the holder the right to sell at a fixed (strike) price. Let us consider a stock option. A call option holder pays option premium to the writer of the option. In return, the option writer is obliged to sell the shares if the option is exercised by the option holder. If the stock price (St) at the time of exercise is less than the exercise price (X), the option holder will not exercise the option. In this case the liability of the option writer is nil. On the other hand, if the stock price (St) is higher than the exercise price (X), the option holder will exercise the option. The reverse situation is in case of put option. Thus, in option trading:



It is very clear that the option holder pays certain price which is otherwise known as option premium to the option writer to obtain the right to trade, i.e., to buy or sell.

Option prices have two components; prices are determined by six factors and the way prices changes are measured by six indicators (called Greeks). There are various models used to determine the option price.

To understand the option pricing one has to conceptualise each element of the following figure.



(b) Value of Option

The price of an option is determined by the option's intrinsic value and time value. It can be mathematically written as follows:

Option value = Intrensic value of an option + Time value of an option

Time value of an option = Option value – Intrinsic value of an option

- ✓ **Intrinsic Value of an Option**

  The intrinsic value of an option is the current value of the option. So, the intrinsic value of an option can be defined by the following equation:

  Intrinsic Value = Current Stock price – Strike price

  If the current trading stock price is less than or equal to the strike price, the call option is said to be out of money. If the current trading stock price is higher than the strike price, the call option is said to be in the money. Let's understand the concept by taking an example. Suppose a long call option with a strike price of `100 has stock trading at `90. So, here the stock price is less than the strike price (90< 100), and therefore, the option said to be out of the money, i.e, it has zero intrinsic value. Another long call option with a strike price of `100 has its stock trading at `110. So, here the stock price is higher than the strike price. Therefore, we can conclude the long call option is in the memory option.

  Let's take an example of a long put option. If the strike price of a long put option is `100 and the current stock price is `110, the long put option is said to be out of the money option, i.e., the option has zero intrinsic value. If the strike price of a long put option is `100 and the current stock price `90, the long put option is said to be in money option. Remember that an investor gets money in the long put option when the strike price is greater than the stock price.

  For long call and long put options, we can write the following equations for intrinsic value calculations:

  Intrinsic value for a long call option = Max (S – K, 0)
  Intrinsic value for a long call option = Max (K - S, 0)
  Where, K is the strike price & S is the stock price

- ✓ **Time Value of an Option**

  The time value of an option is the premium that an investor is willing to pay over and above the intrinsic value of an option. The buyer of a long call option speculates that in the future, the price of stock will go above the strike price and so, will generate profit for the buyer. So, for this reason, the buyer of the option is willing to pay a premium above the intrinsic value of an option. For example, if a long call option with a strike price of `100 and an option value of `20 is currently stock trading at `110, the intrinsic value of the option is `10 and the time value of the option is `10 (20-10). Taking another example, if a long call option with a strike price of `100 and an option value of `20 is currently stock trading at `90, the intrinsic value of the option is zero and the time value of the option is `20 (option value- intrinsic value).

b) Determinants of Option Price

The price at which the stock under option may be put or called is the contract prices. Sometimes, it is referred to as the striking price. During the life of the contract, the contract price remains fixed, except that

market practice is for the contract price to be reduced by the amount of any dividend paid or by the value of any stock right which becomes effective during the life of the contract. In purchasing an option the amount the buyer pays for the option privilege is called the premium, or sometimes the option money. In most option transactions, the contract price is the stock market price prevailing at the time the option is written, and the premium becomes the variable over which buyer and seller bargain.

There are six factors influencing the value of an option. These are:

1. Current Price of the Underlying Security (St) at Maturity

We know that pay-off an option is calculated by comparing the current price (St)of the underlying asset with its strike price (X). Thus:

Option	Call option	Put Option
Pay-off	(St – X)	(X - St)

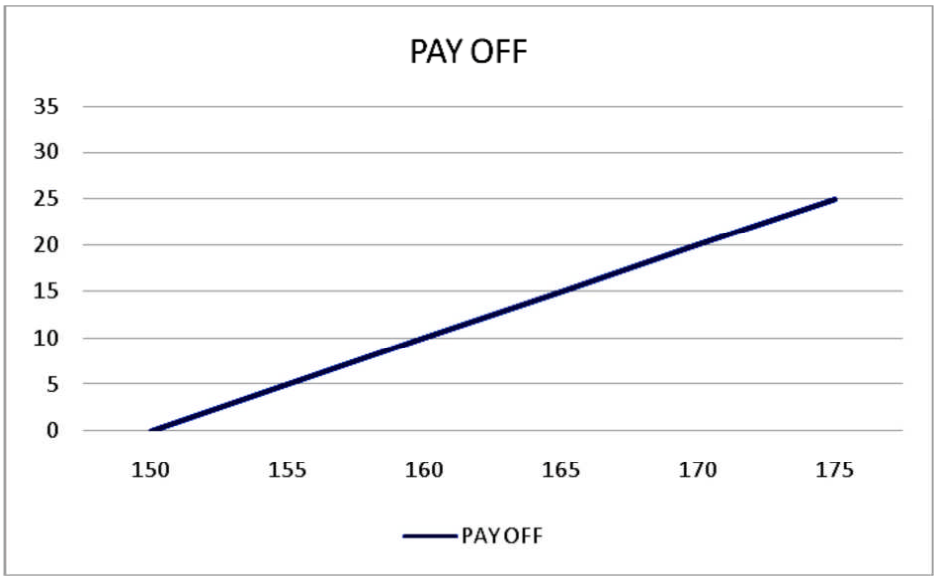
In case of increase in the value of underlying asset, the value of call option will increase and the value of put option will decrease. In case of decrease in the value of underlying asset, the value of call option will decrease and the value of put option will increase.

Thus, the higher the asset price, the higher is the chance that it will rise above the exercise price and therefore, the higher the premium for call option. On the other hand, the higher the asset price, the lower is the chance that it will fall below the strike price and therefore, the premium for the put option would be lower.

Example:

Call Option

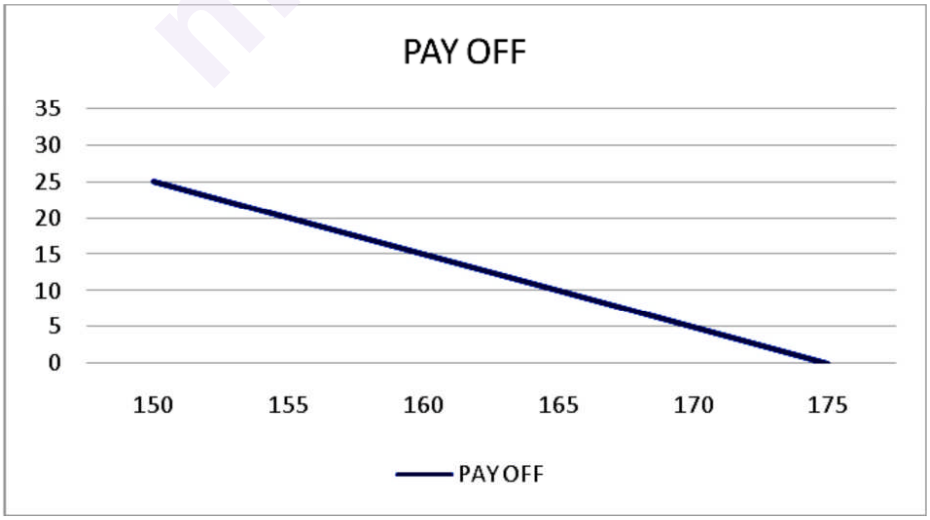
Current Stock (St)	Strike Price (X)	Pay-off (St – X)
150	150	0
155	150	05
160	150	10
165	150	15
170	150	20
175	150	25



Call Option Price and Current Price of the Underlying

Put Option

Current Stock (St)	Strike Price (X)	Pay-off (St – X)
150	175	25
155	175	20
160	175	15
165	175	10
170	175	05
175	175	0



Put Option Price and Current Price of the Underlying

2. Strike (Exercise) Price of an Option (X)

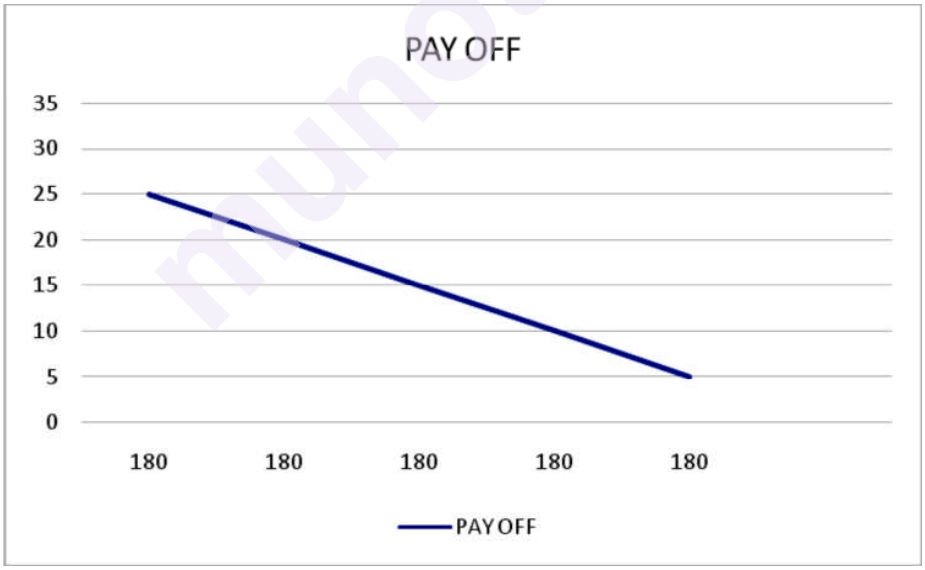
A call option will be exercised only when the price of the underlying asset at maturity (St) exceeds the strike price (X). A put option will be exercised only when the strike price exceeds the price of the underlying asset at maturity. The pay off in both option may be summarised in the following table:

Types of Option	Option Buyer (Holder)	Option Seller (Writer)
Call Option	Max [0,(St – X)]	Min [0,(X - St)
Put Option	Max [0,(X–St)]	Min [0,(St – X)]

Example:

Call Option

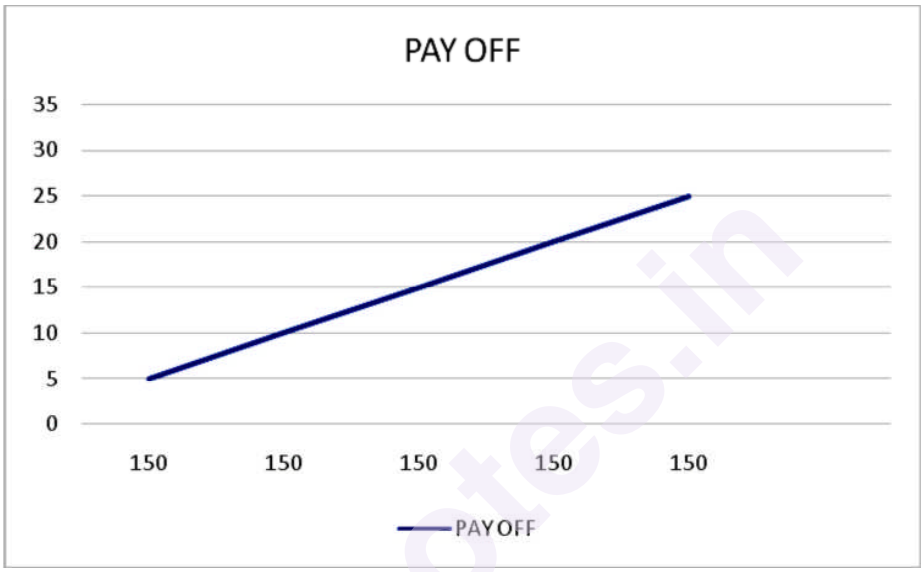
Current Stock (St)	Strike Price (X)	Pay-off (St – X)
180	155	25
180	160	20
180	165	15
180	170	10
180	175	5



Strike Price and Call Option Value

Put Option

Current Stock (St)	Strike Price (X)	Pay-off (St – X)
150	155	5
150	160	10
150	165	15
150	170	20
150	175	25



Strike Price and Put Option Value

In case of call option, the lower the strike price, the higher would be the pay-off. This means the value of the call will be higher and ultimately the option premium will be higher. Logically, if the strike price of an option contract is lower, then the asset price will easily exceed this level. Accordingly, the option seller (writer) will demand for higher premium because the profitability of exercising the option by the option by the option holder is very less. The situation is the reverse for a put option.

From, the above, it is clear that there is a negative correlation between strike price and option value in case of call option and positive correlation between call option and positive correlation between strike price and option value in case of put option.

3. Time of Maturity (T)

Time to maturity is one of the important factor which influence the option value. Generally, the option the time taken for maturity, the higher is the option value. Because, the longer the life of an option, the greater the chances of price fluctuations.

Option value is the aggregate of its intrinsic value and time value. As an option's expiration date approaches, its time value diminishes and ultimately becomes zero.

4. Volatility of the Underlying Security (σ)

Volatility of the underlying asset influences the value of an option. The fluctuation in the price of an asset brings risk to the investors. Options are used to manage such risk. For example, the call option protects the option holder against upward movement of the price and a put option protects against downward movement of price. But the degree of variability (i.e., volatility) in the prices of the underlying assumes risk contents in the dealings. The volatility is measured by Standard Deviation (σ). Both call options and put options become more valuable when volatility of the underlying asset increase.

5. Risk free Interest Rate (R)

The risk interest rate affects the price of an option indirectly.
There are two fold effect of risk free interest on option contract. These are:

Cause	Effects
Increase in the interest rate in an economy (country as a whole)	i. The price of underlying will rise. ii. The present value of future cash flow receives by the holder of the option decreases.

In case of a call option, the exercise price is fixed at the time of contract. The holder pays this contract price at a future date when he exercises his option.

Similarly, in case of a put option, the option holder receives the exercise price at a future date when he exercise his option.

The present value of the exercise price depends on the interest rate (r) and the time until the expiration of the option (T)

Example:

Exercise Price	Risk free Interest Rate	Time to Expiration	Present Value of Exercise Price
240	10%	1 year	$\frac{240}{1.10} = 218.18$
240	11%	1 year	$\frac{240}{1.11} = 216.2$
240	12%	1 year	$\frac{240}{1.12} = 214.2$

From the above example, it is clear that if the interest rate rises, the present value declines. This situation will be favourable to the call holder and unfavourable to the put holder. Thus, the call option price increases as

the risk free interest rate increases and vice versa. Similarly, the put option price declines as the risk free interest rate increases

6. Dividends Expected During the Life of the Asset (D)

The most common popular type of call option is the option on stocks.

Sometimes, stock can be sold just before the declaration of dividend i.e., dividend has become due to the shareholder but has not been received by him. In such circumstances, if the market price includes the accrued dividend, then the price will be higher to the extent of such dividend. In this case, the buyer will receive such dividend as and when the dividend will be paid by the company. Thus, when the stock price includes dividend, the price is called cum-dividend price.

Contrary to this, if the market price of stock does not include such dividend, then the buyer pays only the normal market price and ultimately the seller receives the accrued dividend as it is due to him. Thus, when the stock price does not include the amount of dividend, then such price is called ex-dividend price.

In option trading, dividends that are expected during the life of the option are another determinant of the option price. Particularly, in case of Ex-dividend price, the call value will decrease and put value will increase. To provide protection to the option holder, the option contract generally specifies that the exercise price and the number of shares will be adjusted for stock splits and stock dividends.

(C) Option Pricing Model

13.2 THE BINOMIAL OPTION PRICING MODEL (BOPM)

- **Introduction**

In finance, the Binomial Option Pricing Model (BOPM) provides a generalisable numerical method for the valuation of options. The original version of this Binomial model was developed by John Cox, Stephen Ross and Mark Rubinstein in 1979. This model is also known as C-R-R model.

This model is a “discrete- time” model, because it breaks down the total time to expiration into potentially a very large number of time intervals or steps. These steps form a tree like format. At each step, it is assumed that the price of the underlying asset say stock will up or down by an amount calculated using volatility and time to expiration. Thus, this model is based on binomial approach. This approach assumes that the price of the stock at every point of time may have only two possible states i.e., move up or move down.

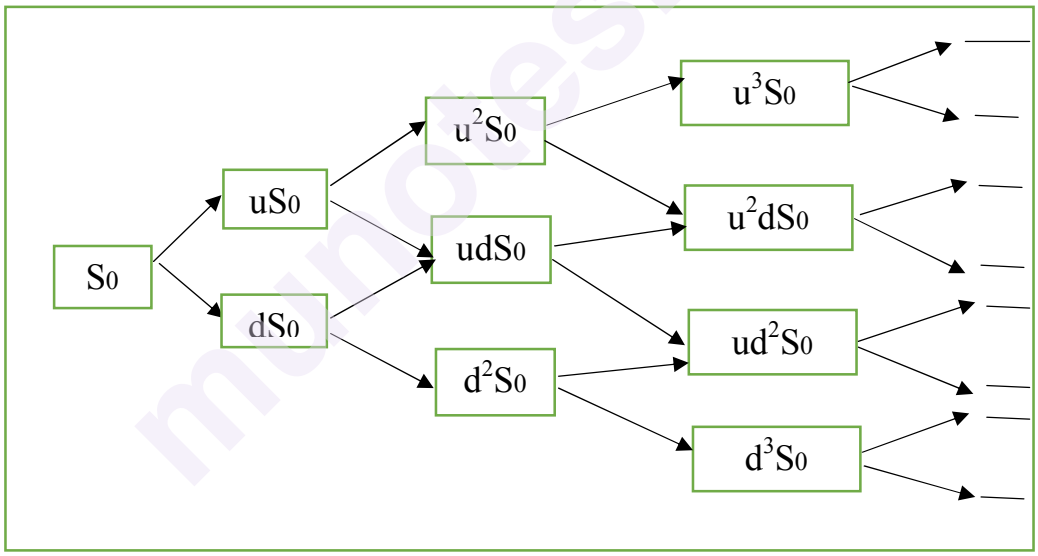
Initially, a tree of stock prices is drawn showing the possible stock prices at every point of time forward from (left to right). This tree is commonly known as Binomial Tree.

The Su and Sd are calculated using the assumptions of how much would be the upward movement and how much would be the downward movement. The mathematical formula for calculating Su and Sd are as follows:

$Su = S \times u$, $Sd = S \times d$

Where, S is the current price of the underlying asset
u is the upward movement in the price of the asset
d is the downward movement in the price of the asset.
Let's say a stock is trading at ₹100, and the upward and downward movements expected are 25% and 20% respectively. Then, the upward movement u is 1.25 and Su equals ₹125, and the downward movement d is 0.80 and Sd equals `80.

u- up, d- down



Point to Note:

i. This Binomial tree produces a binomial distribution of underlying stock prices.
ii. The Binomial tree represents all the possible paths that the stock price could take during the life of the option.

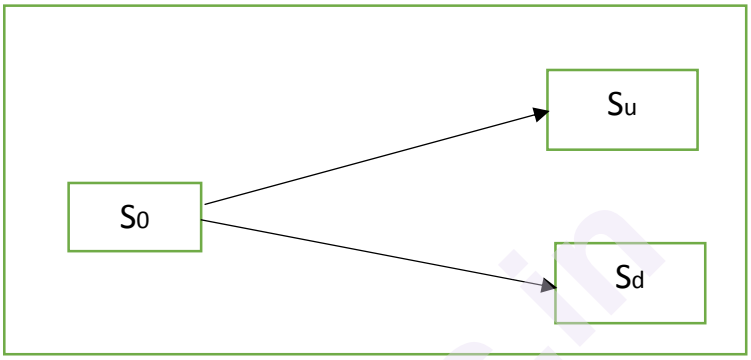
From the above concept, we may define a BOPM tree as follows:

"

A BOPM tree is an option pricing model, obeys a binomial generating process, in which the underlying stock can assume one of only two possible discrete values in the next time period, for each value that it can take in the proceeding time period.

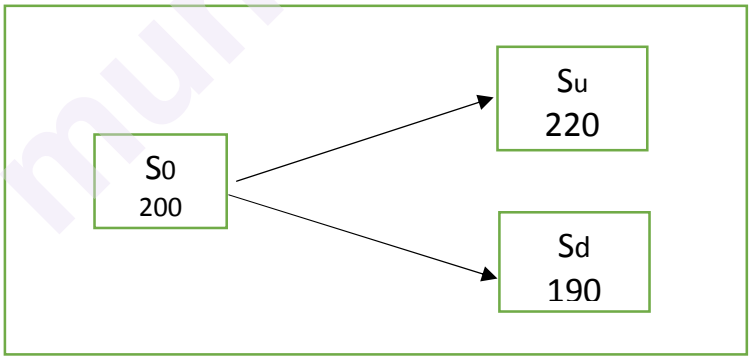
The tree must be systematically structured and ended at the expiration of the option. The most important concept of this model is that all the terminal option prices for the final possible stock price are known as they simply equal to their intrinsic value. Thus, the option values at the final points of times are calculated first.

Next option prices at each step of the tree are calculated working back from expiration to present. The option prices at each step are used to derive the option prices at next step of the tree. For calculating the option prices, this BOPM uses "Risk Neutral Valuation'' method.



Example 1: The current market price of a stock is 200. It is expected that the price may either move up by 10% or move down by 5% by the end of the month.

Here, S0 = 200 up factor (u) = 10%, down factor (d) = 5%
Now we represent the above facts in the following binomial tree.



In the above example, we may calculate u factor and d factors:

u factor $= \frac{Su}{S0} = \frac{220}{200} = 1.10$

d factor $= \frac{Sd}{S0} = \frac{190}{200} = 0.95$

Note: By definition $u \geq 1, and\ 0 < d \leq 1.$

The risk neutral valuation is based on the following three factor

i. Probabilities of the stock prices moving up or down.

ii. The risk free rate of interest.
iii. The time interval of each step.

- **Assumption of the Binomial Option Pricing Model**

There are five basic assumptions underlying these BOPM which are stated as follows:

I. **Stock price movements obeys the binomial process is short periods-**

This BOPM assumes that during a short interval of time, the stock can take only two values – the up move or the down move. Thus, the underlying stock price will either:

- Increasing by a factor of u % (an up tick)
- decreasing by a factor of d % (an down tick)

Let the original stock price is (S0) at the initial point of time say (t0). Then the stock price moves to one of the two new values say Su(up value) and Sd(down value) at the next point of time say (t1).

II. **Use of priori or transition probability to quantity the uncertainty about stock price movements**

The uncertainty is that we do not know which of the two states (up or down) will happen. But we can able to determine the chance of happening such upward or downward state in advance by using priori or transition probability.

The up (u) and down (d) factor are calculated using the underlying volatility (d) and the time duration of a step (t). Taking the condition that the variance of the log of the price is d^2t, we have

$$u=e^{\sigma\sqrt{t}}$$

$$d=e^{-\sigma\sqrt{t}}=\frac{1}{u}$$

Priori or transition probabilities for price movement. The probability of an up movement is assumed to be (P) and the probability of a down movement is assumed to be (1 – P).

Formula:- $P=\frac{e^{rt}-d}{u-d}$

Example 1:

If u = 1.1, d = 0.9, r =0.12 and t = 3 months = 0.25. Find probability of up movement and probability of down payment.

Solution: We denote probability of up movement is P and probability of down payment is (1- P). P is calculated by using the following formula:

$$P = \frac{e^{rt} - d}{u - d}$$

$$P = \frac{e^{0.12 \times 0.25} - 0.9}{1.1 - 0.9}$$

$$P = \frac{e^{0.3} - 0.9}{0.20}$$

P= 0.6523

The probability of down movement is 1 - P = 1- 0.6523 = 0.3477

Example 2

Current stock price is `160 at time (t0). It will go up by 20 % or down by 10% in the next point of time (t1). Suppose the probability of the up move is 0.6. Find out the expected stock price at time t1. Use binomial model.

Solution:

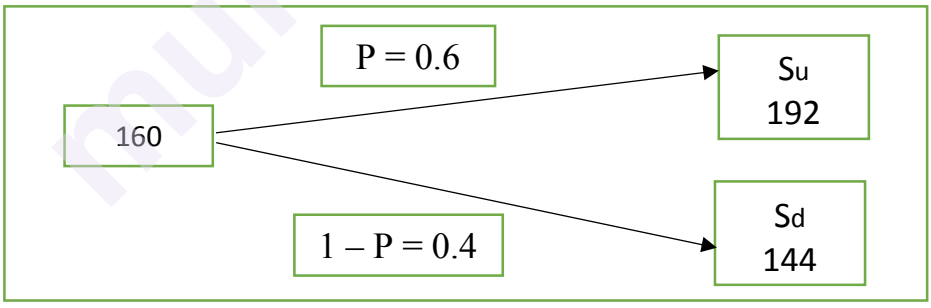
Here S0= `160 Su = $160 \times \frac{120}{100} = 192$

P = 0.6

Sd = $160 \times \frac{90}{100} = 142$

1 – P = 0.4

Now we draw the binomial tree:



III. **Constant Interest Rate (r% Per Period):** It is assumed that there is no interest rate uncertainty. The one period interest rate (r) is constant over the life of the option.

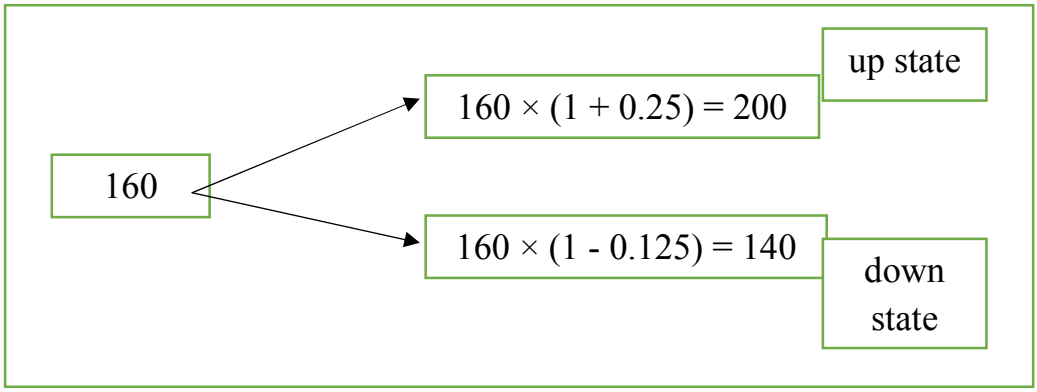
Example:3

A stock is currently priced at ₹160. In one month, the stock price may go up by 25 %, or go down by 12.50%. The strike price is ₹180. Find pay- off of a call option. Use binomial tree.

Solution:

Computation of stock price at t1

Pay-off = 200 – 180 = 20



IV. Markets are Perfect:

- ✓ No arbitrage opportunities
- ✓ No commission
- ✓ No bid ask spreads
- ✓ No taxes
- ✓ No margin requirement
- ✓ No transaction cost.
- ✓ No dividends

V. Participants use Red Ocean Strategy: Red Ocean Strategy implies to involve in full competition. Thus, the market participants act as price takers and not the price makers.

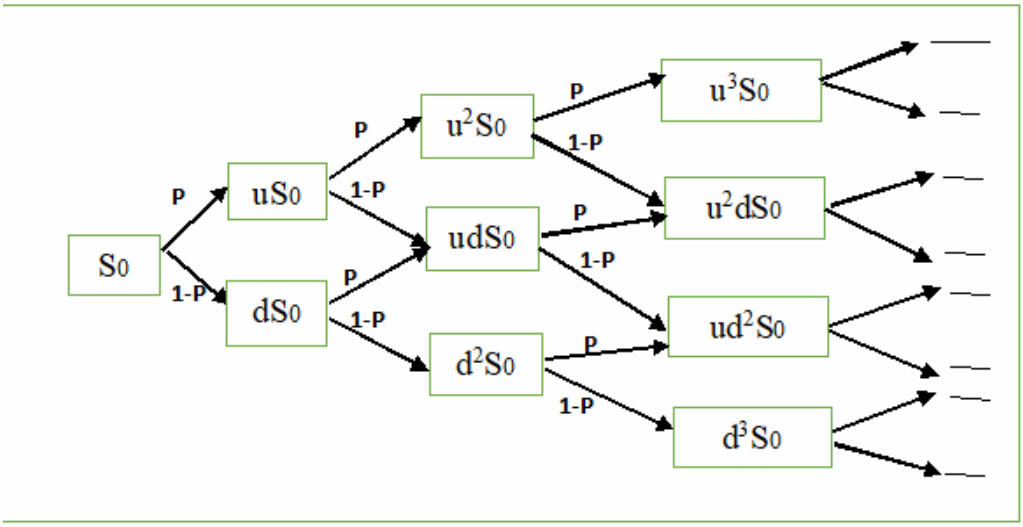
▪ **Characteristics of the Binomial Option Pricing Model**

There are five important features of C-R-R option pricing model. These are

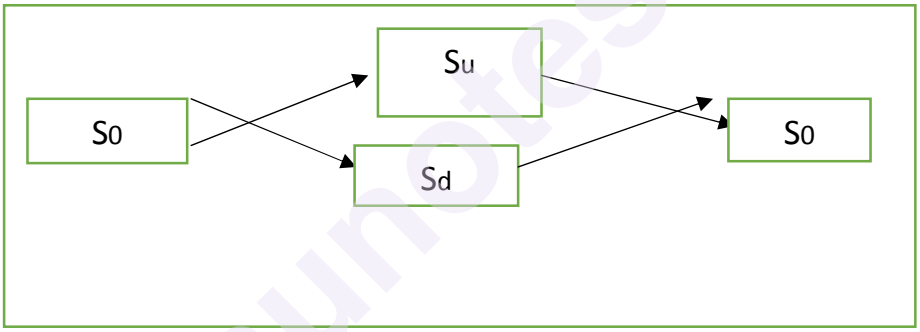
a. It is Constant Discrete time model: This model breaks down the total time of expiration into potentially a very large number of time intervals. The length of such time intervals remain constant throughout the Binomial tree. The end of each time interval is known as ‘ node’.

b. Volatility remains constant throughout model: Volatility is the variability about the mean value of the stock price. It is measured by standard deviation (**σ).** The volatility represented by standard deviation remains constant throughout the binomial tree.

c. The probability of an up movement and down movement remain constant throughout the model.



d. **The Binomial tree is recombinant:** The Binomial model ensures that the tree is recombinant, i.e., if the underlying asset moves up and then down (u,d) the price will be same as if it had moved down and then up (d, u). Here the two paths merge or recombine.



e. **Option Price is determined by Backward Process Calculation:** The option price at each step of the tree are calculated working back from expiration to the present. The option prices at each step are used to derive the option prices at the next step of the tree using risk neutral valuation method. The value computed at each stage is the value of the option at that point in time.

13.3 SUMMARY

- A call option gives the holder the right to buy an asset at a fixed (strike) price while the put option gives the holder the right to sell at a fixed (strike) price.

- **Intrinsic Value of an Option**

  The intrinsic value of an option is the current value of the option. **Intrinsic Value = Current Stock price – Strike price**

- **Time Value of an Option**

  The time value of an option is the premium that an investor is willing to pay over and above the intrinsic value of an option. The buyer of a long call option speculates that in the future, the price of stock will go above the strike price and so, will generate profit for the buyer.

- **Determinants of Option Price**
  - Current Price of the Underlying Security (St) at Maturity
  - Strike (Exercise) Price of an Option (X)
  - Time of Maturity (T)
  - Volatility of the Underlying Security (σ)
  - Risk free Interest Rate (R)
  - Dividends Expected During the Life of the Asset (D).

- **The Binomial Option Pricing Model (BOPM)**

  This model is also known as C-R-R model. This model is a "discrete-time" model, because it breaks down the total time to expiration into potentially a very large number of time intervals or steps. These steps form a tree like format. At each step, it is assumed that the price of the underlying asset say stock will up or down by an amount calculated using volatility and time to expiration.

13.4 SELF-ASSESSMENT QUESTION

1) What is option price? Explain the two components of option value?

2) What are the six variables that affect option pricing?

3) What do you mean by BOPM? Discuss its important characteristics.

4) What are the assumptions of BOPM?

14

DIFFERENCE BETWEEN FUTURE, OPTIONS, FORWARDS & BADLA CONTRACTS

Unit Structure

14.0 Learning Objectives

14.1 Distinguish between Forward Contract and Future Contract

14.2 Distinguish between Option Contract and Future Contract

14.3 Distinguish between Badla Contract and Future Contract

14.4 Self Assessment Question

14.0 LEARNING OBJECTIVES

After studying this lesson, you are able to:

- Understand the difference between Forward, Future, Option and Badla Contract

14.1 DISTINCTION BETWEEN FORWARD CONTRACTS AND FUTURE CONTRACTS

Sr. No.	Points of Distinction	Forward Contracts	Future Contract
1	Concept	A forward contract is an agreement between two parties to buy or sell an asset(which can be of any kind) at a certain future date for a certain price agreed upon now.	A futures contract is a standardised contract, traded on a future exchange, to buy or sell a certain underlying instrument at a specified price, at a certain future date.
2	Structure	The contract is customised to the needs of the parties. Usually, initial payment is not required.	This contract is standardised to the needs of the customers. Initial payment is needed.

3	Trading Place	Private deal and traded on OTC(over the counter)	Traded through specified or recognised stock exchanges only.
4	Method of Transaction	Direct negotiations between buyer and the seller	Quoted and traded on the exchange.
5	Delivery Date	One specified delivery date in future.	Range of delivery date.
6	Nature of Settlement	Only on the date of maturity. A forward contract may be settled by physical delivery of the asset.	Daily settlement through mark to market process or by differential cash settlement.
7	Size of the Contract	Depends on how big the transaction and what are the requirements of the transaction.	The size of the contract is standardised through Future Exchange.
8	Risk	There is a chance of non-performance risk as well as credit default risk.	No such chances occur in a future contract as it is an Exchange traded deal.
9	Quantum of counterparty risk	High counterparty risk	Low counterparty risk

14.2 DISTINCTION BETWEEN OPTIONS CONTRACTS AND FUTURES CONTRACTS

Sr. No.	Points of Distinction	Options	Futures
1	Right and Obligation	An option gives the buyer the right but not the obligation while the seller has an obligation to comply with the contact. It represents a right to one partly and an obligation on the other.	In case of futures, there is an obligation on the part of the buyer and the seller. It represents an obligation to both a buyer or seller

2	Premium and Margins	Buyer of the option contracts pay premium to the seller of the contracts for obtaining the right. It is non-refundable whether the option is exercised or not.	Both buyer and seller have to deposit upfront margin with the exchange. Different types of margins like initial margin, maintenance margin and variation margins etc. are to be deposited by the traders.
3	Pay-off (Profit/ Loss)	The buyers of option contracts have the possibility of unlimited profit but their losses are restricted to the premium paid. Seller of the option contracts have the possibility of limited profit only to the extent of the premium received but they are exposed to the possibility of unlimited losses	In case of raise in futures prices, the buyer gains and vice versa. The position is opposite in case of the seller of the future contract. Thus both buyer and seller face the possibility of unlimited gain or loss.
4	Common users in the Derivative Market	Options are preferential derivative contracts for the hedgers in the derivative market to minimise risk. Normally, they are the covered call writers.	Futures are the preferential contracts for the speculators in the derivative market to maximise profit. Normally, they are the call holders
5	Pricing Methods	Binomial option pricing model and Black-Scholes model are used.	Cost of carry model, Expectation model, Normal Backwardation model and CAPM are used.

14.3 DISTINGUISH BETWEEN BADLA CONTRACT AND FUTURE CONTRACT

Badla	Futures
Expiration date unclear	Expiration date known
Spot market and different expiration dates are mixed up	Spot market and different expiration dates all trade distinct from each other.
Identity of counterparty often known	Clearing corpn. is counterpart
Counterparty risk present	No counterparty risk
Badla financing is additional source of risk	No additional risk
Badla financing contains default-risk premia	Financing cost at close to riskless thanks to counterparty guarantee
Asymmetry between long and short	Long and short are symmetric
Position can breakdown if borrowing/lending proves infeasible	You can hold till expiration date for sure, if you want to

14.4 SELF ASSESSMENT QUESTION

1. Distinguish between
   a) Forward Contract and Future Contract
   b) Option Contract and Future Contract
   c) Badla Contract and Future Contract

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