

# Investment Analysis and Portfolio Management

(As per the Revised Syllabus 2016 - 17 of Mumbai University for T.Y.BMS, Semester – V)

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# **Preface**

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**Authors**

# Syllabus

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**BACHELOR OF MANAGEMENT STUDIES PROGRAMME AT SEMESTER V WITH EFFECT  
FROM THE ACADEMIC YEAR 2016-2017**

## **Investment Analysis and Portfolio Management**

[60 Lectures: 3 Credit]

### **MODULES AT A GLANCE**

<b>Sr. No.</b>	<b>Modules</b>	<b>No. of Lectures</b>
1	Introduction to Investment Environment	15
2	Risk-Return Relationship	15
3	Portfolio Management and Security Analysis	15
4	Theories, Capital Asset Pricing Model and Portfolio Performance Measurement	15
	<b>Total</b>	<b>60</b>

### **OBJECTIVES**

<b>Sr. No.</b>	<b>Objectives</b>
1	To acquaint the learners with various concepts of finance.
2	To understand the terms which are often confronted while reading newspapers, magazines, etc. for better correlation with the practical world.
3	To understand the various models and techniques of security and portfolio analysis.

<b>Unit No.</b>	<b>Name of the Topic</b>	<b>No. of Lectures</b>
<b>Unit 1</b>	<b>Introduction to Investment Environment</b>	<b>(15)</b>
	<p><b>(a) Introduction to Investment Environment</b></p> <ul style="list-style-type: none"> <li>• Introduction, Investment Process, Criteria for Investment, Types of Investors, Investment vs. Speculation vs. Gambling, Investment Avenues, Factors Influencing Selection of Investment Alternatives.</li> </ul> <p><b>(b) Capital Market in India</b></p> <ul style="list-style-type: none"> <li>• Introduction, Concepts of Investment Banks, its Role and Functions, Stocks, Market Index, The NASDAQ, SDL, NSDL, Benefits of Depository Settlement, Online Share Trading and its Advantages, Concepts of Small Cap, Large Cap, Midcap and Penny Stocks.</li> </ul>	
<b>Unit 2</b>	<b>Risk-Return Relationship</b>	<b>(15)</b>
	<ul style="list-style-type: none"> <li>• Meaning, Types of Risk–Systematic and Unsystematic Risk, Measurement of Beta, Standard Deviation, Variance, Reduction of Risk through Diversification, Practical Problems on Calculation of Standard Deviation, Variance and Beta.</li> </ul>	
<b>Unit 3</b>	<b>Portfolio Management and Security Analysis</b>	<b>(15)</b>
	<p><b>(a) Portfolio Management</b></p> <ul style="list-style-type: none"> <li>• Meaning and Concept, Portfolio Management Process, Objectives, Basic Principles, Factors Affecting Investment Decisions in Portfolio Management, Portfolio Strategy Mix.</li> </ul> <p><b>(b) Security Analysis</b></p> <ul style="list-style-type: none"> <li>• Fundamental Analysis, Economic Analysis, Industry Analysis, Company Analysis, Technical Analysis – Basic Principles of Technical Analysis, Uses of Charts: Line Chart, Bar Chart, Candlestick Chart, Mathematical Indicators; Moving Averages, Oscillators.</li> </ul>	
<b>Unit 4</b>	<b>Theories, Capital Asset Pricing Model and Portfolio Performance Measurement</b>	<b>(15)</b>
	<p><b>(a) Theories</b></p> <ul style="list-style-type: none"> <li>• Dow Jones Theory, Elloit Wave Theory, Efficient Market Theory.</li> </ul> <p><b>(b) Capital Asset Pricing Model</b></p> <ul style="list-style-type: none"> <li>• Assumptions of CAPM, CAPM Equation, Capital Market Line, Security Market Line.</li> </ul> <p><b>(c) Portfolio Performance Measurement</b></p> <ul style="list-style-type: none"> <li>• Meaning of Portfolio Evaluation, Sharpe’s Ratio (Basic Problems), Treynor’s Ratio (Basic Problems), Jensen’s Differential Returns (Basic Problems).</li> </ul>	

# Question Paper Pattern

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**Duration: 2.5 hours**

**75 Marks**

**N.B:** 5 questions of 15 marks each.

All questions are compulsory.

**Q. 1 Attempt any 2**

(a)

7.5 Marks

(b)

7.5 Marks

(c)

7.5 Marks

**Q. 2. Attempt any 2**

(a)

7.5 Marks

(b)

7.5 Marks

(c)

7.5 Marks

**Q. 3. Attempt any 2**

(a)

7.5 Marks

(b)

7.5 Marks

(c)

7.5 Marks

**Q. 4. Attempt any 2**

(a)

7.5 Marks

(b)

7.5 Marks

(c)

7.5 Marks

**Q. 5. Case Study**

**15 Marks**

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### **Chapter Contents:**

- 1.1 What is Security?
- 1.2 Investment Objectives
- 1.3 Investment and Speculation
- 1.4 Elements of Investment
- 1.5 Factors Influencing Selection of Investment Alternatives
- 1.6 Investment v/s Speculation v/s Gambling
- 1.7 Exercises

### **1.1 WHAT IS SECURITY?**

A security means a document that gives its owner a specific claim of ownership of a particular finance asset. Financial market provide facilities for buying and selling of financial claims and services. Thus, securities are financial instruments which are bought and sold in the financial market for investment. The important financial instruments are shares, debentures, bonds, etc. Other financial instruments are also known as securities such as Treasury Bill, Mutual Fund Units, Fixed Deposits, Insurance Policies, Post Office Savings like National Savings Certificates, Kisan Vikas Patras, Public Provident Funds, etc. Some of these securities are transferable while some of them are not transferable.

### **1.2 INVESTMENT OBJECTIVES**

Investment is a widespread practice and many have made their fortunes the process. The starting point in this process is to determine the characteristics of the various investment and then matching them with the individuals need and preferences. All personal investing is designed in order to achieve certain objectives. These objectives may be tangible such as buying a car, house, etc., and intangible objectives such as social status, security, etc. Similarly, these objectives may be classified as financial or personal objectives. Financial objectives are safety, profitability and liquidity. Personal or individual objectives may be related to personal characteristics of individual such as family commitments, status, etc.

The objectives can be classified on the basis of the investors approach as follows:

- (a) **Short-term high priority objectives:** Some investors have high priority towards achieving



certain objectives in short time. For example, a young couple will give high priority to buy a house.

- (b) **Long-term high priority objectives:** Some investors look forward and invest on the basis of objectives of long-term needs. They want to achieve financial independence in long period. For example, investing for post-retirement period or education of child, etc.
- (c) **Low priority objectives:** These objectives have low priority in investing. These objectives are not painful. After investing in high priorities assets, investors can invest in these low priority assets. For example, provision for tour, domestic appliance, etc.
- (d) **Money making objectives:** Investors put their surplus money in this kind of investment. Their objective is to maximize wealth. Usually, the investors invest in shares of companies which provides capital appreciation apart from regular income from dividend.

### **1.3 INVESTMENT AND SPECULATION**

“Speculation, is an activity, quite contrary to its literal meaning, in which a person assumes high risks, often without regard for the safety of his invested principal, to achieve large capital gains.” The time span in which the gain is sought to be made is usually very short.

Investment involves putting money into an assets which is not necessarily in order to enjoy a series of returns. The investor sacrifice some money today in anticipation of a financial return in future. He indulges in a bit of speculation. There is an element of speculation involved in all investment decisions. However, it does not mean that all investment are speculative by nature. Genuine investments are carefully thought out decisions. On the other hand, speculative investments are not carefully thought-out decisions. They are based on tips and rumours.

An investment can be distinguished from speculation in three ways—risk, capital gain and time period. Risk has definite financial meaning it is a possibility of incurring a loss in a financial transaction. Investment involves limited risk while speculation is considered as an investment of funds with high risk. Speculation involves buying a security at a low price and selling at a high price to make a capital gain. Investment involves longer-term allocation of funds, whereas speculation involves holding a security for a short-term and trading quickly for earning higher gain.

Speculation involves a higher level of risk and a more uncertain expectation of return. Investments are not risk-free but the risk can be calculated. The expected return is consistent with the risk of investment.

### **1.4 ELEMENTS OF INVESTMENT**

- (a) **Return:** Investors buy or sell financial instruments in order to earn return on them. The return on investment is the reward to the investors. The return includes both current income and capital gains or losses, which arises by the increase or decrease of the security price.
- (b) **Risk:** Risk is the chance of loss due to variability of returns on an investment. In case of every investment, there is chance of loss. It may be loss of interest, dividend or principal amount of investment. However, risk and return are inseparable. Return is a precise statistical term and it is measurable. But the risk is not precise statistical term.
- (c) **Time:** Time is an important factor in investment. It offers several different courses of action. Time period depends on the attitude of the investors who follows a ‘buy and hold’ policy. As time moves on analysts believe that conditions may change and investors may reevaluate expected return and risk for each investment.

## 1.5 FACTORS INFLUENCING SELECTION OF INVESTMENT ALTERNATIVES

There are several constraints that an individual has to take into account before making an investment. These include:

**1. Liquidity:** This is one of the parameters used to measure the efficiency of an investment alternative or instrument. Liquidity is the ability to convert an investment into money. Higher the liquidity for an investment, higher would be its demand and vice versa. At the same time, marketability is the measure of demand for an investment instrument. The higher the demand, the easier it is to find a buyer. Liquidity of an investment provides security to the investor that the money would be available when needed. By way of example, Mrs Rupiah may sell the shares invested in a company any time because they have yielded high returns to pay off a house loan

**2. Age:** The ability of an individual to take risk is linked with his/her age. Typically, the higher the age of an individual, the low is the risk appetite or tolerance.

**3. Taxes:** The government declares tax benefits for citizens through rebates, exemptions etc and these should be considered while making any investment. For example, under Sec 80CCC an investor gets tax benefit for his investments in ELSS (Equity Linked Savings Schemes). Investors need to take a call between the tax benefit and returns these schemes offer. Other options may not have a tax benefit but may be more lucrative in terms of returns.

**4. Need For Regular Income:** Investors may have a need to obtain periodical or regular returns and this will influence their decision to invest in such instruments

**5. Time Horizon:** As explained before, the time horizon will vary from short term (as short as one day) to long term which could be a few months to several years

**6. Risk Tolerance:** Investment decisions are always a trade off between the risk appetites of the investor versus the returns expected. This relation has already been explained.

**7. Lack of time:** Some investment instruments like equity (shares), mutual funds, real estate, and insurance products need a fair amount of analysis to ensure that the return profile is understood. Sometimes investors, typically professionals like doctors or lawyers who are interested in these investments, may not be able to spare the required time for performing the analysis. They may then seek the help of an intermediary or an advisor. The advisor's investment objectives may or may not match with those of the investor and this in itself constitutes a risk. Therefore, there is no excuse to blindly relying on someone's advice without possessing reasonable knowledge of the investment

**8. Price Discovery:** Several assets such as shares are very active market instruments and may be volatile. This creates uncertainty in the minds of the buyer as to the direction the price will move towards if they buy. Will it come down leading to a loss or go up resulting in profit?

## 1.6 INVESTMENT V/S SPECULATION V/S GAMBLING

There is often some confusion between the terms investment, speculation and gambling. This confusion is often linked with investments made in the stock market. Investing is NOT gambling. Gambling is putting money at risk by betting on an uncertain outcome with the hope that you might win money. Part of the confusion between investing and gambling, however, may come from the way some people use investment vehicles. For example, it could be argued that buying a stock based on a 'hot tip' is essentially the same as placing a bet at a casino.

A 'real' investor does not simply throw his money at any random investment. S/he first analyses the situation. If there is a reasonable expectation then only s/he invests.

Many people believe that certain investments are speculative in nature. Are they? An investment may be said to be speculative in nature when the investor takes a position on the timing of making the

investment and exiting from the same. The time horizon may be as short as a day or sometimes several weeks. Investments are deemed to be speculative because there is usually no firm basis other than a hunch or intuition for making that investment decision.

Examples of such speculative investments include buying and selling shares in what is called an intra-day trade. Mr Tradewallah may buy a share in the morning when the market opens at say ₹ 176 and hope to sell it by the end of the day at ₹ 188. Since nothing fundamentally can explain this investment decision, this may be speculative. There is the possibility that Mr Tradewallah has tracked the performance of this stock or has received a tip from Mr Brokerbhai and has taken this decision. Even in such a case, the investment is speculative. If the share finds buyers at ₹ 188 or more, the speculation has been profitable. However if the price falls and Mr Tradewallah has to exit i.e. sell the share at a lower value than his purchase price, it is speculation that results in a loss.

Points of Comparison	Investment	Market Portfolio
Planning Horizon	Usually investors have longer investment horizon which leads to few years. Investors generally opt for longer investment horizon.	A Speculator has a very short planning horizon. His holding period normally extends from few days to few months.
Risk	An investor normally is willing to assume a reasonable & moderate level of risk and he is rarely to assume high level of risk.	Speculators, knowingly or unknowingly is ready to take very high level of risk. Generally he is ready to lose basic capital also.
Return Expectation	An investor usually seeks a reasonable rate of return at limited risk offered by the asset classes.	Speculator usually has a very high return expectation and for that he is ready to bear high risk also.
Basis of Decisions	An investor focuses on fundamental aspects and evaluates the future prospects of the companies in which investment is made.	Speculator gives more importance to technical charts, news and sentiments of the market.
Leverage	Normally, investors invest only his own funds and avoids borrowed fund. Investors don't create leverage positions.	Speculators may invest borrowed funds and create leverage positions to make more money.

Some uninformed people compare investments in the stock market with gambling. It is not at all true. Gambling or betting is more to do with taking a guess at the probability of an event. For example, you want to bet who will win the cricket match. If there are only two teams, then the chances are 50:50. A coin has only two sides and here also the chances are 50:50, either head or tail. Therefore, the probability of head or tail is 50 per cent. It means that if the coin is tossed for a very large number of times - say 10 times - there will be 5 times when it will be heads and an equal number when it will be tails. However, if someone takes a guess on whether it will be heads or tails when the coin is tossed eight

times, it is not possible to predict the outcome. In this case the outcome will be a result of gambling, especially if there is payout involved.

### What is Gambling?

Gambling is fundamentally different from investment and speculation in following respects.

- **Quick Outcome:** Normally Outcome of gambling is know very quickly. The outcome of rolling a dice or the turn of a dice is almost known quickly.
- **Results don't depend on Economic activity:** Normally results of gambling are not dependent on any economic activity. For example when you create position in futures or commodities the prices of stocks or commodities are some where dependent upon economic activity but when you play card and bet on that the outcome of that doesn't depend upon any economic activity.
- **Lack of significant Economic benefit:** Generally gambling doesn't provide significant economic outcome. Whereas, investment and speculation can provide significant economic outcome.
- **Gambling should be for fun:** Normally rational people do gambling for fun and not for making money.

So it is clear that gambling should be more done for fun and not for making money.

## 1.7 EXERCISES

### Answer the following Questions

1. What is an investment? What are the objectives of investment? *(April 06)*
2. What is an investment? How it is different from speculation? *(April 09)*
3. What is an investment decision? What are the approaches to investment decision-making? *(Nov 05)*
4. What is the difference between investor and speculator?

### Objective Type Questions

State whether the following statements are True (T) or False (F).

1. Investments are concerned with risk and return.
2. Investments involve long-term commitments.
3. Speculation brings about stable return for long-term period of time.
4. Speculation is considered with review and analysis and investments with capital gain.
5. Investments are based on portfolio construction, valuation, identification and analysis.
6. The variable investments consist of cash, bonds and savings certificates.
7. The investment objective is high risk and high return.
8. Arbitrage is a long-term investment.
9. The commodity investment is through saving bank.
10. Indirect securities consist of mutual fund and life insurance securities.

**Ans:** 1. (T), 2. (T), 3. (F), 4. (F), 5. (T), 6. (F), 7. (F), 8. (F), 9. (F), 10. (T).

**Multiple Choice Questions****Choose the right Answer**

1. Which of the following is not a financial investment?
  - (i) Purchase of shares
  - (ii) Purchase of bonds
  - (iii) Purchase of car
  - (iv) Purchase of debentures
2. Which of the following is a tax saving investment?
  - (i) Fixed deposit
  - (ii) Shares
  - (iii) NSC
  - (iv) PPF
3. The fundamental analysis approach has been associated with \_\_\_\_\_.
  - (i) Uncertainties
  - (ii) Certainties
  - (iii) Ratios
  - (iv) Balance sheet
4. The object of portfolio is to reduce \_\_\_\_\_ by diversification.
  - (i) Return
  - (ii) Risk
  - (iii) Uncertainty
  - (iv) Percentage
5. Investment means
  - (i) Commitment of funds for future income
  - (ii) Net additions to economy capital stock
  - (iii) Short-term commitment of funds
  - (iv) Capital gain
6. Speculation can be distinguished from investment in the following way
  - (i) Investment is high risk, speculation is low risk
  - (ii) Investment is short-term period of time, speculation covers long term period
  - (iii) Investment is based on planning of funds for safety, liquidity, profitability, and stability. Speculation on hunches and benefits
  - (iv) Investment is your own funds, speculation consists of other people's funds
7. A gambler is one who makes planned investment
  - (i) Believes in low risk and high profits
  - (ii) Considers high risk and high profits
  - (iii) Expects other people to plan his resources in one best security
  - (iv) Buying government securities with safety of returns

**Ans:** 1. (iii), 2. (iv), 3. (i), 4. (ii), 5. (i), 6. (iii), 7. (ii).





### **Chapter Contents:**

- 2.1 Introduction
- 2.2 Non-marketable Financial Assets
- 2.3 Money Market Instruments
- 2.4 Bonds or Fixed Securities
- 2.5 Investment in Equity Market
- 2.6 Mutual Fund
- 2.7 Life Insurance
- 2.8 Investment in Real Estate
- 2.9 Investment in Precious Metals
- 2.10 Exercises

### **2.1 INTRODUCTION**

#### **Characteristics of Investments**

It is worthwhile considering the characteristics of some forms of investment popular amongst individuals. The most popular is probably the bank or building society deposit. On the upside these are free of capital risk, offer an income yield, and are usually liquid. On the downside they lack substantial growth potential, are subject to a high level of income risk and have inflation risk.

Rental, or buy-to-let, property has become popular in recent years. Such investment has growth potential and provides an income yield. On the downside it is illiquid and subject to both income and capital risk. The income risk relates to the possibility that rents fall, or that a property fails to attract tenants and remains unoccupied for long periods. The capital risk exists because property prices can fall.

An investor invests in the avenues after studying the merits and demerits of the investments. The types of investments are as:

1. Shares and debentures.
2. Government funds

3. Money market instruments
4. Public deposits
5. Bank deposits
6. Post office savings
7. HDFC schemes/Housing bank schemes
8. Mutual Fund Schemes
9. Life Insurance Schemes
10. Public provident fund
11. Gold-silver
12. Real estates

## **2.2 NON-MARKETABLE FINANCIAL ASSETS**

The financial instruments which are not transferable or saleable are known as non-marketable financial assets. The investors can invest in these instruments but they cannot transfer or sell the instruments.

A good portion of the financial assets of individual is held in the form of non-marketable financial assets like bank deposits, post office deposits, company deposits, and provident fund deposits. A distinguishing feature of these assets is that they represent personal transactions between the investor and the issuer. For example, when you open a savings bank account at a bank you deal with the bank personally. In contrast when you buy equity shares in the stock market you do not know who the seller is and you do not care. The important non-marketable financial assets held by investors are briefly described below.

1. Post office saving schemes
2. Public provident fund
3. Deposit with banks
4. Life insurance policy

### **1. Post Office Saving Schemes**

The main financial services offered by the Department of Posts are the Post Office Savings Bank. It is the largest and oldest banking service institution in the country. The Department of Posts operates the Post Office Savings Scheme function on behalf of the Ministry of Finance, Government of India. Under this scheme, more than 20.50 crores savings account are operated. These accounts are operated through more than 1,54,000 post offices across the country.

The Post offices provide a number of savings schemes like the Savings Account Schemes, Recurring Deposit Schemes, Time Deposit Schemes, Public Provident Fund Schemes, Monthly Income Schemes, National Savings Certificates, Kisan Vikas Patras, and Senior Citizens, and Savings Scheme.

#### **A. Post Office Monthly Income Scheme:**

The post office monthly income scheme (MIS) provides for monthly payment of interest income to investors. It is meant for investors who want to invest a sum amount initially and earn interest on a monthly basis for their livelihood. The MIS is not suitable for an increase in your investment. It is meant to provide a source of regular income on a long-term basis. The scheme is, therefore, more beneficial for retired persons.

#### **Features:**

- Only one deposit is available in an account.
- Only individuals can open the account; either single or joint (two or three).



- Interest rounded off to nearest rupee, i.e., 50 paise and above will be rounded off to next rupee.
- The minimum investment in a Post Office MIS is ₹ 1,000 for both single and joint accounts.
- The maximum investment for a single account is ₹ 3 lakh and ₹ 6 lakh for a joint account.
- The duration of MIS is six years.

**Returns:**

The post office MIS gives a return of 8% plus a bonus of 10 per cent on maturity. However, this 10 per cent bonus is not available in case of premature withdrawals. The minimum investment in a Post Office MIS is ₹ 1,000 for both single and joint accounts.

Deposit ₹	Monthly Interest	Amount returned on maturity
5,000	33	5,500
10,000	66	11,000
50,000	333	55,000
1,00,000	667	1,10,000
2,00,000	1,333	2,20,000
3,00,000	2,000	3,30,000
6,00,000	4,000	6,60,000

**Advantages:**

- Premature closure of the account is permitted any time after the expiry of a period of one year of opening the account.
- Deduction of an amount equal to 5 per cent of the deposit is to be made when the account is prematurely closed. Investors can withdraw money before three years, but a discount of 5%.
- Closing of account after three years will not have any deductions. Monthly interest can be automatically credited to savings account provided both the accounts standing at the same post office.
- The interest income accruing from a post office MIS is exempt from tax under Section 80L of the Income Tax Act, 1961.
- Moreover, no TDS is deductible on the interest income. The balance is exempt from Wealth Tax.

**B. Post Office Time Deposits (POTDs):**

Similar to fixed deposits if commercial banks, POTDs have features:

1. Deposits can be made in multiples of ₹ 50 without any limit.
2. The interest rates on POTDs are in general slightly higher than those on bank deposits.
3. The interest is calculated half-yearly and paid annually.
4. No withdrawal is permitted for up to six months.
5. After six months, withdrawals are permitted. However, on withdrawals made between six months and one year, no interest is payable. On withdrawal after one year, but before the term of deposit, interest is paid for the period the deposit has been held, subject to a penal deduction of 2 per cent.
6. A POTD account can be pledged.
7. Deposits in 10 years to 15 years post office cumulative Time Deposit Account can be deducted before computing the taxable income under Section 80C.



**C. Monthly Income Scheme of the Post Office (MISPO):**

A popular scheme of the post office, the MISPO is meant to provide regular monthly income for the depositors. The salient features of the scheme are as follows:

1. The term of the scheme is 6 years.
2. The minimum amount of investment is ₹ 1,000. The maximum investment can be ₹ 3,00,000 in a single account or ₹ 600,000 in a joint account.
3. The interest rate is 8.0 per cent payable monthly. A bonus of 10 per cent is payable on maturity.
4. There is no tax deduction at source.
5. There is a facility of premature withdrawal after one year, with 5 per cent deduction before 3 years.

**D. Kisan Vikas Patra (KVP):**

Scheme of the post office, the Kisan Vikas Patra has the following features:

1. The minimum amount of investment is ₹ 1,000. There is no maximum limit.
2. The investment doubles in 8 years and 7 months. Hence, the compound interest rate works out to 8.4 per cent.
3. There is no tax deduction at source.
4. KVPs can be pledged as a collateral security for raising loans.
5. There is a withdrawal facility after 2½ years.

**E. National Savings Certificate:**

Issued at post offices, the National Saving Certificate offers the following features:

1. It comes in denomination of ₹ 100, ₹ 500, ₹ 1,000, ₹ 5,000 and ₹ 10,000
2. It has a term of 6 years. Over this period ₹ 100 becomes ₹ 160.1. Hence, the compound rate of return works out to 8.16 per cent
3. Investment in NSC can be deducted before computing the taxable income under Section 80C.
4. There is no tax deduction at source.
5. It can be pledged as collateral for raising loans.

**F. Investment in Government Securities:**

It is possible through post offices. Here, the terms and conditions are fixed by the government. Thus, post office provides various schemes for safe investment of interest rates are reduced considerably in recent years. Personal attention are not given by the staff due to use of old methods. The postal rules and procedures are lengthy.

**G. Time Deposits:**

Period 1 to 5 years. No maximum limit of deposit in an account. The interest rate on time deposits have a effect on the investment decision of the investor.

**H. Recurring Deposits:**

Period 5 years. Rate of interest is 7.5 per cent. The interest is compounded on a quarterly basis. Maturity value is notified and paid accordingly.

**2. Public Provident Fund**

PPF is a 30-year-old statutory scheme of the Central Government started with the objective of providing old age income security to the unorganized sector workers and self-employed persons. Presently, there are nearly 30 lakh PPF accountholders in India across banks and post offices.

**Eligibility:**

Any individual (salaried or non-salaried) can open a PPF account. He may also subscribe on behalf of a minor, HUF, AOP and BOI. Even NRIs can open PPF account.

A person can have only one PPF account. Also, two adults cannot open a joint PPF account. The aggregate annual contribution by an individual on account of himself, his minor child and HUF/AOP/BOI (of which individual is member) cannot exceed ₹ 70,000 otherwise the excess amount will be returned without any interest.

**Subscription:**

The annual contribution to PPF account ranges from a minimum of ₹ 500 to a maximum of ₹ 70,000 payable in multiple of ₹ 5 either in lump sum or in convenient instalments, not exceeding 12 in a year.

**Where to Open a PPF Account?**

A PPF account can be opened at any branch of State Bank of India or its subsidiaries or in few nationalized banks or in post offices. On opening of account, a pass book will be issued wherein all amounts of deposits, withdrawals, loans and repayment together with interest due shall be entered. The account can also be transferred to any bank or post office in India.

**Interest Rate:**

Deposits in the account earn interest at the rate notified by the Central Govt. from time-to-time (presently 8% p.a. compounded annually). Interest is calculated on the lowest balance between the fifth day and last day of the calendar month and is credited to the account on 31st March every year. So to derive the maximum, the deposits should be made between 1st and 5th day of the month, as it also enables you to earn interest on your Savings Bank A/c for the previous month.

**Tenure:**

Although, PPF is 15-year scheme but the effective period works out to 16 years, i.e., the year of opening the account and adding 15 years to it. The contribution made in the 16th financial year will not earn any interest but one can take advantage of the tax rebate.

**Withdrawal:**

The investor is permitted to make one withdrawal every year beginning from the seventh financial year of an amount not exceeding 50% of the balance at the end of the fourth year or the financial year immediately preceding the withdrawal, whichever is less. This facility of making partial withdrawals provide liquidity and the withdrawn amount can be used for any purpose.

**Loan:**

The depositor can take a loan in the third financial year of opening the account for up to 25% of the balance at the end of second preceding financial year. Further, no loan can be taken after 6th financial year. Continuing with the previous example, the first loan can be taken during FY 2002-03 for 25% of the balance at the end of FY 2000-01.

The loan is to be repaid in 36 months following the month in which the loan is taken, either in lump sum or in instalments. The fresh loan will be given only after previous loan is repaid in full with interest at 1% p.a. over the interest paid on PPF. Moreover, if the loan is not repaid within stipulated time, the interest would be charged @ 6% p.a. instead of 1% p.a. In the event of death of subscriber, his legal heirs/nominee shall repay the interest on the loan.

**Maturity:**

On maturity, the account can be closed by making an application for withdrawal of entire balance together with interest after adjustments, if any. However, the account can also be extended for any period in a block of five years at each time, with or without fresh contribution.

If the account is continued without fresh contribution, the entire sum can be withdrawn either in lump sum or in instalments not exceeding one in a year. If continued with fresh subscriptions, withdrawal is permitted for up to 60% of the balance at the beginning of each extended period in one or more instalments, but not more than once a year.

**Tax Treatment:**

The contributions made to the PPF account are eligible for deduction u/s 80C of Income Tax Act. The interest earned and the entire amount received on maturity or premature withdrawal is completely tax-free. Moreover, the balance held in PPF account is fully exempt from wealth tax, without any limit.

**Benefits:**

- The investment in PPF offers highest security as it is a government-backed scheme. The return of 8% p.a. offered by the scheme actually works out to be higher due to tax benefits and the compounding factor (interest on interest earned).
- The balance amount in PPF account is not subject to attachment under any order or decree of court in respect of any debt or liability.
- Reasonably attractive interest rate.
- Tax exemption on investment made in PPF.
- Withdrawal facility available at certain intervals which also avoids frequent withdrawals.

**Disadvantages:**

1. Low liquidity as one can withdraw only once in a year.
2. The PPF account is for a period of 15 years which is very long.

**Conclusion:**

PPF is debt product that is an all-time favourite and it adds stability to one's portfolio along with risk-free stable returns.

**3. Bank Deposits**

Commercial and cooperative banks accept deposits from public in the form of current account which bears no interest, savings accounts which bear interest varying from 4.5% to 5.5% per annum, and fixed deposits of varying maturities.

What's the difference between savings and investment? The simple definition is savings have very little risk with low limited returns, on the other hand, investments provide the opportunity for higher returns by managing risk.

By savings in the banks, you may earn interest and you feel good and secured as you watch your money grows overtime. But hang on, if you factor in inflation you realise that you actually have a negative growth.

Alternatively, investment may provide income and capital gains with proper management of the risk involved in any form of investment. Investment comes in all sort of categories of investment assets such as Money market, Equity, Bonds, Derivatives, Unit Trust, etc.

There are two types of returns that can be derived from investments, that is income and capital gains. While income is derived from your investment in the form of rental or dividends, you get capital gains from selling the investment asset for a profit.

**Bank Savings**

**Bank Fixed Deposits [Term Deposit]**

In a Fixed Deposit Saving Scheme a certain amount of money is deposited in the bank for a specified period at a fixed rate of interest.

To invest the hard earned money for a longer period and get a regular income, a Fixed Deposit Scheme is ideal. It is safe, liquid and fetches high returns.

Loan/Overdraft facility is available against bank fixed deposits. Now many banks don't charge premature withdrawals.

**Recurring Deposits**

Under a Recurring Bank Deposit Saving Scheme, an investor invests a specific amount in a bank on a monthly basis for a fixed rate of return. The deposit has a fixed tenure, at the end of which the investor gets principal amount as well as the interest earned during that period.

Recurring Deposit provides the element of compulsion to save at high rates of interest applicable to Term Deposits along with liquidity to access that savings any time.

**Advantages:**

1. Investment is reasonably safe and secured.
2. Banks offer loan facility.
3. Procedures and formalities involved in bank investment are limited.
4. Reasonable return on the investment made and that too in a regular manner.

**Disadvantages:**

1. The rate of return in the case of bank investment is low as compared to other avenues of investment.
2. The return on investment is not adequate even to give protection against the present inflation rate in the economy.
3. Capital appreciation is not possible.

**2.3 MONEY MARKET INSTRUMENTS**

By convention, the term "money market" refers to the market for short-term requirement and deployment of funds. Money market instruments are those instruments, which have a maturity period of less than one year. The most active part of the money market is the market for overnight and term money between banks and institutions (called call money) and the market for repo transactions. The former is in the form of loans and the latter are sale and buyback agreements – both are obviously not traded. The main traded instruments are commercial papers (CPs), certificates of deposit (CDs) and Treasury Bills (T Bills). All of these are discounted instruments, i.e., they are issued at a discount to their maturity value and the difference between the issuing price and the maturity/face value is the implicit interest. These are also completely unsecured instruments. One of the important features of money market instruments is their high liquidity and tradability. A key reason for this is that these instruments are transferred by endorsement and delivery and there is no stamp duty or any other transfer fee levied when the instrument changes hands. Another important feature is that there is no tax deducted at source from the interest component. A brief description of these instruments is as follows:

**Commercial Paper (CP)**

These are issued by corporate entities in denominations of ₹ 2.5 mn and usually have a maturity of 90 days. CPs can also be issued for maturity periods of 180 and one year but the most active market is for 90 day CPs.

Two key regulations govern the issuance of CPs. Firstly, CPs have to be compulsorily rated by a recognized credit rating agency and only those companies can issue CPs which have a short-term rating of at least P1. Secondly, funds raised through CPs do not represent fresh borrowings for the corporate issuer but merely substitute a part of the banking limits available to it. Hence, a company issues CPs

almost always to save on interest costs, i.e., it will issue CPs only when the environment is such that CP issuance will be at rates lower than the rate at which it borrows money from its banking consortium.

### **Certificates of Deposit (CD)**

These are issued by banks in denominations of ₹ 0.5 mn and have maturity ranging from 30 days to 3 years. Banks are allowed to issue CDs with a maturity of less than one year while financial institutions are allowed to issue CDs with a maturity of at least one year. Usually, this means 366 day CDs. The market is most active for the one year maturity bracket, while longer dated securities are not much in demand. One of the main reasons for an active market in CDs is that their issuance does not attract reserve requirements since they are obligations issued by a bank.

### **Treasury Bills (T Bills)**

These are issued by the Reserve Bank of India on behalf of the Government of India and are thus actually a class of Government Securities. At present, T Bills are issued in maturity of 14 days, 91 days and 364 days. The RBI has announced its intention to start issuing 182 day T Bills shortly. The minimum denomination can be as low as ₹ 100, but in practice most of the bids are large bids from institutional investors who are allotted T Bills in dematerialized form. RBI holds auctions for 14 and 364 days T Bills on a fortnightly basis and for 91 days T Bills on a weekly basis. There is a notified value of bills available for the auction of 91 days T Bills which is announced 2 days prior to the auction. There is no specified amount for the auction of 14 and 364 days T Bills. The result is that at any given point of time, it is possible to buy T Bills to tailor one's investment requirements.

Potential investors have to put in competitive bids at the specified times. These bids are on a price/interest rate basis. The auction is conducted on a French auction basis, i.e., all bidders above the cut-off at the interest rate/price which they bid while the bidders at the clearing/cut-off price/rate get *pro rata* allotment at the cut-off price/rate. The cut-off is determined by the RBI depending on the amount being auctioned, the bidding pattern, etc. By and large, the cut-off is market determined although sometimes the RBI utilizes its discretion and decides on a cut-off level which results in a partially successful auction with the balance amount devolving on it. This is done by the RBI to check undue volatility in the interest rates.

Non-competitive bids are also allowed in auctions (only from specified entities like State Governments and their undertakings and statutory bodies) wherein the bidder is allotted T Bills at the cut-off price.

Apart from the above money market instruments, certain other short-term instruments are also in vogue with investors. These include short-term corporate debentures, Bills of exchange and promissory notes.

Like CPs, short-term debentures are issued by corporate entities. However, unlike CPs, they represent additional funding for the corporate, i.e., the funds borrowed by issuing short term debentures are over and above the funds available to the corporate from its consortium bankers. Normally, debenture issuance attracts stamp duty; but issuers get around this by issuing only a letter of allotment (LoA) with the promise of issuing a formal debenture letter. However, the debenture is never issued and the LoA itself is redeemed on maturity. These LoAs are freely tradable but transfers attract stamp duty.

Bills of exchange are promissory notes issued for commercial transactions involving exchange of goods and services. These bills form a part of a company's banking limits and are discounted by the banks. Banks in turn rediscount bills with each other.

### **Gilt-edged Securities**

Gilts are bonds issued by certain national governments. The term is of British origin, and originally referred to the debt securities issued by the Bank of England, which had a gilt (or gilded) edge. Hence, they are called gilt-edged securities, or gilts for short. The term is also sometimes used in Ireland and

some British Commonwealth countries, South Africa and India. When a reference is made to gilts, what is generally meant is British gilts unless otherwise specified. The description below applies to the UK gilt market. The data reveal that about two-thirds of all gilts are held by insurance companies and pension funds. During 2009, large quantities of gilts were created and purchased by the Bank of England under its policy of quantitative easing.

The term “Gilt Account” is also a term used by the Reserve Bank of India to refer to a constituent account maintained by a custodian bank for maintenance and servicing of dematerialized Government Securities owned by a retail customer.

### **Conventional Gilts**

These are the simplest form of UK government bond and make up the largest share of UK government debt. A conventional gilt is a bond issued by the UK government which pays the holder a fixed cash payment (or coupon) every six months until maturity, at which point the holder receives their final coupon payment and the return of the principal.

### **Coupon Rate**

Conventional gilts are denoted by their coupon rate and maturity year, e.g., 4¼% Treasury Gilt 2055. The coupon paid on the gilt typically reflects the market rate of interest at the time of issue of the gilt, and indicates the cash payment per £100 that the holder will receive each year in two semi-annual payments.

### **Gilt Names**

Historically, gilt names referred to their purpose of issuance, or signified how a stock had been created, such as 10¼% Conversion Stock 1999. In more recent times, gilts have been generally named Treasury Stocks. From 2005-2006 onwards, all new issues of gilts are being called Treasury Gilts.

## **2.4 BONDS OR FIXED SECURITIES**

### **What Does Bond Mean?**

A debt investment in which an investor loans money to an entity (corporate or governmental) that borrows the funds for a defined period of time at a fixed interest rate. Bonds are used by companies, municipalities, states and US and foreign governments to finance a variety of projects and activities.

Bonds are commonly referred to as fixed-income securities and are one of the three main asset classes, along with stocks and cash equivalents.

### **Bond**

The indebted entity (issuer) issues a bond that states the interest rate (coupon) that will be paid and when the loaned funds (bond principal) are to be returned (maturity date). Interest on bonds is usually paid every six months (semi-annually). The main categories of bonds are corporate bonds, municipal bonds, and US Treasury bonds, notes and bills, which are collectively referred to as simply “Treasuries”.

Two features of a bond-credit quality and durations are the principal determinants of a bond’s interest rate. Bond maturities range from a 90-day Treasury Bill to a 30-year government bond. Corporate and municipals are typically in the three to 10-year range.

### **Definition**

A debt instrument issued for a period of more than one year with the purpose of raising capital by borrowing. The Federal government, states, cities, corporations, and many other types of institutions sell bonds. Generally, a bond is a promise to repay the principal along with interest (coupons) on a specified date (maturity). Some bonds do not pay interest, but all bonds require a repayment of principal. When an investor buys a bond, he/she becomes a creditor of the issuer. However, the buyer does not



gain any kind of ownership rights to the issuer, unlike in the case of equities. On the hand, a bond holder has a greater claim on an issuer's income than a shareholder in the case of financial distress (this is true for all creditors). Bonds are often divided into different categories based on tax status, credit quality, issuer type, maturity and secured/unsecured (and there are several other ways to classify bonds as well). The US Treasury bonds are generally considered the safest unsecured bonds, since the possibility of the Treasury defaulting on payments is almost zero. The yield from a bond is made up of three components: coupon interest, capital gains and interest on interest (if a bond pays no coupon interest, the only yield will be capital gains). A bond might be sold at above or below par (the amount paid out at maturity), but the market price will approach par value as the bond approaches maturity. A riskier bond has to provide a higher payout to compensate for that additional risk. Some bonds are tax-exempt, and these are typically issued by municipal, county or state governments, whose interest payments are not subject to federal income tax, and sometimes also state or local income tax.

### **Buying Bonds: Advantages and Disadvantages**

Bonds don't enjoy the same allure as stocks, but high quality bonds should be an essential part of your financial plan. Bonds promise a steady income stream, typically at a fixed coupon rate (interest rate).

#### **Advantages of Investing in Bonds**

- Bonds are predictable. You know how much interest you can expect to receive, how often you'll receive it, and when your principal (the bond's face value) will be repaid (maturity date).
- Bonds are more steady than stocks (which can fluctuate wildly short-term). Nervous investors usually sleep better by buying bonds instead of equity investments.
- People on a fixed income and/or in retirement will receive a predictable amount of regular income from bonds.
- The interest rates paid by bonds typically exceed those paid by banks on savings accounts, especially short-term bonds.

#### **Disadvantages of Bonds**

- Companies and municipalities can and do go bankrupt, and if they do, your bonds will lose value and possibly even become worthless.
- Long-term bonds will have your money tied up in low yielding bonds should interest rates go up.
- Unlike stocks, bonds don't offer the possibility of high long-term returns. Younger investors and those with several years to go until retirement would be better served by limiting their bond purchases and opting for equity buys instead.

**Government Securities Market (G-Sec Market):** It consists of Central and State Government securities. It means that, loans are being taken by the Central and State Government. It is also the most dominant category in the India debt market.

**Bond Market:** It consists of Financial Institutions bonds, Corporate bonds and debentures and Public Sector Units bonds. These bonds are issued to meet financial requirements at a fixed cost and hence remove uncertainty in financial costs.

#### **Advantages:**

- The biggest advantage of investing in Indian debt market is its assured returns. The returns that the market offer is almost risk-free (though there is always certain amount of risks, however the trend says that return is almost assured). Safer are the government securities.

- On the other hand, there are certain amounts of risks in the corporate, FI and PSU debt instruments. However, investors can take help from the credit rating agencies which rate those debt instruments. The interest in the instruments may vary depending upon the ratings.
- Another advantage of investing in Indian debt market is its high liquidity. Banks offer easy loans to the investors against government securities.

**Disadvantages:**

- As there are several advantages of investing in Indian debt market, there are certain disadvantages as well.
- As the returns here are risk-free, those are not as high as the equities market at the same time. So, at one hand you are getting assured returns, but on the other hand, you are getting less return at the same time.
- Retail participation is also very less here, though increased recently. There are also some issues of liquidity and price discovery as the retail debt market is not yet quite well developed.

**2.5 INVESTMENT IN EQUITY MARKET**

What are the advantages and disadvantages in investing in the stock market?

This is a common question among investors. Stocks and bonds differ dramatically in their structures, payouts, returns and risks. In order to answer this question, we need to go through a brief description of both stocks and bonds.

A bond is a form of debt with which you are the lender instead of the borrower. Bonds are contractual loans made between investors and institutions that, in return for financing, will pay a premium for borrowing, known as a coupon. Additionally, the bond's face value is returned to the investor at maturity. The guarantee of payback and all coupon payments relies solely on the ability of the borrower to generate enough cash flow to repay bondholders.

Stocks are a form of ownership; they represent participation in a company's growth. Generally, investors are given no promises about returns of the initial investment. In fact, the profitability of the investment depends almost entirely upon rising stock price, which, at the most fundamental level, relates directly to the performance and growth (increasing profits) of the company.

So, this leads to the original question: which security is better? The answer is neither. Stocks and bonds both have their pros and cons depending on what you are looking for. For example, risk-averse investors looking for safety of capital and who prefer a known periodic payment structure (i.e., coupon payments) for a limited timeframe would be better off investing in bonds. On the other hand, investors who are willing to take on greater risks than bondholders and who would prefer the benefit of having partial ownership in a company and the unlimited potential of a rising stock price would be better off investing in stocks.

However, the disadvantage of stocks versus bonds is that stocks are not guaranteed to return anything to the investor while the coupon payments and principal of bonds are. Thus, the possibility for high returns is greater with stocks but so is the possibility of losing money.

For most investors, a combination of stocks and bonds is the best situation. By diversifying your investments and putting some money into both stocks and bonds you ensure some safety while leaving some opportunity for above-average returns in your stock investments.

**Advantages:**

1. You own your own business with literally do nothing.
2. Flexible holding position, which you can liquidate it anytime you want, no string attach.
3. Unlike other business, you need a team. But here, you can work yourself, and from home!



**Disadvantages:**

1. Very steep learning curve in the beginning.
2. It is not that easy to control your emotion.
3. You can end up broker if you do things wrong.

**2.6 MUTUAL FUND**

Mutual funds are money-managing institutions set up to professionally invest the money pooled in from the public. These schemes are managed by Asset Management Companies (AMCs), which are sponsored by different financial institutions or companies.

Mutual Fund is an ideal investment vehicle where a number of investors come together to pool their money with common investment goal. Each Mutual Fund with different type of schemes is managed by respective Asset Management Company (AMC). An investor can invest his money in one or more schemes of Mutual Fund according to his choice and becomes the unitholder of the scheme. The invested money in a particular scheme of a Mutual Fund is then invested by fund manager in different types of suitable stock and securities, bonds and money market instruments. Each Mutual Fund is managed by qualified professional man, who use this money to create a portfolio which includes stock and shares, bonds, gilt, money market instruments or combination of all. Thus Mutual Fund will diversify your portfolio over a variety of investment vehicles. Mutual Fund offers an investor to invest even a small amount of money.

Mutual Funds schemes are managed by respective Asset Management Companies sponsored by financial institutions, banks, private companies or international firms. The biggest Indian AMC is UTI while Alliance, Franklin Templeton, etc., are international AMCs.

Mutual Funds offers several benefits to an investor such as potential return, liquidity, transparency, income growth, good post-tax return and reasonable safety. There are number of options available for an investor offered by a mutual fund.

Before investing in a Mutual Fund an investor must identify his needs and preferences. While selecting a Mutual Fund's schemes he should consider the effect of inflation rate, diversification of investment, the time period of investment and the risk factors. There are various type of risk factors as:

- (a) Market Risk
- (b) Credit Risk
- (c) Interest Rate Risk
- (d) Inflation Risk
- (e) Political Environment

CRISIL's composite performance ranking (CPR) measures the performance for each of the open-ended scheme of Mutual Fund. There are four parameters considered to measure the performance of a mutual fund such as Risk-adjusted returns of the scheme's NAV, Diversification of Portfolio, Liquidity and Asset Size.

**Tax Benefits Available by Investing in Mutual Funds**

From April 1, 2003 onwards, all dividends, declared by the debt-oriented mutual funds (mutual funds with less than 50% of assets in equities), are tax-free in the hands of the investor.

The mutual fund has to pay a dividend distribution tax of 12.5% (that includes surcharge on the dividends declared by the fund. Long-term debt funds, monthly income plans (MIPs), government securities funds (G-Sec/gilt funds), are some examples of debt-oriented funds.

Dividends that are declared by equity-oriented funds (mutual funds with more than 50% investment of assets in equities) are tax-free in the hands of investor. Also, no dividend distribution tax is applicable on these funds u/s 115R. Sector funds, balanced funds and diversified equity funds, are examples of equity-oriented funds.

The amount invested in tax-saving funds such as Equity linked savings schemes (ELSS) is eligible for deduction U/s 80C; but the aggregate amount deductible under this section cannot exceed ₹ 100,000.

### What is a Mutual Fund?

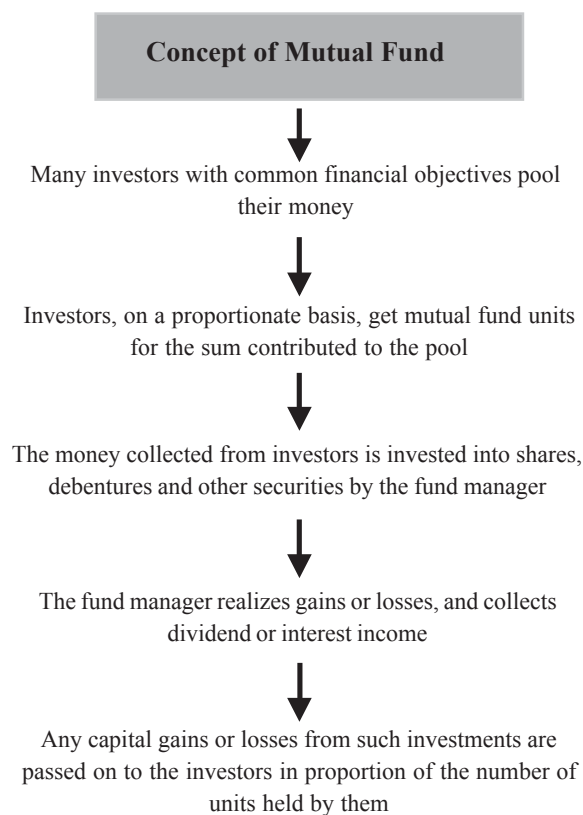
Mutual fund is a pool of money from many investors who wish to save or make money. Investing in mutual funds can be a lot easier as compared to buying and selling individual stocks or bonds on your own. Here, the funds are kept in units of ₹ 10.

An investor can redeem his/her holdings partially or fully at any point of time and collect the proceedings on at + 2 basis.

The basic idea behind Mutual Fund is that investors lack time, the inclination and skills required to manage their own investments. Professional Mutual Fund managers are highly experienced personnels and act on behalf of the mutual fund company that manages the investments for the benefit of the investors in return of a management fees.

The organization that manages the investment is known as Asset Management Company (AMC).

In India, operations of AMC are supervised and regulated by the Securities and Exchange Board of India (SEBI).



### Tax on Mutual Funds

**Section 2(42A):** A unit of mutual fund is treated as short-term capital asset if the same is held for less than 12 months. The units that are held for more than 12 months are treated as long-term capital asset.

**Section 10(38):** Short-term capital gains on all equity-oriented funds are chargeable to tax @ 10% (plus the education cess, applicable surcharge). However, such securities transaction tax shall be allowed as rebate under Section 88E of the Act, if the transaction indicates business income.

The long-term capital gains on debt-oriented funds are subject to a tax @ 20% of capital gain after allowing indexation benefit or at 10% flat without indexation benefit, whichever is lesser.

All short-term capital gains on debt-oriented funds are subject to a tax at the tax bracket applicable (i.e., marginal tax rate) to the investor.

**Section 112:** Capital gains not covered by exemption U/s 10(38), chargeable on transfer of long-term capital assets shall be subject to following tax rates:

- For Resident Individual and HUF – 20% plus surcharge, education cess.
- For Partnership firms as well as Indian companies – 20% plus surcharge.
- For Foreign companies – 20% (no surcharge).

Capital gains are computed after taking into consideration the cost of acquisition as adjusted by the Cost Inflation Index, notified by Central Government.

Unitholders can opt for being taxed at 10% (along with applicable surcharge, education cess) without the cost inflation index benefit or 20% (along with applicable surcharge) with cost inflation index benefit, whichever is beneficial.

U/s 115AB of the Income Tax Act, 1961, the long-term capital gains on units, purchased in foreign currency by an overseas financial, and held for a period greater than 12 months, will be charged at the rate of 10%. Such gains will be calculated without indexation of cost of acquisition. No surcharge is applicable for taxes U/s 115AB, for corporate bodies.

### Mutual Fund Scheme by Structure

**Open-ended Funds:** An open-ended funds is one that is available for subscription all through the year. These do not have a fixed maturity. Investors can conveniently buy and sell units at Net Asset Value (“NAV”) related prices. The key feature of open-ended schemes is liquidity.

**Closed-ended Funds:** A closed-ended funds has a stipulated maturity period which generally ranging from 3 to 15 years. The fund is open for subscription only during a specified period. Investors can invest in the scheme at the time of the initial public issue and thereafter they can buy or sell the units of the scheme on the stock exchanges where they are listed. In order to provide an exit route to the investors, some close-ended funds give an option of selling back the units to the Mutual Fund through periodic repurchase at NAV related prices. SEBI Regulations stipulate that at least one of the two exit routes is provided to the investor.

**Interval Funds:** Interval funds combine the features of open-ended and close-ended schemes. They are open for sale or redemption during predetermined intervals at NAV-related prices.

### Mutual Fund Scheme by Investment Objective

**Growth Funds:** The aim of growth funds is to provide capital appreciation over the medium- to long-term. Such schemes normally invest a majority of their corpus in equities. It has been proved that returns from stocks, have outperformed most other kind of investments held over the long-term. Growth schemes are ideal for investors having a long-term outlook seeking growth over a period of time.

**Income Funds:** The aim of income funds is to provide regular and steady income to investors. Such schemes generally invest in fixed income securities such as bonds, corporate debentures and Government securities. Income funds are ideal for capital stability and regular income.

**Balanced Funds:** The aim of balanced funds is to provide both growth and regular income. Such schemes periodically distribute a part of their earning and invest both in equities and fixed income securities in the proportion indicated in their offer documents. In a rising stock market, the NAV of these schemes may not normally keep pace, or fall equally when the market falls. These are ideal for investors looking for a combination of income and moderate growth.

**Money Market Funds:** The aim of money market funds is to provide easy liquidity, preservation of capital and moderate income. These schemes generally invest in safer short-term instruments such as Treasury Bills, certificates of deposit, commercial paper and inter-bank call money. Returns on these schemes may fluctuate depending upon the interest rates prevailing in the market. These are ideal for corporate and individual investors as a means to park their surplus funds for short periods.

### **Other Schemes**

**Tax Saving Schemes:** These schemes offer tax rebates to the investors under specific provisions of the Indian Income Tax laws as the Government offers tax incentives for investment in specified avenues. Investments made in Equity Linked Savings Schemes (ELSS) and Pension Schemes are allowed as deduction u/s 88 of the Income Tax Act, 1961. The Act also provides opportunities to investors to save capital gains u/s 54EA and 54EB by investing in Mutual Funds.

### **Special Schemes**

**Industry Specific Schemes:** Industry specific schemes invest only in the industries specified in the offer document. The investment of these funds is limited to specific industries like Infotech, FMCG, Pharmaceuticals, etc.

**Index Schemes:** Index funds attempt to replicate the performance of a particular index such as the BSE Sensex or the NSE 50.

**Sectoral Schemes:** Sectoral funds are those which invest exclusively in a specified sector. This could be an industry or a group of industries or various segments such as 'A' Group shares or initial public offerings.

### **Benefits of Investment in Mutual Funds**

Mutual funds offer several benefits to an investor that unmatched by the other investment options. The major benefits are good post-tax returns and reasonable safety, the other benefits in investing in mutual funds are:

**Professional Management:** Mutual funds provide the services of experienced and skilled professionals, backed by a dedicated investment research team that analyses the performance and prospects of companies and selects suitable investments to achieve the objectives of the scheme.

**Diversification:** The best mutual funds design their portfolios so individual investments will react differently to the same economic conditions. For example, economic conditions like a rise in interest rates may cause certain securities in a diversified portfolio to decrease in value. Other securities in the portfolio will respond to the same economic conditions by increasing in value. When a portfolio is balanced in this way, the value of the overall portfolio should gradually increase overtime, even if some securities lose value.

**Convenient Administration:** Investing in a mutual fund reduces paperwork and helps you avoid many problems such as bad deliveries, delayed payments and follow up with brokers and companies. Mutual funds save your time and make investing easy and convenient.

**Potential Return:** Mutual funds have the potential to provide a higher return to an investor than any other option over a reasonable period of time.

**Liquidity:** In open-ended schemes, the investor gets the money back promptly at net asset value related prices from the mutual fund. In closed-end schemes, the units can be sold on a stock exchange at the prevailing market price or the investor can avail of the facility of direct repurchase at NAV-related prices by the Mutual Fund.

**Low Costs:** Mutual fund expenses are often no more than 1.5 per cent of your investment. Expenses for index funds are less than that, because index funds are not actively managed. Instead, they automatically buy stock in companies that are listed on a specific index.

**Flexibility:** Investment in mutual funds offers a lot of flexibility with features of schemes such as regular investment plan, regular withdrawal plans and dividend reinvestment plans enabling systematic investment or withdrawal of funds.

**Affordability:** Small investors with low investment fund are unable to high-grade or blue chip stocks. An investor through mutual funds can be benefited from a portfolio including of high priced stock.

**Transparency:** You get regular information on the value of your investment in addition to disclosure on the specific investments made by your scheme, the proportion invested in each class of assets and the fund manager's investment strategy and outlook.

**Well Regulated:** All mutual funds are registered with SEBI and they function within the provisions of strict regulations designed to protect the interests of investors. The operations of mutual funds are regularly monitored by SEBI.

## **2.7 LIFE INSURANCE**

Life insurance is a contract between the policyholder and the insurer, where the insurer promises to pay a designated beneficiary a sum of money (the "benefits") upon the death of the insured person. Depending on the contract, other events such as terminal illness or critical illness may also trigger payment. In return, the policyholder agrees to pay a stipulated amount (the "premium") at regular intervals or in lump sum. In some countries, death expenses such as funerals are included in the premium; however, in the United States the predominant form simply specifies a lump sum to be paid on the insured's demise.

The value for the policy owner is the 'peace of mind' in knowing that the death of the insured person will not result in financial hardship.

Life policies are legal contracts and the terms of the contract describe the limitations of the insured events. Specific exclusions are often written into the contract to limit the liability of the insurer; common examples are claims relating to suicide, fraud, war, riot and civil commotion.

Life-based contracts tend to fall into two major categories:

- Protection policies – designed to provide a benefit in the event of specified event, typically a lump sum payment. A common form of this design is term insurance.
- Investment policies – where the main objective is to facilitate the growth of capital by regular or single premiums.

Life insurance has the highest penetration levels amongst investment options with 44 per cent, followed by Bank Fixed Deposits which has 35 per cent votes. Gold (33%) and Property (23%) are the other favourites among Indians. The current financial turmoil makes it a tough case for equity markets.

**Future Intention to Invest**

Again, life insurance topped the list of future investment instruments with 30 per cent respondents agreeing to consider it as a future investment option, followed by Bank Fixed Deposits (11%), Gold and Property (both 7%), and Life Insurance Child Plans (6%).

“In the wake of the global financial meltdown, most investors are looking at options which help them safeguard their capital. Life insurance is seen to be one such avenue” said Kalyan Karmakar, Associate Director, Consumer Research, The Nielsen Company.

**The Insurance Category**

The three key triggers for buying life insurance are family protection in case of untimely death, Retirement Corpus and Securing Child’s Future. Interestingly insurance for child emerged as a key trigger compared to the previous leg of the survey in 2004. Tax exemption as a trigger to purchase insurance has dropped significantly compared to 2004.

“We see a reduction in the number of people who bought insurance for tax saving with more people buying insurance for insurance sake!”, said Kalyan Karmakar.

**Marketing Channels**

“We have seen a sea of change in the insurance marketing landscape in recent years. Increase in the number of players, significant spikes in media spends, growing focus on instruments like Unit Linked Insurance Plans (ULIPs) and expanding channels such as Bancassurance have led to high noise levels and clutter in the market. Yet, the role of the agent or insurance advisor remains paramount while closing sales”, continued Karmakar.

For 98 per cent respondents, agents are the main source of information on insurance policies. Friends/peer group emerge as a significant source of information (58%) in comparison to 2004. Media also plays an important role in spreading awareness about various insurance policies, which includes Television Advertisements (55%), Newspapers (35%), and Outdoor Hoardings (33%).

By investing in life insurance, almost anyone can transfer the financial risks of dying early, guaranteeing a payout for family members who might otherwise be left in economic turmoil. Today’s life insurance policies, however, often come with features borrowed from the investment world, blending traditional insurance with attributes of a mutual fund account.

**Vehicles for Investing in Life Insurance**

Those who haven’t purchased a policy may be familiar only with “term” life insurance, which covers the owner for a set period of time, say, until their child graduates from college. If the owner lives past that date, the plan expires and is worthless.

But some life insurance policies are “cash value”, which means the fees, or premium, initially are greater at the start of the policy than they would be in a term policy. The excess premium is then invested in a “separate account”, either by the insurer or in an account controlled by the policy holder, building up cash value. Any investment gains can be used in a few ways: to increase the death benefit, to borrow against for any use or to keep the policy in effect if you stop paying monthly premiums. Policies that offer this investment feature come with significantly more complex terms, and are offered by salespeople who may earn a significant commission of your initial premium.

In variable life insurance policies, the cash value and benefits may actually decrease or go away completely depending upon the performance of your investments. The National Association of Insurance Commissioners website offers a downloadable consumer guide to life insurance policies that urges prospective buyers of variable life policies to obtain a prospectus from the company and to read it carefully.



**Tax Benefits of Investing in Life Insurance**

Tax benefits are chief among the advantages of a variable universal life insurance policy. Each year's earnings on the investment portion of the policy are not taxed, and the taxable gains on policies that are later cashed out can be reduced by the amount of insurance protection the plan provided. And if the policyholder dies, the gains are not usually taxed.

Similar tax benefits are also offered through pure investment accounts, such as 401k plans, some financial advisers recommend that these choices be funded to the maximum amount before an investment-oriented insurance policy is considered.

In addition, insurance policies may offer a wide variety of investment options, including stocks, bonds, balanced mutual funds, international mutual funds and money market accounts. Investments may also be tied to a major stock market index, like the Standard & Poor's 500. These are often similar to what might be found in a retirement investment account.

**Flexibility of Investing in Life Insurance**

The death benefit on a variable universal plan may be increased with a lump sum payment, or borrowed against in the event of a pressing financial need like a medical emergency. The ability to skip payments is also considered an advantage. In addition, the investment account may be shifted to more conservative or aggressive options.

**Fees and Complexity of Life Insurance**

Critics of variable universal life insurance plans say that the tax benefits are outweighed by a variety of fees that eat away at returns. These fees may be misunderstood by the policyholder, disclosed in long prospectus documents but glossed over in sales pitches. These policies may charge a fee, often 4% to 6%, on each deposit; annual contract fees; administrative charges on the account, and expenses on the investment options themselves. Many of these plans come with "surrender" charges of \$10,000 or more in the event the policy is cashed out before a certain number of years. While other investment accounts come with a variety of fees, critics of life insurance policies say the true cost of the plans are difficult for many buyers to comprehend.

**Tips for Investing in Life Insurance**

If you decide that a variable universal life insurance policy offers appropriate benefits, you might consider purchasing a plan directly from the insurer and skipping the salesperson. These include Ameritas, USAA life and TIAA-CREF. Though you won't be enriching a salesperson, there are still sales costs that should be explained by the company's agent. Here are some other tips:

- Consider funding your other tax-advantaged retirement accounts before opening a variable universal life insurance policy. Term life insurance, however, continues to provide a unique benefit.
- Holding a cash value insurance plan until death or retirement increases the likelihood that the plan will be an appropriate investment.
- Dodge big fees, commissions, and surrender charges by investigating "low-load" insurers.
- Read the prospectus, which explains the benefits and risks in relatively plain language, without the spin of a sales pitch.

**2.8 INVESTMENT IN REAL ESTATE**

The real estate sector in India is of great importance. According to the report of the Technical Group on Estimation of Housing Shortage, an estimated shortage of 26.53 million houses during the Eleventh Five Year Plan (2007-12) provides a big investment opportunity.

According to a report 'Emerging trends in Real Estate in Asia-Pacific 2011', released by PricewaterhouseCoopers (PwC) and Urban Land Institute (ULI), India is the most viable investment destination in real estate. The report, which provides an outlook on Asia-Pacific real estate investment and development trends, points out that India, in particular Mumbai and Delhi, are good real estate investment options for 2011. Residential properties maintain their growth momentum and hence are viewed as more promising than other sectors. ULI is a global non-profit education and research institute.

Further, real estate companies are coming up with various residential and commercial projects to fulfil the demand for residential and office properties in Tier-II and Tier-III cities. For instance, Ansal Properties has several residential projects in cities such as Jodhpur, Ajmer, Jaipur, Panipat, Kundli and Agra. Omaxe has also planned around 40 residential and integrated township projects in Tier-II and Tier-III cities, majority of them being in Uttar Pradesh, Punjab, Madhya Pradesh, Rajasthan and Haryana. The growth in real estate in Tier-II and Tier-III cities is mainly due to increase in demand for organized realty and availability of land at affordable prices in these cities.

Real estate is a legal term (in some jurisdictions, such as the United Kingdom, Canada, Australia, USA, Dubai, Trinidad and Tobago and The Bahamas) that encompasses land along with improvements to the land, such as buildings, fences, wells and other site improvements that are fixed in location—immovable. Real estate law is the body of regulations and legal codes which pertain to such matters under a particular jurisdiction and include things such as commercial and residential real property transactions. Real estate is often considered synonymous with real property (sometimes called realty), in contrast with personal property (sometimes called chattel or personality under chattel law or personal property law).

However, in some situations the term “real estate” refers to the land and fixtures together, as distinguished from “real property”, referring to ownership of land and appurtenances, including anything of a permanent nature such as structures, trees, minerals, and the interest, benefits, and inherent rights thereof. Real property is typically considered to be immovable property. The terms real estate and real property are used primarily in common law, while civil law jurisdictions refer instead to immovable property.

## 2.9 INVESTMENT IN PRECIOUS METALS

A precious metal is a rare, naturally occurring metallic chemical element of high economic value. Chemically, the precious metals are less reactive than most elements, have high lustre, are softer or more ductile, and have higher melting points than other metals. Historically, precious metals were important as currency, but are now regarded mainly as investment and industrial commodities. Gold, silver, platinum, and palladium each have an ISO 4217 currency code.

The best-known precious metals are the coinage metals gold and silver. While both have industrial uses, they are better known for their uses in art, jewellery and coinage. Other precious metals include the platinum group metals: ruthenium, rhodium, palladium, osmium, iridium, and platinum, of which platinum is the most widely traded. Radioactive polonium, radium, actinium and protactinium, are not considered precious due to the health risk they pose.

### Why Invest in Precious Metals?

In the past, people have invested in gold or silver as a method for storing value when a currency was losing its value. But today, our currency is no longer backed by gold *per se*. It is backed by the gross domestic production of the nation. Now there are many other reasons people have for investing in these precious metals. For the last several years, the consumption of gold, silver, platinum and palladium has far exceeded its production. This is coupled by the fact that the market price of these precious metals has been kept relatively down by the selling of gold reserves by central banks. In addition to this,



rich foreign investors from developing countries have been increasingly looking for an investment to store away their personal wealth. They are moving out of their governments, which are often in the hands of corrupt politicians. It would take a global recession to slow the demand for gold and other such precious metals. Precious metals have long been looked to as the repositories of absolute value – not the relative value of paper currency.

When most people think of investing in gold and precious metals, they think of bullion (bars and wafers). Although many people do invest in bullion, there are investments in many different forms. Precious metal investments can be made in jewellery, coins, bullion, futures, options, mining stocks, or mutual funds. In this sense, they have tremendous liquidity and can be bought and sold without problems. Platinum and palladium, however, are less liquid than gold and silver. Each of the above types of precious metal investments is easy to get into and to get out of.

For these and similar other reasons, many investor's allot a portion of their portfolios to precious metal assets. Like other investments, the gold/silver market prices go through tremendous cycles. Prices moved from about \$140 an ounce in early 1977 to over \$887 an ounce in early 1980. When confidence in other assets causes their values to plummet, precious metals often do well. But as a result, investing in gold has been especially speculative, as you can see.

## **CASE STUDIES**

**1.** As a portfolio management consultant, you are approached by a investor with investible funds of ₹ 25 lakhs. He wants to know from you that what are the investment avenues available to him which will give a stable return with minimum risks.

**Ans:** A rational investor considers two factors before making investment decision – Returns and Risk. He expects to get high returns while the associated risk should be low. There are various alternatives available for investment in market. Following are the few alternatives which provide stabilized returns with minimum risk.

### **1. Bonds and Debentures**

Bonds are fixed income securities. Investors get interest on regular basis from companies. Interest may be paid quarterly, half-yearly or yearly. The risk involved is also limited particularly when money is deposited with a reputed company. The interest offered is higher than the interest rate offered by banks. This method is simple and cheaper than obtaining loans from commercial banks. Gilt-edged securities, i.e., Government securities and securities issued by financial institutions such as IDBI, ICICI, etc. are fully secured as they have government banking. The maturity period varies from 10-20 years. These securities are highly liquid asset as it can sold easily. Even tax benefits are available for such securities.

### **2. Fixed Deposits**

The investor can invest in fixed deposits of banks particularly in nationalized banks as the risk involved is zero while the returns are reasonable. The returns generated from fixed deposits are around 9-10% p.a. It provides liquidity because the fixed deposits can be withdrawn before maturity in case of emergency or loan can be raised against F.D. There is a provision of tax saving under Sec. 80C of Income Tax Act, 1961. The bank deducts tax on interest if the interest amount is ₹ 10,000 or more in a year.

### **3. Public Provident Fund**

PPF is a one attractive tax sheltered investment scheme for middle class and salaried people and businessmen. The investor can deposit certain amount periodically in the post office or SBI. The returns generated are 9.5% p.a. Withdrawals facility is available but it is limited to once in a year. It is normally for a period of 15 years but can be extended for more years. It is not transferable, but nomination facility is available. Thus, it is safe and reasonable investment avenue having limited liquidity.

#### 4. Life Insurance Policy

Life insurance policy gives protection to family members through financial support in case of death of policy holders. At the same time, it is also acts as method of compulsory savings over a long period out of regular income. It provides financially independent life after retirement. LIC issues different life policies such as Whole Life insurance policy, endowment policy, money back policy, etc. It gives tax benefit even if the policy is on the name of investor's wife, son, or daughter. LIC now gives bonus to policy holders on yearly basis. Thus apart from giving financial independence, policy allows investor to earn stabilize returns with no risk involved in investment.

#### 5. Preference Shares

Preference shares are different from equity shares. Investment in equity shares is risky. Investor gets dividend only if company earns profits. This is not in case of preference shares. A preference shareholder is entitled to dividend every year. If company cannot pay in particular year, then it is added to next year's dividend. If company cannot pay next year also, it keeps on adding till company can pay it. Preference shareholder gets priority over ordinary shares. Equity shareholder gets dividend only after preference shareholder. If the company winds up and sells all its assets, the money that comes is given to shareholder. Even here preference shareholder first gets the money. Thus, investor earns secured returns periodically and risk is also less.

#### 6. Mutual Fund

Mutual Fund Company mobilizes the saving of variance small investors and invests them in stock market securities. The returns generated are distributed amongst the investor. These companies have expertise knowledge of investment. The funds are invested in safe, secured and profitable manner in companies belonging to different industries. Even tax benefit is available for the amount invested. Here, the risk of loss is diversified among different investors. So individually an investor has to face minimum risk while the returns are high. Investor can expect 15% returns on mutual funds.

The best way to manage portfolio is to diversify the entire amount of investment among different securities/stock. Even if a particular security fetches you loss, there should be other securities that yield returns. Thus, the overall portfolio risk of investor can be minimized. It is advisable to diversify ₹ 25 lakhs.

In manner:

Sr. No	Investment	Amount	%
1	Bonds/Debentures	60,00,00	24
2	Fixed Deposits	20,00,00	8
3	Preference shares	60,00,00	24
4	LIC policy	53,00,00	21.2
5	PPF	70,000	2.8
6	Mutual fund	50,00,00	20
	<b>Total</b>	<b>25,00,000</b>	<b>100%</b>

2. You are a PMS (Portfolio Management Services) Consultant. A middle-aged investor approaches you to seek your advice on deploying his surplus funds of ₹ 20 lakhs in various shares, schemes, bonds and Govt. Securities. Present to him any five Investment schemes mentioning various merits and demerits of each scheme. You may assume that he is willing to take risk to the extent of 30% of his funds.

**Ans:** The Portfolio of an Investor can be as follows:

**Portfolio of a Middle-aged Investor**

Sr. No.	Investment	Amount	Percentage
1	Shares	6,00,000	30%
2	Bonds	3,30,000	16.5%
3	Fixed Deposits	5,00,000	25%
4	Public Provident Funds	70,000	3.5%
5	Mutual Funds	5,00,000	25%
	<b>Total</b>	<b>20,00,000</b>	<b>100</b>

**1. Share:** Investment in share risky but it provides higher returns if investment is made carefully. As the investor is willing to take risk to the extent of 30%, an amount of ₹ 6,00,000 can be invested in shares. It is a liquid investment. The shares can be sold through the broker and money can be realized within 3 days. However, he should invest in blue chips like profit making and dividend paying companies. He can invest in four to five companies from different industries like IT, Pharma, Entertainment and Banking.

**2. Bond**

**3. Fixed Deposits**

**4. Public Provident Fund**

**5. Mutual Fund**

**For Explanation Please Refer Earlier Explanation**

## 2.10 EXERCISES

### Answer the following Questions

1. What is mutual fund? What are the objectives of mutual fund?
2. What are the advantages of investment in life insurance market?
3. What are the limitations in investment in mutual fund?
4. What are bond? Explain different types of bonds.
5. Short note of equity options.
6. Mutual fund.

### Objective Type Questions

#### State whether the following statements are True (T) or False (F).

1. A financial system is a network of financial markets, institutions, instruments and intermediaries.
2. Money market is for long-term investments.
3. The Central Bank of India is the Reserve Bank of India.
4. Mutual Funds are market intermediaries.
5. The ownership securities consist of Deep Discount Bonds.
6. Financial engineering is the creation of new securities by combining different options.
7. Security exchange commission acts as a controlling agency in a securities market.
8. A mutual fund has income, growth and sectoral schemes.
9. Debt securities are mostly ownership based.
10. The role of a financial system is to establish a link between savers and investors.
11. The new issue market and the stock market are independent of each other.
12. Book building means a fixed price of shares.

13. A merchant banker manages the share issue of a company.
  14. An underwriter takes up the unsubscribed agreed portion of issue capital.
  15. The Sensex has a base of 30 securities.
  16. The NIFTYs base period is 1995.
  17. Listing securities is compulsory for only government companies.
  18. A depository is a deposit in a fixed deposit.
  19. A Red Herring Prospectus does not have any details of number of shares offered or price of shares.
  20. Free pricing of shares means issuing of shares at any denomination.
- Ans:** 1. (T), 2. (F), 3. (T), 4. (T), 5. (F), 6. (T), 7. (T), 8. (T), 9. (F), 10. (T), 11. (F), 12. (F), 13. (T), 14. (T), 15. (T), 16. (T), 17. (F), 18. (F), 19. (T), 20. (T).

### Multiple Choice Questions

#### Choose the right Answer

1. The function of a financial system is to \_\_\_\_\_.
  - (i) establish a link between savers and investors
  - (ii) link commercial banks with the Central Bank of a country
  - (iii) create regulators for influencing the intermediaries
  - (iv) help traders and moneylenders in the capital market
2. Financial engineering is a new term \_\_\_\_\_.
  - (i) to acquire a financial degree
  - (ii) to become a market participant
  - (iii) to be a credit rating agency
  - (iv) to provide a combination of features in a security to suit an investor
3. The difference between a primary market and a secondary market is \_\_\_\_\_.
  - (i) primary market is the stock market and secondary market is the market for second-hand sale of securities
  - (ii) a primary market helps in long-term credit and secondary market offers short-term credit
  - (iii) a primary market helps in issue of new securities those which are offered for the first time and the secondary market is for second-hand sale of securities listed on stock exchange
  - (iv) a primary market is the unorganised sector and the secondary market is the organised sector for sale and purchase of securities
4. The New Issue Market and Stock Market \_\_\_\_\_.
 

(i) are independent of each other	(ii) control each other
(iii) compete with each other	(iv) complement each other
5. Book Building means \_\_\_\_\_.
 

(i) fixed price of shares	(ii) variable price auction
(iii) making a book for a publisher	(iv) a price index

6. A Merchant Banker is \_\_\_\_\_.
- (i) broker
  - (ii) bank
  - (iii) banker who manages the issue of a company
  - (iv) a shareholder
7. An underwriter takes up \_\_\_\_\_.
- (i) the unsubscribed agreed portion of issued capital
  - (ii) fixed portion of issued capital
  - (iii) book building
  - (iv) private placement
8. SENSEX has \_\_\_\_\_ stocks.
- (i) 25
  - (ii) 30
  - (iii) 50
  - (iv) 100
9. The NIFTY's base period is \_\_\_\_\_.
- (i) 1992
  - (ii) 1995
  - (iii) 1978
  - (iv) 1985
10. Listing of securities is \_\_\_\_\_.
- (i) mandatory
  - (ii) recognises the merit of the stock
  - (iii) is necessary for large joint-stock companies
  - (iv) is compulsory for mid-capped companies
- Ans:** 1. (i), 2. (iv), 3. (iii), 4. (iv), 5. (ii), 6. (iii), 7. (a), 8. (ii), 9. (ii), 10. (ii).





### Chapter Contents:

- 3.1 Introduction of Securities Market
- 3.2 Basic Functions of Securities Market
- 3.3 Secondary Market Operations
- 3.4 Stock Market Quotations
- 3.5 Stock Exchanges in India – Bombay Stock Exchange
- 3.6 Locations
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- 3.11 Securities Exchange Board of India
- 3.12 Government Securities Market
- 3.13 Corporate Debt Market
- 3.14 Money Market Instruments
- 3.15 Exercises

### 3.1 INTRODUCTION OF SECURITIES MARKET

**Securities market** is an economic institute within which take place sale and purchase transactions of securities between subjects of economy on the base of demand and supply. Also we can say that securities market is a system of interconnection between all participants (professional and non-professional) that provides effective conditions:

- To buy and sell securities,
- To attract new capital by means of issuance new security (securitization of debt),
- To invest money for short- or long-term periods with the aim of deriving profit.

### 3.2 BASIC FUNCTIONS OF SECURITIES MARKET

- Commercial function (to derive profit from operation on this market)
- Price determination (demand and supply balancing, the continuous process of prices movements guarantees to state correct price for each security (so, the market corrects mispriced securities))
- Informative function (market provides all participants with market information about participants and traded instruments)
- Regulation function (securities market creates the rules of trade, regulation, priorities determination)

### 3.3 SECONDARY MARKET OPERATIONS

#### (a) Trading

The act of buying and selling of securities on a stock exchange is known as Stock Exchange Trading. Jobbers and brokers are the two categories of dealers in the stock exchange. A jobber is a dealer in securities while a broker is an agent or seller of securities. Every year a member has to decide and declare in advance whether he proposes to act as a jobber or a broker. A jobber gives two quotations as a dealer in securities, lower quotation for buying and higher one for selling. The difference between the two quotations is his remuneration. This system enables specialization in the dealings and each jobber specializes in a certain group of securities. It also ensures smooth and prompt execution of transactions. The double quotation of a jobber assures fair trading in the market. A broker is merely an agent to buy or sell on behalf of his clients. He is a generalist. Broker has to negotiate terms and conditions of sale or purchase and safeguard his client's interest. He gets commission from his clients, which is fixed by the stock exchange.

#### (b) Types of Dealings

There are three types of dealings in the Indian Stock Market:

- (1) **Spot Delivery Contract:** Spot delivery contract is a contract in which the payment and delivery of securities takes place on the spot, on the same day or on the next day. The sale is completed on the day of the contract. These are essentially cash dealings meant for the investors. All listed securities are allowed in the spot market.
- (2) **Ready Delivery Contract:** Where the payment and delivery takes place within a fixed time period not exceeding 7 days from the date of the contract is called 'Ready Delivery Contract'. There is usually hand delivery full payment.
- (3) **Forward Delivery Contract:** When payment and delivery of securities takes place on a future date through clearing house only, it is called Forward Delivery Contract. Such a contract has carry over facilities also. Speculators are the interested parties in these dealings.

#### (c) Speculative Dealings

Stock market dealings which are carried out as a part of speculative dealings are as follows:

- (1) **Option Dealings:** The right to buy or sell a certain security within a certain time and at a certain price is called option dealing. An option to buy a security is called 'Call Option' and an option to sell a security is called 'Put Option'. When in an option, both the right to buy and sell is acquired by an investor it is called double option.

An investor acquires a call option where the price of a security is expected to rise in future and in such a case, he will buy the security at a lower price and sell it at higher price, thereby making a profit by way of the difference in price. On the other hand, when an investor acquires put option where the price of a security is expected to fall in future and as such, he

will sell the security at a higher price and buy it a lower price, thereby making a profit by way of difference in price.

- (2) **Hedging:** A mechanism through which loss on a transaction is minimized is called 'hedging'. It is possible for a bull speculator to hedge himself by buying a put option where he agrees to purchase the security from the market. It would help him offset any loss that he may suffer on the exercise of the call option. Similarly, a speculator intending to exercise right to sell can hedge himself against loss through a call option.
- (3) **Margin Trading:** The term margin is used with reference to the deposit required to be maintained by the member-brokers with the clearing house of the stock exchange. This level of deposit varies with the value and volume of security, traded by the member. Such an arrangement of margin enables the broker for buying and selling of securities on behalf of the clients without any difficulty. Margin offers a measure of cushion to the broker in securities. The securities purchased by the broker will be used as a margin for securing maintains the minimum amount with the broker. It places a check on excessive speculation by requiring the client to maintain the margin by making a fresh deposit besides making the broker's investment safe. Margin trading has been carried out in Bombay, Delhi, Kolkata and Ahmedabad Stock Exchanges.

#### (d) Demat Trading

Buying and selling electronic shares is just like buying and selling physical shares. The only difference is trading in electronic shares is simpler and safer. The steps in the procedure are:

- (1) **Placing Order:** When a shareholder desires to sell his electronic share, he places an order with his broker. After the sell transaction he instructs his participant by use of Delivery instruction (cheque like instrument) to debit his account with the number of shares sold by him.
- (2) **Issue Receipt Intimation:** When a shareholder buys electronic shares, he must inform his broker about his depository account number so that the electronic shares bought by him are credited into his account. He has to instruct his participant by way of Receipt Intimation to receive credit in his account.
- (3) **Payment:** Payment for electronic shares either bought or sold is made directly through bank account connected to the demat account of the investor.
- (4) **Transfer of share:** The shares bought by a shareholder are transferred in his name the very next day of payout. There is no fear of bad delivery. There is no formality of filling transfer deeds, affixing share transfer stamps and applying to the company for registering the shares in his name.

It is important to note that trading in demat share is possible only in those stock exchanges whose clearing houses are linked to the depository. The following stock exchanges are linked to the depository:

- (1) Bombay Stock Exchange
- (2) National Stock Exchange
- (3) Calcutta Stock Exchange
- (4) Ludhiana Stock Exchange
- (5) Delhi Stock Exchange
- (6) Over the Counter Exchange of India (OTCEI)

Setting up of depository is a major development in the Indian capital market. SEBI has granted registration to two depositories, namely, the **National Securities Depository Ltd. (NSDL)** and the **Central Depository Services (India) Ltd. (CDSL)** under the Depository Act, 1996.



**(e) Rolling Settlement**

Trading in demat shares used to take place on the basis of T+5 or T+3 rolling settlement on an optional basis. IT has been started since 1998. The system was introduced in those exchanges, which are connected to a depository. Rolling settlement system was first introduced at Bombay Stock Exchange and then by the National Stock Exchange.

**(f) New Settlement System**

SEBI has introduced T+2 rolling settlement in the Indian Equity Market from 1<sup>st</sup> April, 2003. The rolling settlement has widened the scope of settlement procedure. There has been wider use of electronic fund transfer facility. Electronic contract notes have been issued to the clients.

**(g) Online Trading**

Online trading in shares and securities has already been started in India. It has been made possible due to introduction of demat. ICICI Web Trade, HDFC Securities, Stock Holding Corporation of India and many other institutions have started the online trading system. The investors can carry-out buying and selling of securities while sitting in the house or office. Internet connection is required for this purpose. The investors have to open an account with these institutions who provide online trading. There are three accounts into one place, Demat Account, Bank Account and Online Trading Account. A password is given to each investor which is secret. Investors can carry-out buying and selling securities at BSE and NSE during normal trading hours. The settlement is done automatically with the programme of the computer. Margin Trading, Options and Futures Trading are also possible in this method.

**3.4 STOCK MARKET QUOTATIONS**

The price at which a company's shares are offered initially in the primary market is called as Issue Price. However, when the shares begin to be traded in the stock market, the market price may be above or below the issue price. When an investor contracts the broker for any dealing, his computer screen may show the following pictures:

Buy Quantity	Buy Rate	Sell Quantity	Sell Rate
1000	51.00	400	51.50
200	51.00	600	52.00

The best buy order is at the rate of ₹ 51, while the best sell order is at the rate of ₹ 51.50. The investor can decide and then place the order to buy or sell the shares.

The closing prices of all traded scrips are calculated based on the weighted average price of all the trades in last 15 minutes for that particular scrip. If there are no trades during the last 15 minutes, then the last traded price would be taken as the official Closing Price. If there has been no trading in the scrip during the day, then the opening price will be traded as the closing price. The stock exchange bulletin also gives the price quotations such as previous close, the day's open, close, high and low which are published in the newspapers.

**3.5 STOCK EXCHANGES IN INDIA — BOMBAY STOCK EXCHANGE****Introduction**

The Stock Exchange, Mumbai, popularly known as "BSE" was established in 1875 as "The Native Share and Stock Brokers Association", as a voluntary non-profit making association. It has evolved over the years into its present status as the premier Stock Exchange in the country. It may be noted that the Stock Exchanges is the oldest one in Asia, even older than the Tokyo Stock Exchange, which was founded in 1878.

The Exchange, while providing an efficient and transparent market for trading in securities, upholds the interests of the investors and ensures redressal of their grievances, whether against the companies or its own member-brokers. It also strives to educate and enlighten the investors by making available necessary informative inputs and conducting investor education programmes.

A Governing Board comprising of 9 elected directors (one-third of them retire every year by rotation), two SEBI nominees, a Reserve Bank of India nominee, six public representatives and an Executive Director is the apex body, which decides the policies and regulates the affairs of the Exchange.

The Executive Director as the Chief Executive Officer is responsible for the day-to-day administration of the Exchange.

The average daily turnover of the Exchange during the year 2000-2001 (April-March), was ₹ 3984.19 crore and average number of daily trades was 5.69 lakh. However, the average daily turnover of the exchange during the year 2001- 2002 has declined to ₹ 1244.10 crore and number of average daily trades during the period to 5.17 lakh. The ban on all deferral products like BLESS and ALBM in the Indian capital markets by SEBI w.e.f. July 2, 2001, abolition of account period settlements, introduction of Compulsory Rolling Settlements in all scrips traded on the Exchanges w.e.f. December 31, 2001, etc., have adversely impacted the liquidity and consequently there is a considerable decline in the daily turnover at the exchange.

### **3.6 LOCATIONS**

One of the objectives of NSE was to provide a nationwide trading facility and to enable investors' spread all over the country to have an equal access to NSE. NSE uses sophisticated telecommunication technology through which members can trade remotely from their offices located in any part of the country. NSE trading terminals are present in around 400 cities and towns all over India.

### **3.7 LISTING**

The prime objective of admission to dealings on the Exchange is to provide liquidity and marketability to securities as also to provide a mechanism for effective management of trading.

Securities listed on the Exchange are required to fulfill the listing eligibility criteria. Various types of securities of a company are traded under a unique symbol and different series. This section provides a direct link to the web site of companies traded on the Exchange.

### **3.8 CONSTITUTION**

The NSE has two segments for trading in securities: Wholesale Debt Market (WDM) and Capital Market (CM). Separate membership is required for each segment.

### **3.9 TRADING MEMBERS**

They are recognized members of NSE. The persons eligible to become TMs are body corporates, subsidiaries of banks and financial institutions. They are selected on the basis of a comprehensive selection criterion.

### **3.10 TRADING MECHANISM**

#### **Rolling Settlement**

In a rolling settlement, each trading day is considered as a trading period and trades executed during the day are settled based on the net obligations for the day.

In NSE, the trades in rolling settlement are settled on a T+5 basis, i.e., on the 5th working day. For arriving at the settlement day all intervening holidays, which include bank holidays, NSE holidays, Saturdays and Sundays are excluded. Typically trades taking place on Monday shall be settled on the next Monday, Tuesday's trades shall be settled on the next Tuesday and so on.

## **Trading System**

NSE operates on the 'National Exchange for Automated Trading' (NEAT) system, a fully automated screen based trading system, which adopts the principle of an order driven market. NSE consciously opted in favour of an order driven system as opposed to a quote driven system. This has helped reduce jobbing spreads not only on NSE but in other exchanges as well, thus reducing transaction costs.

Till the advent of NSE, an investor wanting to transact in a security not traded on the nearest exchange had to route orders through a series of correspondent brokers to the appropriate exchange. This resulted in a great deal of uncertainty and high transaction costs. NSE has made it possible for an investor to access the same market and order book, irrespective of location, at the same price and at the same cost.

## **3.11 SECURITIES EXCHANGE BOARD OF INDIA**

### **Introduction**

In 1988 the Securities and Exchange Board of India (SEBI) was established by the Government of India through an executive resolution, and was subsequently upgraded as a fully autonomous body (a statutory Board) in the year 1992 with the passing of the Securities and Exchange Board of India Act, (SEBI Act) on 30th January, 1992. In place of Government Control, a statutory and autonomous regulatory board with defined responsibilities, to cover both development and regulation of the market, and independent powers have been set up. Paradoxically this is a positive outcome of the Securities Scam of 1990-91.

The basic objectives of the Board were identified as:

- to protect the interests of investors in securities;
- to promote the development of securities market;
- to regulate the securities market, and
- for matters connected therewith or incidental thereto.

Since its inception SEBI has been working targeting the securities and is attending to the fulfilment of its objectives with commendable zeal and dexterity. The improvements in the securities markets like capitalization requirements, margining, establishment of clearing corporations, etc., reduced the risk of credit and also reduced the market.

SEBI has introduced the comprehensive regulatory measures, prescribed registration norms, the eligibility criteria, the code of obligations and the code of conduct for different intermediaries like, bankers to issue, merchant bankers, brokers and sub-brokers, registrars, portfolio managers, credit rating agencies, underwriters and others. It has framed bye-laws, risk identification and risk management systems for clearing houses of stock exchanges, surveillance system, etc., which has made dealing in securities both safe and transparent to the end investor.

Another significant event is the approval of trading in stock indices (like S&P CNX Nifty and Sensex) in 2000. A market index is a convenient and effective product because of the following reasons:

- It acts as a barometer for market behaviour;
- It is used to benchmark portfolio performance;
- It is used in derivative instruments like index futures and index options;
- It can be used for passive fund management as in case of index funds.

Two broad approaches of SEBI is to integrate the securities market at the national level, and also to diversify the trading products, so that there is an increase in number of traders including banks, financial institutions, insurance companies, mutual funds, primary dealers, etc., to transact through the exchanges.

In this context the introduction of derivatives trading through Indian Stock Exchanges permitted by SEBI in 2000 AD is a real landmark.

SEBI appointed the **L.C. Gupta Committee** in 1998 to recommend the regulatory framework for derivatives trading and suggest bye-laws for Regulation and Control of Trading and Settlement of Derivatives Contracts. The Board of SEBI in its meeting held on May 11, 1998 accepted the recommendations of the committee and approved the phased introduction of derivatives trading in India beginning with Stock Index Futures. The Board also approved the “Suggestive bye-laws” as recommended by the Dr. L.C. Gupta Committee for Regulation and Control of Trading and Settlement of Derivatives Contracts.

SEBI then appointed the **J.R. Verma Committee** to recommend Risk Containment Measures (RCM) in the Indian Stock Index Futures Market. The report was submitted in November 1998.

However, the Securities Contracts (Regulation) Act, 1956 (SCRA) required amendment to include “derivatives” in the definition of securities to enable SEBI to introduce trading in derivatives. The necessary amendment was then carried out by the Government in 1999. The Securities Laws (Amendment) Bill, 1999 was introduced. In December 1999 the new framework was approved.

Derivatives have been accorded the status of ‘Securities’. The ban imposed on trading in derivatives in 1969 under a notification issued by the Central Government was revoked. Thereafter SEBI formulated the necessary regulations/bye-laws and intimated the Stock Exchanges in the year 2000. The derivative trading started in India at NSE in 2000 and BSE started trading in the year 2001.

### **3.12 GOVERNMENT SECURITIES MARKET**

A market where the Government Securities are bought and sold is called Government Securities Market. The securities are bonds, treasury bills, special rupee securities in payment of India subscriptions to IMF, IBRD, ADB, IDA, etc. The special rupee securities are treated as a part of internal floating debt of the Government. These securities are issued by the Central Government, State Governments and Semi-Government Authorities, which include local government authorities like city corporations and municipalities, port trusts, state electricity boards, public sector corporations and other agencies like IDBI, IFCI, SFCs, SIDCs, NABARD and Housing Boards. These agencies are suppliers of Government Securities to banks, financial institutions and investors demand these securities in the market.

Government Securities offer a safe avenue of investment through guaranteed payment of interest and repayment of principal by the Government. They offer relatively a lower fixed rate of interest compared to interest on other securities. These securities are issued in the interest is paid half-yearly. RBI services loans as these are the liabilities of Government of India and the State Governments. These securities are also eligible as SLR investments. As the date of maturity is specified in the securities they are also called as ‘dated Government Securities’.

RBI plays a special role in the purchase and sale of these securities as part of its monetary management exercise. There is no underwriting or guaranteeing required in sale of Government Securities. Dealing in securities take place through the mechanism provided by the RBI. The brokers and dealers are approved by the RBI. A striking feature of these securities is that they offer wide- ranging tax incentives to the investors. Therefore, these securities are more popular. Under the Income Tax Act, rebates are allowed for the investment in these securities. Each sale and purchase has to be negotiated separately; the gilt-edged market is an over-the-counter market. The Government Securities market has two segments namely primary market and secondary market. The issuers are Central and State Governments in the primary market. The secondary market comprises Banks, Financial Institutions, Insurance Companies, Provident Funds, Trusts, Individuals, Primary dealers and the RBI.

The securities of Central and State Government are issued in the form of Stock Certificate, Promissory Notes and Bearer bonds. These securities are mainly traded at Bombay Stock Exchange. In terms of size, the primary market for Government Securities is much bigger than the Industrial Securities Market. A notification for the issue of securities is made a few days before the public subscription is open. The opening of the subscription depends on the response of the market and varies between two to three days. The issue is made in number of branches in a year. The offices of RBI and SBI receive the applications for the Securities. The Government reserves the right to retain oversubscription up to a pre-specified percentage which is generally 10%, of the notified amount. The mechanism of trading in Government Securities takes place through the Direct Sale, Securities General Ledger accounts and Bank Receipts method. The Government may issue securities through the following modes;

- (1) Issue of securities through auction.
- (2) Issue of securities with pre-announced coupon rates.
- (3) Issue of securities through tap sale.
- (4) Issue of securities through conversion.

The securities can be issued through auction either on price basis or yield basis. The coupon on such securities are announced before the date of floating and the securities are issued at par. No aggregated amount is indicated in the notification in respect of the securities sold on tap. The holders of Treasury Bills of certain specified maturities and holder of specified dated securities are provided an option to convert the respective Treasury Bills or dated securities at specified prices into new securities offered for sale.

### **3.13 CORPORATE DEBT MARKET**

A market where fixed income securities of various types and features are issued and traded is called Debt Market. Fixed income securities are Government Securities, public sector bonds and private sector bonds. These securities are issued by Central and State Governments, municipal corporations, semi-government bodies and commercial bodies such as financial institutions, banks, public sector units, and public limited companies.

The profiles of financial instrument which are traded in the debt market include the following:

- (a) **Government Securities**, such as Treasury Bills, zero coupon bonds, coupon bearing bonds, etc.
- (b) **Public sector bonds**, such as bonds issued by public sector entities like government agencies, statutory bodies. The financial instruments issued by these bodies include Debentures, PSU Bonds, Government Guaranteed Bonds and Commercial Paper.
- (c) **Private sector bonds** are issued by private sector entities such as companies, financial institutions, banks. The financial securities issued by these institutions include Debentures, Bonds, Commercial Paper, Floating Rate Bonds, Zero-coupon Bonds, Intercorporate Deposits, and Certificate of Deposits.

Investment in fixed income securities is profitable to the banks and other investors. They ensure steady and constant return by way of interest and repayment of principal of maturity of the instrument. These securities are issued by eligible entities of standing against the money borrowed by them from the investors. This guarantees safety of funds invested. Such debt is usually secured against the assets of the company. Most of the fixed income securities are issued by Government or Government agencies who offer risk-free return on the investment.

Debt market facilitates mobilization of resources at reasonable cost. It provides greater funding avenues to public and private sector projects, and thus reduces the pressure on institutional financing.

There is enhanced resource mobilization by unlocking illiquid retail investments like gold and silver. It also helps financing the development activities of the Government. It facilitates the efficient liquidity management in tune with the overall short-term and long-term objectives of the economic planning. The price of an instrument is determined in the market by the operation of the forces of demand and supply yield and the market price of the bond are inversely related.

Debt market is divided into two parts, secondary market and primary market. New instruments are issued in the primary market by various participants. The market for bonds and securities are bought and sold is called secondary debt market. The securities are already issued by the companies and these securities are traded in this market. The secondary market is again divided into wholesale market and retail market. Wholesale debt market comprises of institutions and agencies such as banks, financial institutions, RBI, primary dealers, insurance companies, provident funds, mutual funds, corporate entities and foreign institutional investors. The two types of transactions are executed in a wholesale debt market, i.e., an outright sale or purchase and a repo trade. The retail debt market comprises individual investors, small trusts and other legal entities.

### **3.14 MONEY MARKET INSTRUMENTS**

#### **Treasury Bills**

Treasury Bills are money market instruments to finance the short-term requirements of the Government of India. These are discounted securities and thus are issued at a discount to face value. The return to the investor is the difference between the maturity value and issue price.

#### **Types of Treasury Bills**

There are different types of Treasury Bills based on the maturity period and utility of the issuance like, adhoc Treasury Bills, 3 months, 6 months and 12 months Treasury Bills, etc. In India, at present, the Treasury Bills are issued for the following tenors 91-days, 182-days and 364-days.

### **3.15 EXERCISES**

#### **Answer the following Questions**

1. What is a securities market? What are its features?
2. What is primary market? How it is different from secondary market?
3. What is security market? How does it differ from primary market?
4. Distinguish between primary market and secondary market?
5. Explain the role of SEBI in regulating securities market.
6. What are the benefits of NSE to the investors?
7. What is a stock exchange? How does it help the investors?
8. Write short notes:
  - (a) Stock market.
  - (b) Treasury bills.
  - (c) Mutual funds.
  - (d) Rating of debt securities.

#### **Objective Type Questions**

#### **State True or False with Reasons**

1. The new issue market and the stock market are the independent of each other.
2. Nifty's base period is 1995.



3. Listing of securities is compulsory for only government companies.
4. A depository is a deposit in fixed deposit.
5. A red herring prospectus does not have any details of number of shares offered or price of shares.

**Ans:** 1. (F), 2. (T), 3. (F), 4. (F), 5. (T).

### Multiple Choice Questions

#### Choose the right Answer

1. The new issue market and stock market \_\_\_\_\_.
  - (i) Are independent of each other
  - (ii) Control each other
  - (iii) Compete with each other
  - (iv) Complement each other
2. Book building means \_\_\_\_\_.
  - (i) Fixed price of shares
  - (ii) Variable price auction
  - (iii) Making a book for publisher
  - (iv) Price index
3. A merchant banker is \_\_\_\_\_.
  - (i) Broker
  - (ii) Bank
  - (iii) Banker who manages issue of company
  - (iv) Shareholder
4. An underwriter takes up \_\_\_\_\_.
  - (i) Unsubscribed agreed of portion of issued capital
  - (ii) Fixed proportion of issued capital
  - (iii) Book building
  - (iv) Private placement
5. The Sensex has \_\_\_\_\_.
  - (i) 25 stocks
  - (ii) 30 stocks
  - (iii) 50 stocks
  - (iv) 100 stocks

**Ans:** 1. (iv), 2. (ii), 3. (iii), 4. (i), 5. (ii).



## CHAPTER

# 4

# RISK AND RETURN RELATIONSHIP

### Chapter Contents:

- 4.1 Meaning of Risk
- 4.2 Types of Risk
- 4.3 Measuring Risk
- 4.4 Risk Preference of Investors
- 4.5 Meaning of Return
- 4.6 Measures of Return
- 4.7 Holding Period of Return
- 4.8 Annualized Return
- 4.9 Expected Return
- 4.10 Investors' Attitude towards Risk and Return
- 4.11 Exercises

### 4.1 MEANING OF RISK

Risk is a chance of loss. Investment risk exists where there is more than one possible future return associated with an investment. If more than one possible return exists and the investor has no idea of the probabilities associated with the occurrence of any of the possible future returns, the situation is of complete investment uncertainty. Investment certainty exists when there is an only one possible return. The investor should be certain of the investment's return. Between the two extremes of investment certainty lies the area of investment risk. Under condition of risk, investors realize that there is a range of possible returns and can associate some probability to each possible return. This dispersion of possible returns represents risks. The greater the dispersion of possible returns on an investment, the greater the risk. **The risks that equity shares can carry are:**

1. Loss of dividend when no dividend is declared,
2. Low dividend, i.e., dividend lower than bank's fixed deposit rates of interest,
3. Stagnation or depreciation in the price of shares, and
4. Insolvency of the company.



## 4.2 TYPES OF RISK

The various types of risk in investment may be classified as follows:

**(1) Default risk:** It is the risk of insurer of investment going bankrupt. An investor who purchases share or debenture will have to face the possibility of default and bankruptcy of the company. In the case of fixed income securities such as debenture or fixed deposits of companies, the investor may take the care to see that the credit rating given to the company, so that the risk can be minimized.

**(2) Business risk:** Business risk means the risk of a particular business failing and thereby an investment is lost. It is identifiable as the variation in the firm earnings due to its business or product line. The principal determinants of a firm's business risk are the variability of sales and its operating leverage. Operating leverage represents the firm's ability to translate increased sales increased profit. Business risk can be divided into two broad categories, external and internal. External business risk to the result of operating conditions imposed upon the firm by circumstances beyond its control. Internal business risk is associated with the efficiency with which a firm conducts its operation.

**(3) Financial risk:** The financial risk is a function of the company's structure or financial leverage. Financial leverage is a per cent change in net earning for a giving result from the use of debt financing in the capital structure. If a company use of large amount of debt, then it has contracted to pay a relatively large fixed amount for its sources of capital. When the operating profits fall, the company will have to pay large interest payment and the net profit will even more. This is an example of financial leverage. The likelihood of a company defaulting on its debt-servicing obligation is known as financial risk.

**(4) Purchasing power risk:** The purchasing power risk of a security is the variation of real returns on the security caused by inflation. Inflation reduces the purchasing power of money over time. The impact of inflation is failed greater in case of fixed income investments. On the other hand, in case of fluctuating income like shares and dividends, there is a possibility of the dividend rate being higher than the inflation rate. Thus, unless the returns on your investments are higher than the inflation rates, your investments are not profitable. The return on your investment after adjusting for inflation is known as real rate of return.

**(5) Interest rate risk:** The earnings of the companies and the performance of their shares are sensitive to interest rates changes. Therefore, potential variability of investment return due to interest rate fluctuation is interest rate risk. The returns on other type of securities also depend upon interest rates. The degree of sensitivity to interest rate changes will naturally differ from company-to-company. Recently, companies have started issuing 'floating rate bonds'. The rate of interest on these bonds are linked to some floating rate such as 'prime rate' or the bank minimum lending rate. When the market interest rate rise, the bond rate rises and when it fall, the bond rate also falls.

**(6) Market risk:** The market risk means the variability in the rates of return caused by the market upswings or market downswings. It is caused by the investor reaction by tangible as well as intangible events in markets the returns on the securities tend to move together. That is, on a good day, the fact that some stocks in the market are rising seems to fuel enthusiasm, and other stocks tend to rise also. On the other hand, when some stock begin to fall, other will also tend to fall as a mood of pessimism pervades the market.

**(7) Liquidity risk:** Liquidity risk arises from the inability to convert an investment quickly into cash. It refers to the ease with which the stock may be sold. If a stock is highly liquid, it can be sold very quickly at a price which is more or less equal to its previous market price. When the investor wants to sell a stock he is concerned with its liquidity. On the other hand, when an investor wants to buy a stock, he is interested in its availability. A stock may be deemed to be easily available, if it can be purchased quickly at a price more or less equal to its previous price. A stock may be regarded as not easily available, if the purchaser has to wait for quite some to buy it at a price which is more or less equal

to the previous price. Thus, the lower marketability of stock gives a degree of liquidity risk that makes the price of the stock a bit more uncertain.

**(8) Systematic and unsystematic risk:** The fluctuation in an investment’s return attributable to the changes in broad economy social or political factors which influence the return on investment is a systematic risk. It is that portion of risk of a security which is caused by the influence of certain economic-wide factor like money supply, inflation, level of government spending and monsoon which have a bearing on the fortune of every company.

Unsystematic risk is the variation in return due to factors related to individual firm or security. It is that portion of total risk which arises from factors specific to a particular firm such as plant break down, labour strikes, sources of material, etc. All risky securities have some degree of unsystematic risk but combining securities into diversified portfolios reduces unsystematic risk from the portfolio.

**4.3 MEASURING RISK**

The risk associate with the stock refers to the variability of its rate of return. The investors should be able to quantify and measure the risk. The risk probability distribution of the possible returns on the investments represents an investment’s total risk.

**(1) Range:** The simplest measure of the dispersion of a distribution is the range of returns. The range is equal to the highest value that the variable can be less to the lowest possible value.

Monthly holding returns for Gramophone Equipment Corporation

Months	Returns
January	0.026
February	-0.050
March	-0.109
April	0.053
May	-0.058
June	-0.076
July	-0.057
August	0.241
September	-0.063
October	0.125
November	0.161
December	-0.053

Expected value = 0.012

Range = 0.35

Variance = 0.011

Standard deviation = 0.106

Thus, the higher the range of returns, the riskier the security.

The advantage of the range as a measure of risk lies in its simplicity.

**(2) Variance:** Variance is the better measure of risk than the range. It takes into account the derivation of all possible returns from their mean or expected value. The statistical measure that accomplishes this purpose is the variance of returns. The formula used for variance is as follows:

$$\sigma^2 = \sum_{i=1}^n [R_i - E(R)]^2 \times P$$

The above equation defines the variance as the weighted average of the squared deviation of the returns from their mean. The above table shows the variance computed for Gramophone Equipment Corporation using above equation. The greater the variance of a security, the higher the security's total risk level.

**(3) Standard deviation:** Computation of the variance of returns makes use of the squared deviation of returns from the mean and therefore the resulting variance is stated in squared terms. The standard deviation of a set of numbers is the average variability around the mean. The following formula can be used to calculate standard deviation.

$$\sqrt{\frac{1}{n-1} \sum [(R_i - R_i)]^2}$$

where, n = number of observation in the sample

$R_i$  = rate of return

$R_i$  = arithmetic average of the rates of return

#### 4.4 RISK PREFERENCE OF INVESTORS

Investors make investment decision designed to maximise their expected utility. The expected utility of an investment means the total benefit that an investor expects to receive from the investment. We assume that investor seek to maximise expected utility. Investor could regard the risk-return trade-off in three distinct ways as follows:

- (1) Investor could be risk seeking
- (2) Investor could be risk indifferent
- (3) Investor could be risk averse

**(1) Risk seeking investors:** This means that the investor are willing to make investment of increasing higher risk for the promise of increasingly smaller increments of return. These investors like to accept risk. Extreme risk seekers would be willing to purchase investments of higher risk for less return. Naturally, such extreme risk seekers would have distorted view of personal satisfaction.

**(2) Risk indifferent investors:** Risk indifferent investors would be willing to continue buying investment of higher risk by receiving the same increase in return. This is not a logical situation because at some point a reasonable person would likely to stop further investment. A risk-indifferent investor receives the same incremental utility for each increase in health.

**(3) Risk averse investors:** When investors require successfully greater increment of return to compensate them for each additional unit increase in risk, they are known as Risk averse investors. They receive smaller increments of utility of each additional increments of wealth. They will accept the additional risk, but if only if they are adequately compensated for doing so and adequately compensation for a risk averter means being paid more and more for accepting higher risk.

#### 4.5 MEANING OF RETURN

The return means the profit earned on the capital invested in the business. It is expressed as a percentage. The return on an investment is the profit required to establish and maintain the investment. The investors invest their funds to make a profit which is known as return. The goal of the investment is to minimize the investor's utility and maximizing expected return.

#### 4.6 MEASURES OF RETURN

Return can be measured as a rate of return on capital investment. To measure the rate of return an investor wants to know three items:

1. The period of time that the measurement covers.
2. The net profit of the investment over the time period, and
3. The amount needed to establish and maintain the investment.

The final component of return is usually the purchase price of the security. It is a stock concept meaning that we measure its value of a particular point in time rather than over a time period.

#### 4.7 HOLDING PERIOD RETURN

In the typical security investment, an investor purchase and pays for the security at the beginning of the holding period and then sells it at the end of the time period. In such a situation, the holding period return on the investment is:

$$R_t = \frac{P_t - P_{t-1} + Y_t}{P_{t-1}}$$

where,  $R_t$  = the holding period return on the investment

$P_t$  = the price of the security at time  $t$ , the end of the holding period

$P_{t-1}$  = the price of the security at time  $(t-1)$ , the beginning of the holding period

$Y_t$  = the income from the investment during the holding period

The above equation shows that the holding period a return is equal to the profit on the security per rupee invested in the security.

For e.g., the holding period returns of the security purchased for ₹ 4,000 and sold for ₹ 5,000 after holding for two months is determined as follows:

$$R = \frac{5000 - 4000}{4000} = \frac{1000}{4000} = 0.25 \text{ or } 25\%$$

#### 4.8 ANNUALIZED RETURN

When comparing the returns on two different investments, the holding periods for the investments must be equal length for the comparison to be meaningful. The most commonly used holding period for reporting and comparing returns is annual returns.

For e.g., a security purchased for ₹ 4,000 and sold for ₹ 5,000 after holding period for 2 months, its annualised return will be 150%, i.e.,  $\frac{5000 - 4000}{4000} \times 100 \times \frac{12}{2}$

#### 4.9 EXPECTED RETURN

Under condition of risk, investors, realize that an investment can actually yield a number of different returns and they are able to associate or estimate each possible return with its respective probability of occurring. These probabilities may be determined using precise mathematical methods and past data or by using subjective, judgement assessment.

Probability distribution of returns represents the total risk of the investment. The larger and the more spread out the distribution the greater the risk of the investment. Investments with lower levels of risk correspond to narrower distribution of possible returns.

The concept of expected return becomes useful at any time when there is uncertainty about an return on an investment. Thus, an expected return means the average return that one expects to receive on an investment over the long-run. From mathematical point of view, an expected return is defined as

the weighted average holding period various probabilities of their occurrences. The expected return is calculated by using the following return:

$$E(R) = \sum_{i=1}^n R_i P_i$$

where,  $E(R)$  = the expected return on an investment

$n$  = the number of possible terms

$R_i$  = the  $i^{\text{th}}$  possible return

$P_i$  = the probability of the  $i^{\text{th}}$  return  $R_i$

Thus, the expected rate of return is equal to the sum of each possible returns its probability of occurrence.

#### 4.10 INVESTORS' ATTITUDE TOWARDS RISK AND RETURN

Understanding and measuring return and risk is a fundamental to the investment process and increases an awareness of the investment problem. Most investors are risk averse. They must be aware of the risks in different investment. To have a higher return the investors should be able to accept the fact that he has to be faced with greater risk. The investor attempt to maximize their wealth at the minimum risk. When risk is established, it can be reduced to a minimum but it cannot be completely eliminated. Risk and return are related. The higher the risk a person is willing to accept the better the returns and he is able to achieve.

**Illustration 1:** Mr. A has invested equal amounts of security X and Y. The expected return during the boom and depression with equal probability of occurrence are as under:

Economic condition	Expected return of	
	Security X	Security Y
Boom	6	12
Depression	15	5

Calculate expected return and standards deviation of each security.

**Solution:**

(i) Calculation of Expected Rate of Return:

Economic condition	Expected Return		Probability	Expected returns	
	X	Y		X	Y
Boom	6	12	0.5	3.00	6.00
Depression	15	5	0.5	7.05	2.05
	Expected Return			10.50	8.50

(ii) Calculation of Standard Deviation of X:

State of Economy	$K_i$	$(K_i - K_p)$	$(K_i - K_p)^2$	P	$P(K_i - K_p)^2$
Boom	6	-4.50	20.25	0.5	10.125
Depression	15	4.50	20.25	0.5	10.125
					20.25

$$\text{Standard deviation} = \sqrt{20.25} = 4.5$$

(iii) Calculation of Standard Deviation of Y:

State of Economy	$K_i$	$(K_i - K_i)$	$(K_i - K_i)^2$	P	$P(K_i - K_i)^2$
Boom	12	305	12.25	0.50	6.125
Depression	5	-3.5	12.25	0.50	6.125
				12.25	

Standard Deviation =  $\sqrt{12.25} = 3.5$

**Illustration 2:** The rate of return on Stocks X and Y under different states of the economy are given below:

	Boom	Normal	Recession
Probability of occurrences	0.35	0.50	0.15
Rate of return on stock X (%)	20	30	40
Rate of return on stock Y (%)	40	30	20

- (i) Calculate the expected return and standard deviation of returns of both the stocks.
- (ii) If you could invest in either stocks X and Y, but not in both, which stock would you prefer?
- (iii) What would be your decision if the probability changes to 30:40:30?

**Solution:**

(i) (a) Calculation of expected return:

State of economy	Rate of return		Probability	Expected returns	
	X (%)	Y (%)		X	Y
Boom	20	140	0.35	07	14
Depression	30	30	0.50	15	15
Recession	40	20	0.15	06	03
		Expected Return		28	32

(b) Calculation of standard deviation of stock X:

State of economy	Return on X (%)	$(X - X)$	$(X - X)^2$	P	$P(X - X)^2$
Boom	20	-8	64	0.35	22.40
Normal	30	2	4	0.50	2.00
Recession	40	12	144	0.15	21.60
					46.00

Standard deviation =  $\sqrt{46.00} = 6.78$

(c) Calculation of standard deviation of Y:

State of economy	Return on Y (%)	$(Y - Y)$	$(Y - Y)^2$	P	$P(Y - Y)^2$
Boom	40	8	64	0.35	22.40
Normal	30	-2	4	0.50	2.00
Recession	20	-12	144	0.15	21.60
					46.00

Standard deviation =  $\sqrt{46.00} = 6.78$

- (ii) Standard deviation measures the risk of a security. The standard deviation of both the stock is the same. Return on stock 'Y' is higher by 4% as compared to return on stock 'X' though the risk is same. Therefore, it is preferable to invest in stock 'Y'.

## (iii) (a) Calculation of expected return:

State of economy	Rate of return		Probability	Expected returns	
	X (%)	Y (%)		X	Y
Boom	20	40	0.30	6	12
Depression	30	30	0.40	12	112
Recession	40	20	0.30	12	6
		Expected Return		30	30

## (b) Calculation of Standard Deviation of X:

State of economy	Return on X (%)	(X - X)	(X - X) <sup>2</sup>	P	P (X - X) <sup>2</sup>
Boom	20	-10	100	0.30	30.00
Normal	30	0	0	0.40	0.00
Recession	40	10	100	0.30	30.00
					60.00

$$\text{Standard deviation} = \sqrt{60.00} = 7.75$$

## (c) Calculation of Standard Deviation of Y:

State of economy	Return on X (%)	(X - X)	(X - X) <sup>2</sup>	P	P (X - X) <sup>2</sup>
Boom	40	-10	100	0.30	30.00
Normal	30	0	0	0.40	0.00
Recession	20	10	100	0.30	30.00
					60.00

$$\text{Standard deviation} = \sqrt{60.00} = 7.75$$

If the probability changes to 30 : 40 : 30, then both the stocks have same returns as well as risk. Hence, investment can be made in any stock.

**Illustration 3:** Dr. Shah purchased 400 shares of Sundar Ltd. @ ₹ 61 each on 15<sup>th</sup> October, 2004. He paid brokerage of ₹ 600. The company paid the following dividends:

June, 2005	₹ 800
June, 2006	₹ 1000
June, 2007	₹ 1200

He sold all his holdings for ₹ 34,500 (net) on 15<sup>th</sup> October, 2007

- (1) What is the holding period return?
- (2) What is annualized return?
- (3) Is Mr. Shah a good investor?

**Solution:**

- (1) Purchases  $400 \times 61 = ₹ 24,400$   
 Brokerage = ₹ 600  
 Total = ₹ 25,000
- (2) Dividend =  $800 + 1,000 + 1,200 = ₹ 3,000$
- (3) Capital Gains =  $34,500 - 25,000 = ₹ 9,500$
- (4) Total Returns =  $3,000 + 9,500 = 12,500$

(5) Holding period = 3 years

(6)  $\frac{\text{Return}}{\text{Investment}} \times 100 = \frac{12,500}{25,000} \times 100 = 50\%$

(7) Annualized return =  $\frac{50}{3} = 16.67$

(8) Mr. Shah is a good investor.

**Illustration 4:** Shankar has been considering an investment in stock X or Y. He has estimated the following probability distribution of return of stock X and Y.

Return on stock X	Return on stock Y	Probability
-10	05	10
0	10	25
10	15	40
20	20	20
30	25	05

Calculate the expected return and standard deviation of stock X and Y and state which stock is worth investing.

**Solution:**

(i) Calculation of expected return

X	Y	P	ER <sub>x</sub>	ER <sub>y</sub>
-10	05	0.10	-1	0.50
0	10	0.25	0	0
10	15	0.40	4	6.00
20	20	0.20	4	8.00
30	25	0.05	1.50	1.25
			8.50	14.75

(ii) Calculation of standard deviation of stock X

X <sub>1</sub>	(X <sub>1</sub> - X <sub>1</sub> )	(X <sub>1</sub> - X <sub>1</sub> ) <sup>2</sup>	P	P(X <sub>1</sub> - X <sub>1</sub> ) <sup>2</sup>
-10	-18.50	342.25	0.10	34.225
0	-8.50	72.25	0.25	18.06
10	1.50	2.25	0.40	0.90
20	11.50	132.25	0.20	26.45
30	21.50	462.25	0.05	23.11
		1011.25		102.745

SD =  $\sqrt{102.745} = 10.14$

Y <sub>1</sub>	(Y <sub>1</sub> - Y <sub>1</sub> )	(Y <sub>1</sub> - Y <sub>1</sub> ) <sup>2</sup>	P	P(Y <sub>1</sub> - Y <sub>1</sub> ) <sup>2</sup>
05	-9.25	85.56	0.10	8.55
10	-4.25	18.06	0.25	4.51
15	0.75	0.56	0.40	0.22
20	5.75	33.06	0.20	6.61
25	10.75	115.56	0.05	5.78
				25.67



$$SD = \sqrt{25.67} = 5.07$$

**Illustration 5:** The following is the information of stock A and stock B under the possible states of nature:

State of nature	Probability	Return 'A'	Return 'B'
1	0.10	5%	0%
2	0.30	10%	8%
3	0.50	15%	18%
4	0.10	20%	26%

- (1) Calculate expected return on A and B.
- (2) Calculate the standard deviation of stock A and B.
- (3) If you want to invest in any one stock, which stock would you prefer?

**Solution:**

**(1) Calculation of expected return**

State of nature	Probability	R <sub>a</sub> %	R <sub>b</sub> %	ER <sub>a</sub> %	ER <sub>b</sub> %
1	0.10	5	0	0.50	0
2	0.30	10	8	3.0	2.40
3	0.50	15	18	7.50	9.00
4	0.10	20	26	2.00	2.06
				13.00	14.00

**(2) (i) Calculation of standard deviation of stock A**

State of Economy	K <sub>i</sub>	(K <sub>i</sub> - K <sub>i</sub> )	(K <sub>i</sub> - K <sub>i</sub> ) <sup>2</sup>	P	P(K <sub>i</sub> - K <sub>i</sub> ) <sup>2</sup>
1	5	-8	64	0.10	6.40
2	10	-3	09	0.30	2.70
3	15	2	04	0.50	2.00
4	20	7	49	0.10	4.90
					16

$$16 \sigma_a = \sqrt{16} = 4\%$$

**(ii) Calculation of standard deviation of stock B**

State of Economy	K <sub>i</sub>	(K <sub>i</sub> - K <sub>i</sub> )	(K <sub>i</sub> - K <sub>i</sub> ) <sup>2</sup>	P	P(K <sub>i</sub> - K <sub>i</sub> ) <sup>2</sup>
1	0	-14	196	0.10	19.6
2	8	-6	36	0.30	10.8
3	18	4	16	0.50	8.0
4	26	12	144	0.10	14.4
					52.8

$$\sigma_b = \sqrt{52.8} = 7.25\%$$

- (3) Expected return on stock B is higher but the risk (S.D.) is also higher. Therefore, Risk averse investor can invest in stock A while the risk taker will invest in stock B.

**Illustration 6:** Following is the information about shares of ABC Ltd. and XYZ Ltd. under different economic condition. At present both shares are traded at ₹ 100.

Economic Condition	Probability	Expected price of Shares ABC Ltd.	Expected price of Shares XYZ Ltd.
High growth	0.3	140/-	150/-
Low growth	0.4	110/-	100/-
Stagnation	0.2	120/-	120/-
Recession	0.1	100/-	80/-

- (i) Which company has more risk to invest?  
 (ii) Mr. Ram wants to invest ₹ 10,000  
 (1) Only in ABC Ltd. (2) Only in XYZ Ltd.  
 Which is better option justify?  
 (iii) Will your decision change if probabilities are 0.4, 0.4, 0.1 and 0.1 respectively?

**Solution:**

**(i) Calculation of rate of return:**

$$\text{Rate of return} = \frac{\text{Expected Price} - \text{Present Price}}{\text{Present Price}} \times 100$$

ABC Ltd.	XYZ Ltd.
High growth = $\frac{140 - 100}{100} \times 100 = 40\%$	= $\frac{150 - 100}{100} \times 100 = 50\%$
Low growth = $\frac{110 - 100}{100} \times 100 = 10\%$	= $\frac{100 - 100}{100} \times 100 = 0\%$
Stagnation = $\frac{120 - 100}{100} \times 100 = 20\%$	= $\frac{120 - 100}{100} \times 100 = 20\%$
Recession = $\frac{100 - 100}{100} \times 100 = 0\%$	= $\frac{80 - 100}{100} \times 100 = 20\%$

**(ii) Calculation of expected return:**

Eco-condition	Rate of Return		Probability	Expected return	
	ABC %	XYZ %		ABC Ltd.	XYZ Ltd.
High growth	40	50	0.3	12	15
Low growth	10	0	0.4	4	0
Stagnation	20	20	0.2	4	4
Recession	0	-20	0.1	0	-2
				20	17

**(iii) Calculation of SD of ABC Ltd.**

Eco-condition	Return (K)	(K - K <sub>i</sub> )	(K - K <sub>i</sub> ) <sup>2</sup>	P	P(K - K) <sup>2</sup>
High growth	40	20	400	0.3	120
Low growth	10	-10	100	0.4	40
Stagnation	20	0	0	0.2	0
Recession	0	-20	400	0.1	40
					200

$$SD = \sqrt{200} = 14\%$$

(iv) Calculation of SD of XYZ Ltd.

Eco-condition	Return (K)	(K - K <sub>i</sub> )	(K - K <sub>i</sub> ) <sup>2</sup>	P	P(K - K <sub>i</sub> ) <sup>2</sup>
High growth	50	33	1089	0.3	326.7
Low growth	0	-17	289	0.4	115.6
Stagnation	20	3	9	0.2	1.8
Recession	-20	-37	1369	0.1	136.9
					581

$$SD = \sqrt{581} = 24\%$$

(v) SD when probability are changed ABC Ltd.

Eco-condition	Return (K)	(K - K <sub>i</sub> )	(K - K <sub>i</sub> ) <sup>2</sup>	P	P(K - K <sub>i</sub> ) <sup>2</sup>
High growth	40	18	324	0.4	129.6
Low growth	10	-12	144	0.4	57.6
Stagnation	20	-2	04	0.1	0.4
Recession	0	-22	484	0.1	48.4
					236

$$SD = \sqrt{236} = 15.36$$

(vi) SD when probability are changed XYZ Ltd.

Eco-condition	Return (K)	(K - K <sub>i</sub> )	(K - K <sub>i</sub> ) <sup>2</sup>	P	P(K - K <sub>i</sub> ) <sup>2</sup>
High growth	50	30	90	0.4	360
Low growth	0	-20	400	0.4	160
Stagnation	20	3	9	0.1	0
Recession	-20	-40	1600	0.1	160
					680

$$SD = \sqrt{680} = 26.08$$

If the probabilities are changed, then the decision will not change.

**Illustration 7:** The following is the information of stock X and stock Y under the possible states of nature:

States of nature	Probability	Return on X	Return on Y
Boom	0.10	5%	0%
Normal	0.30	10%	8%
Recession	0.50	15%	18%
Recovery	0.10	20%	26%

You are required to:

- Calculate the expected return on stock X and Y.
- Calculate the standard deviation of both the stocks, and
- If you want to invest in any one stock, which stock would you prefer?

**Solution:**

**(i) Calculation of expected return on stock X and Y:**

State of nature	Probability	Rate on return (%)		Expected return	
		X	Y	X	Y
Boom	0.10	5	0	0.50	0
Normal	0.30	10	8	3.00	2.40
Recession	0.50	15	18	7.50	9.00
Recovery	0.10	20	26	2.00	2.6
		Expected return		13.0	14.0

**(ii) Calculation of standard deviation of stock 'X':**

State of nature	$K_i$	$(K - K_i)$	$(K_i - K_i)^2$	P	$P(K - K_i)^2$
Boom	5	-8	64	0.10	6.4
Normal	10	-3	09	0.30	2.7
Recession	15	2	04	0.50	2.0
Recovery	20	7	49	0.10	4.9
					16

$$\text{Standard deviation} = \sqrt{16} = 04\%$$

**(iii) Calculation of standard deviation of stock 'Y':**

State of nature	$K_i$	$(K - K_i)$	$(K_i - K_i)^2$	P	$P(K - K_i)^2$
Boom	0	-14	196	0.10	19.6
Normal	8	-6	36	0.30	10.8
Recession	18	4	14	0.50	8.0
Recovery	26	12	144	0.10	14.40
					52.8

$$\text{Standard deviation} = \sqrt{52.8} = 7.27\%$$

Expected return on stock 'Y' is higher than 'X'. However, standard deviation is also higher. Hence, investment in stock 'X' is preferred because expected return is reasonable and risk (SD) is lower.

**Illustration 8:** Mr. Rajesh, a fund manager produced the following returns for the last five years. Rates of return on Sensex are also given on comparison:

	2003-04	2004-05	2005-06	2006-07	2007-08
Mr. Rajesh	6%	48%	-15%	7%	11%
Sensex	12%	40%	-6%	20%	3%

Calculate the average return and standard deviation of Mr. Rajesh's mutual fund. Did he do better or worse than sensex by these measures?

**Solution:**

**Calculation of Average Return and Standard Deviation**

Year	Rajesh			Sensex		
	$R_i$	$R_i - \bar{R}_i$	$(R_i - \bar{R}_i)^2$	$R_i$	$R_i - \bar{R}_i$	$(R_i - \bar{R}_i)^2$
2003-04	6	-5.4	29.16	12	-1.8	3.24
2004-05	48	36.6	1339.56	40	-26.3	686.44
2005-06	-15	-26.4	696.96	-06	-19.8	392.04
2006-07	07	-4.4	19.36	20	6.2	38.44
2007-08	11	-0.4	0.16	03	-10.8	116.64
			2085.20			1236.80

$$\text{Average return} = \frac{\sum R_i}{n}$$

$$\text{Average return of Rajesh} = \frac{57}{5} = 11.4\%$$

$$\text{Average return of Sensex} = \frac{69}{5} = 13.8\%$$

$$\text{Standard deviation of return} = \sqrt{\frac{\sum (R_i - \bar{R}_i)^2}{n}}$$

$$\text{Standard deviation of Rajesh's return} = \sqrt{\frac{2085}{5}} = \sqrt{417} = 20.42\%$$

$$\text{Standard deviation of sensex return} = \sqrt{\frac{1236.80}{5}} = \sqrt{247.36} = 15.72\%$$

Average return on Rajesh's mutual fund is 11.4% and standard deviation is 20.42% while average return on sensex is 13.8% and standard deviation is 15.72%. Therefore, the performance of Rajesh's mutual fund is worse than sensex.

**Illustration 9:** Compute the expected return of an investment in the following security.

Economic condition	Probability (P)	Return on investment (%)
Boom	0.275	40
Stagnation	0.450	20
Depression	0.275	-10

**Solution:**

Economic condition	Probability (P)	Return on	Expected return investment (%)
Boom	0.275	40	11.00
Stagnation	0.450	20	09.00
Depression	0.275	-10	-02.75
			17.25

**Illustration 10:** Ashok purchased 100 shares of A Ltd., four years ago at ₹ 500 each. The rate of brokerage was 1%. The company paid the following dividends:

	Year 1	Year 2	Year 3	Year 4
Dividend per share (₹)	2	2	2.50	3
Dividend amount	200	200	250	300

The current price of the share is ₹ 600. What is the profit has be earned on his investment if he sells the shares now?

**Solution:**

**Calculation of profit on sale of shares:**

<b>(i) Calculation of investment</b>	₹	
100 shares @ ₹ 500 each	50,000	
<i>Add:</i> Brokerage @ 1%		<u>500</u>
<b>Total</b>	<u>₹ 50,000</u>	
<b>(ii) Total dividend received</b>		
₹ 200 + 200 + 250 + 300	₹ 950	
<b>(iii) Sales realised</b>	₹	
100 shares @ ₹ 600 each	₹ 60,000	
<i>Less:</i> Brokerage @1%		<u>600</u>
Net proceeds	<u>₹ 59,400</u>	

$$(iv) \text{ Capital appreciation} = ₹ 59,400 - ₹ 50,500 \\ = ₹ 8,900$$

$$(v) \text{ Total profit earned} = \text{Dividend} + \text{Capital Appreciation} \\ = ₹ 950 + ₹ 8,900 \\ = ₹ 9,850$$

$$(vi) \text{ Holding period return} = \frac{\text{Profit}}{\text{investment}} \times 100 \\ = \frac{9,850}{50,500} \times 100 = 19.50\%$$

$$(vii) \text{ Annualised return} = \frac{19.50}{4} = 4.88\%$$

**Illustration 11:** An investor would like to find the expected return on the share of Golden Ltd. The following data have been available:

State of economy	Probability	Rate of Return
Boom	0.30	30
Normal	0.50	18
Recession	0.20	10

Calculate the expected return from the share.

**Solution:**

**Calculation of Expected Return from the Share**

State of economy	P	$R_i$	$\bar{R}_i$	$(R_i - \bar{R}_i)$	$(R_i - \bar{R}_i)^2$	$P(R_i - \bar{R}_i)^2$
Boom	0.30	30	9	10	100	30
Normal	0.50	18	9	-2	4	2
Recession	0.20	10	2	-10	100	20
			20			52

∴ The expected return of share is 20%.

**Illustration 12:** Given below are the likely returns in case of shares of VCC Ltd. and LCC Ltd. in the various economic conditions. Both the shares are presently quoted at 100 per share.

Economic Conditions	Probability	Returns of VCC Ltd.	Returns of LCC Ltd.
High Growth	0.3	100	150
Low Growth	0.4	110	130
Stagnation	0.2	120	90
Recession	0.1	140	60

Which of two companies are risky investments?

**Solution:**

**Calculation of Expected Return and Standard Deviation for VCC Ltd.**

Economic Conditions	P	$R_i$	$\bar{R}_i$	$(R_i - \bar{R}_i)$	$(R_i - \bar{R}_i)^2$	$P(R_i - \bar{R}_i)^2$
High Growth	0.3	100	30	-12	144	43.2
Low Growth	0.4	110	44	-2	4	1.6
Stagnation	0.2	120	24	8	64	12.8
Recession	0.1	140	14	28	784	78.4
			112			136

∴ Standard deviation

$$\sigma = \sqrt{136}$$

$$\sigma = 11.66\%$$

∴ Expected Return = 112%

∴ Standard Deviation = 11.66%

**Calculation of Expected Return and Standard Deviation for LCC Ltd.**

Economic Conditions	P	$R_i$	$\bar{R}_i$	$(R_i - \bar{R}_i)$	$(R_i - \bar{R}_i)^2$	$P(R_i - \bar{R}_i)^2$
High Growth	0.3	150	45	29	841	252.3
Low Growth	0.4	130	52	9	81	32.4
Stagnation	0.2	90	18	-31	961	192.2
Recession	0.1	60	6	-61	3721	372.1
			121			849

∴ Standard Deviation

$$\sigma = \sqrt{849}$$

$$\sigma = 29.14\%$$

∴ Expected Return = 121%  
 Standard Deviation = 29.14%

Standard deviation measures the risk of every security. Higher the standard deviation, higher is the risk. Here, VCC Ltd. and have 11.66% standard deviation and LCC Ltd. have 29.14% standard deviation.

Hence, the investment in LCC Ltd. is risky as compared to VCC Ltd. though it gives more returns.

**Illustration 13:** The rate of return on stocks X and Y under different states of the economy are given below:

States of Economy	Probability	Returns on Stock X (%)	Returns on Stock Y (%)
Boom	0.35	20	40
Normal	0.50	30	30
Recession	0.15	40	20

- (i) Calculate expected return and SD of return on both the stocks.
- (ii) If you could invest in either stock X or stock Y, but not in both, which stock would you prefer?
- (iii) What would be your decision if the probability changes to 0.30, 0.40 and 0.30?

**Solution:**

**Calculation of Expected Return and SD of Stock X**

State of economy	Probability (P)	R <sub>i</sub>	$\bar{R}_i$	(R <sub>i</sub> - $\bar{R}_i$ )	(R <sub>i</sub> - $\bar{R}_i$ ) <sup>2</sup>	P (R <sub>i</sub> - $\bar{R}_i$ ) <sup>2</sup>
Boom	0.35	20	7	-8	64	22.4
Normal	0.50	30	15	2	4	2
Recession	0.15	40	6	12	144	21.6
			28			46

Standard deviation ( $\sigma$ ) =  $\sqrt{46}$   
 $\sigma = 6.78\%$

∴ Expected Return = 28%  
 Standard Deviation = 6.78%

**Calculation of Expected Return and SD of Stock Y**

State of Economy	P	R <sub>i</sub>	$\bar{R}_i$	(R <sub>i</sub> - $\bar{R}_i$ )	(R <sub>i</sub> - $\bar{R}_i$ ) <sup>2</sup>	P (R <sub>i</sub> - $\bar{R}_i$ ) <sup>2</sup>
Boom	0.35	40	14	8	64	22.4
Normal	0.50	30	15	-2	4	2
Recession	0.15	20	3	-12	144	21.6
			32			46

Standard deviation ( $\sigma$ ) =  $\sqrt{46}$   
 $\therefore \sigma = 6.78\%$

∴ Expected Return = 32%  
 Standard Deviation = 6.78%

I would prefer the stock Y as it gives more returns than stock X and the standard deviation is also same, i.e., 6.78%.



**Calculation of Expected Return and SD of Stock X with New Probability**

State of economy	P	$R_i$	$\bar{R}_i$	$(R_i - \bar{R}_i)$	$(R_i - \bar{R}_i)^2$	$P(R_i - \bar{R}_i)^2$
Boom	0.30	20	6	-10	100	30
Normal	0.40	30	12	0	0	0
Recession	0.30	40	12	10	100	30
			30			60

$$\text{Standard Deviation } (\sigma) = \sqrt{60}$$

$$\sigma = 7.75\%$$

$$\therefore \text{Expected Return} = 30\%$$

$$\text{Standard Deviation} = 7.75\%$$

**Calculation of Expected Return and SD of Stock Y with New Probability**

State of economy	P	$R_i$	$\bar{R}_i$	$(R_i - \bar{R}_i)$	$(R_i - \bar{R}_i)^2$	$P(R_i - \bar{R}_i)^2$
Boom	0.30	40	12	10	100	30
Normal	0.40	30	12	0	0	0
Recession	0.30	20	6	-10	100	30
			30			60

$$\text{Standard Deviation } (\sigma) = \sqrt{60}$$

$$\sigma = 7.75\%$$

$$\therefore \text{Expected Return} = 30\%$$

$$\text{Standard Deviation} = 7.75\%$$

The decision will not change with the changes in probabilities because with earlier probabilities stock Y gives higher returns.

**Illustration 14:**

Particulars	Boom	Normal	Recession
Probability	0.3	0.4	0.3
ROR of Stock A(%)	20	30	50
ROR of Stock B (%)	50	30	20

Calculate:

1. Expected Rate of Return
2. Standard Deviation
3. Which stock to be preferred?

**Solution:**

**Calculation of Expected Return and SD of Stock A**

State of Economy	P	$R_i$	$\bar{R}_i$	$(R_i - \bar{R}_i)$	$(R_i - \bar{R}_i)^2$	$P(R_i - \bar{R}_i)^2$
Boom	0.3	20	6	-13	169	50.7
Normal	0.4	30	12	-3	9	3.6
Recession	0.3	50	15	17	289	86.7
			33			141

$$\text{Standard Deviation } (\sigma) = \sqrt{141}$$

$$\sigma = 11.87\%$$

∴ Expected Return = 33%

Standard Deviation = 11.87%

**Calculation of Expected Return and Standard Deviation of Stock B**

Situations	P	R <sub>i</sub>	$\bar{R}_i$	$(R_i - \bar{R}_i)$	$(R_i - \bar{R}_i)^2$	$P(R_i - \bar{R}_i)^2$
Boom	0.3	50	15	17	289	86.7
Normal	0.4	30	12	-3	9	3.6
Recession	0.3	20	6	-13	169	50.7
			33			141

$$\text{Standard Deviation } (\sigma) = \sqrt{141}$$

$$\sigma = 11.87\%$$

∴ Expected Return = 33%

Standard Deviation = 11.87%

Both stocks gives the same returns. So, investment in any stock is preferable.

**Illustration 15:**

Particulars	Boom	Normal	Recession
Probability	0.4	0.3	0.3
ROR of Stock P(%)	40	30	20
ROR of Stock Q (%)	30	25	15

Calculate:

1. Expected Rate of Return
2. Standard Deviation
3. Which stock to be preferred?

**Calculation of Expected Return and Standard Deviation of Stock P**

Situations	P	R <sub>i</sub>	$\bar{R}_i$	$(R_i - \bar{R}_i)$	$(R_i - \bar{R}_i)^2$	$P(R_i - \bar{R}_i)^2$
Boom	0.4	40	16	9	81	32.4
Normal	0.3	30	9	-1	1	0.3
Recession	0.3	20	6	-11	121	36.3
			31			69

$$\text{Standard Deviation } (\sigma) = \sqrt{69}$$

$$= 8.31\%$$

∴ Expected Return = 31%

Standard Deviation = 8.31%

**Calculation of Expected Return and Standard Deviation of Stock Q**

Situations	P	R <sub>i</sub>	$\bar{R}_i$	$(R_i - \bar{R}_i)$	$(R_i - \bar{R}_i)^2$	$P(R_i - \bar{R}_i)^2$
Boom	0.4	30	1.2	6	36	14.4
Normal	0.3	25	7.5	1	1	0.3
Recession	0.3	15	4.5	-9	81	24.3
			24			39

$$\begin{aligned}\text{Standard Deviation } (\sigma) &= \sqrt{39} \\ &= 6.24\%\end{aligned}$$

$$\therefore \text{Expected Return} = 24\%$$

$$\text{Standard Deviation} = 6.24\%$$

Stock Q is preferable because it is less risky as compared to stock P.

**Illustration 16:** Ms. Radha purchased 4,000 shares at ₹ 25 each on 15.10.04. She earned dividend as below: 8,000, 9,000, 12,000 and 14,000. She sold all her holdings at ₹ 1,35,000.

What are her holding period returns?

What is annualised return?

Is Ms. Radha is a good investor?

**Solution:**

$$\begin{aligned}1. \text{ Investment of Ms. Radha} &= ₹ 25 \times 4,000 \\ &= ₹ 1,00,000\end{aligned}$$

$$\begin{aligned}2. \text{ Dividend} &= 8,000 + 9,000 + 12,000 + 14,000 \\ &= ₹ 43,000\end{aligned}$$

$$\begin{aligned}3. \text{ Sales Price} &= ₹ 1,35,000 \\ \text{Total Return} &= \text{Dividend} + \text{Capital Gain} \\ &= 43,000 + (1,35,000 - 1,00,000) \\ &= 43,000 + 35,000 \\ &= ₹ 78,000\end{aligned}$$

$$\begin{aligned}4. \text{ Rate of Return} &= \frac{\text{Total Return}}{\text{Investment}} \times 100 \\ &= \frac{78,000}{1,00,000} \times 100 \\ &= 78\%\end{aligned}$$

$$\begin{aligned}5. \text{ Annualised Returns} &= \frac{78}{4} \\ &= 19.5\%\end{aligned}$$

$\therefore$  Holding Period Return is 78%

Annualised Return is 19.5%

Ms. Radha is good investor.

#### 4.11 EXERCISES

Answer the following Questions

1. Discuss "Beta" as a instrument.
2. Explain in brief Risk-return relationship.

3. What is risk? State types of risks in detail..
4. What all the various methods of measuring the risk?

**Objective Type Questions**

State whether the following statements are True (T) or False (F).

1. The distance between intersection and horizontal axis is called beta risk.
2. The most important part of the regression equation is beta risk.
3. The relationship between stocks, returns and market index structures is called beta.
4. Correlation and covariance techniques are complementary methods for calculation of risk.
5. Rho describes the dispersion of the observations around the regression line.
6. The statistical tool to measure a companys risk is standard deviation.
7. Systematic risk is caused by the operating environment within an industry.
8. Purchasing power risk is a part of systematic risk.
9. Return is measured according to the internal risk.
10. Holding period yield is important to find out what the investor receives as income during the time he holds an asset.

**Ans:** 1. (F), 2. (T), 3. (T), 4. (T), 5. (T), 6. (T), 7. (F), 8. (T), 9. (F), 10. (T).

**Sume for Practice**

1. Prashant buys ₹ 30,000 of stock A Ltd, and sells short ₹ 10,000 of stock of B Ltd. using all the proceeds to buy more of stock Y Ltd. The correlation between the two securities is 0.45. The expected returns of stock A and B are 15% and 10% respectively with the standard deviation of 10% and 12%. What is the expected return and standard deviation of Vasant portfolio?
2. Mahesh has invested in two stocks, one is having a standard deviation of 20 per cent, the other is having a standard deviation of 30 per cent. The correlation between their rates of return is 0 and he has invested half of the money in each of the two stocks. Find out the standard deviation of his portfolio.
3. (a) What will be the expected rate of return on a portfolio composed of the followin securities?

Security	Expected return %	Proportion %
A	10	25
B	15	25
C	20	50

- (b) What will be the expected return if the proportion of each security in the portfolio is 20, 30, and 50 respectively?
4. Ms. Monalisa’s portfolio returns are given below:

Year	Returns of orange	Returns of airtel
1	10	12
2	16	18

Standard deviation of both the securities is 3.

Calculate:

- (a) Expected rate of return on Monalisa’s portfolio if it is made up of 40% of Orange shares and 60% of Airtel shares.

- (b) Covariance of Airtel and Orange.  
 (c) Portfolio risk is made up of 40% of Orange and 60% of Airtel.
5. Ashok purchased 100 shares of "A" Ltd. four years ago at ₹ 500 each. The rate of brokerage was 1%. The company paid the following dividends:

	Year 1	Year 2	Year 3	Year 4
Dividend per share (₹)	2	2	2.50	3
Dividend amount	200	200	250	300

The current price of the share is ₹ 600. What is the profit has to be earned on his investment if he sells shares now, and also find the rate of return?

6. Mr. T.S.V. Mani has a portfolio of five securities. The expected return and amount of investment in each security is as follows:

Security	A	B	C	D	E
Expected return	14%	8%	15%	9%	12%
Amount invested (₹)	20,000	10,000	30,000	25,000	15,000

Compute the expected return on T.S.V. Mani's portfolio.

7. Calculate the expected rate of return from the return from the following information relating to B Ltd.

State of economy	Probability of occurrences	Expected rate of return
Boom	0.30	40%
Normal	0.50	30%
Recession	0.20	20%





### **Chapter Contents:**

- 5.1 Meaning of Portfolio
- 5.2 Portfolio Management
- 5.3 Portfolio Management Process
- 5.4 Objective of Portfolio Management
- 5.5 Selection of Portfolio
- 5.6 Selection of Asset Mix
- 5.7 Exercises

### **5.1 MEANING OF PORTFOLIO**

Portfolio means combined holding of many kinds of financial security that is shares, debentures, government bonds, units and other financial assets. The term investment portfolio refers to the various assets of an investor which are to be considered as a unit. It is not merely a collection of a unrelated assets but a carefully blended asset combination within a unified framework. It is necessary for investors to take all decisions as regards their wealth position in a portfolio context. Making a portfolio putting one's egg in different baskets with varying elements of a risk and return. Thus, a portfolio is a combination of various instrument of investment. It is also combination of securities with different risk return characteristics. A portfolio is built up out of the wealth or income of the investors over a period of time with a view to manage the risk return preferences. The analysis of the risk return characteristics of individual securities in the portfolio is made from time-to-time and changes that may take place in combination with other securities are adjusted accordingly. The object of portfolio is to reduce risk by diversification and maximize gains.

### **5.2 PORTFOLIO MANAGEMENT**

Portfolio management means selection of securities and constant shifting of the portfolios in the light of varying attractiveness of the constituents of the portfolio. It is a choice of selecting and revising spectrum of securities to it in which the characteristics of an investor. Marko Wiz analyzed the implications of the fact that the investors, although seeking high expected returns, generally wish to avoid risk. It is

the basis of all scientific portfolio management. Although the expected return on a portfolio is directly related to the expected return on component securities, it is not possible to deduce a portfolio riskiness simply by knowing the riskiness of individual securities. The riskiness of portfolio depends upon the attributes of individual securities as well as the interrelationship among securities.

A professional, who manages other people's or institution's investment portfolio with the object of profitability, growth and risk minimization is known as portfolio manager. He is expected to manage the investors assets prudently and choose particular investment avenues appropriate for particular times aiming at maximization of profit. Portfolio management includes portfolio planning, selection and construction, review and evaluation of securities. The skill in portfolio management lies in achieving a sound balance between the objectives of safety, liquidity and profitability.

Timing is an important aspect of portfolio revision. Ideally, investors should sell at market tops and buy at market bottoms. They should be guarded against buying at high prices and selling at low prices.

### **5.3 PORTFOLIO MANAGEMENT PROCESS**

Portfolio management is a dynamic process which involves the following basic steps:

- (a) Identification of the objectives, constraints and preferences of investors for formulation of investment policy.
- (b) Develop and implement strategies in tune with investment policy formulated. It will help the selection of asset classes and securities in each class depending upon their risk return attributes.
- (c) Review and monitoring of the performance of the portfolio by continuous overview of the market conditions and performance of the companies.
- (d) Evaluation of the portfolio for the result to compare with targets and make some adjustments for the future.

### **5.4 OBJECTIVES OF PORTFOLIO MANAGEMENT**

The basic objective of portfolio management is to maximize yield and minimize risk. The other objectives are as follows:

- (a) **Stability of income:** An investor considers stability of income from his investment. He also considers the stability of purchasing power of income.
- (b) **Capital growth:** Capital appreciation has become an important investment principle. Investors seek growth stocks which provide a very large capital appreciation by way of right, bonus and appreciation in the market price of shares.
- (c) **Liquidity:** An investment is a liquid asset. It can be converted into cash with the help of a stock exchange. Investment should be liquid as well as marketable. The portfolio should contain a planned proportion of high grade and readily saleable investment.
- (d) **Safety:** Safety means protection for investment against loss under reasonably variations. In order to provide safety, a careful review of economic and industry trends is necessary. In other words, errors in portfolio are unavoidable and it requires extensive diversification.
- (e) **Tax incentives:** Investors try to minimize their tax liabilities from the investment. The portfolio manager has to keep a list of such investment avenues along with the return risk, profile, tax implications, yield and other return.

### **5.5 SELECTION OF PORTFOLIO**

The selection of portfolio depends upon the objectives of the investor. The selection of portfolio under different objectives are dealt subsequently.

**Objectives and asset mix:**

If the main objective is getting adequate amount of current income, sixty per cent of the investment is made in debt instruments and remaining in equity. Proportion varies according to individual preference.

- **Growth of income and asset mix:** Here the investor requires a certain per centage of growth as the income from the capital he has invested. The proportion of equity varies from 60 to 100% and that of debt from 0 to 40%. The debt may be included to minimize risk and to get tax exemption.
- **Capital appreciation and Asset Mix:** It means that value of the investment made increases over the year. Investment in real estate can give faster capital appreciation but the problem is of liquidity. In the capital market, the value of the shares is much higher than the original issue price.
- **Safety of principle and asset mix:** Usually, the risk adverse investors are very particular about the stability of principal. Generally, old people are more sensitive towards safety.
- **Risk and return analysis:** The traditional approach of portfolio building has some basic assumptions. An investor wants higher returns at the lower risk. But the rule of the game is that more risk, more return. So, while making a portfolio the investor must judge the risk taking capability and the returns desired.
- **Diversification:** Once the asset mix is determined and risk-return relationship is analyzed the next step is to diversify the portfolio. The main advantage of diversification is that the unsystematic risk is minimized.

**5.6 SELECTION OF ASSET MIX****What Does Asset Mix Mean?**

The classification of all assets within a fund or portfolio. Assets are assigned to one of the core asset classes: stocks (equities), bonds (fixed income), cash and real estate. Other categories that are sometimes considered asset classes are commodities, international investments, hedge funds and limited partnership interests.

The asset mix is usually shown as the set of percentages every asset class contributes to the total market value of the portfolio. It is a key determinant of the risk/reward profile of the fund, which in turn is largely determinant of long-term performance results.

Based on your objectives and constraints, you have to specify your asset allocation, that is, you decide how much of your portfolio has to be invested in each of the following asset categories:

1. Cash
2. Bonds
3. Stocks
4. Real estate
5. Precious metals
6. Other

The thrust of this article will be on determining the appropriate mix of 'bonds' and 'stocks' in the portfolio. Before we examine this issue, note the following:

The first important investment decision for most individuals is concerned with their education meant to build their human capital.



The most significant asset that people generally have during their early working years is their earning power that stems from their human capital. Purchase of life and disability insurance becomes a pressing need to hedge against loss of income on account of death or disability.

The first major economic asset that individuals plan to invest in is their own house. Before they are ready to buy the house, their savings are likely to be in the form of bank deposits and money market mutual fund schemes. Referred to broadly as 'cash' these instruments have appeal because they are safe and liquid.

Once the investment in house is made and reasonable liquidity in the form of 'cash' is maintained to meet expected and unexpected expenses in the short-run, the focus shifts to planning for the education of children, providing financial security to the family, saving for retirement, bequeathing, wealth to heirs, and contributing to charitable activities. In this context 'stocks' and 'bonds' become important. Very broadly, we define them as follows:

'Stocks' include equity shares (which in turn may be classified into income shares, growth shares, blue chip shares, cyclical shares, speculative shares, and so on) and units/shares of equity schemes of mutual funds (like Master shares, Birla Advantage, and so on).

'Bonds' defined very broadly, consist of non-convertible debentures of private sector companies, public sector bonds, gilt edged securities, RBI Savings Bonds, units/shares of debt-oriented schemes of mutual funds, National Savings Certificates, Kisan Vikas Patras, bank deposits, post office savings deposits fixed deposits with companies, deposits in provident fund and public provident fund schemes, deposits in the Senior Citizen's Savings Scheme, and so on. The basic feature of these investments is that they earn a fixed or near fixed return.

## **5.7 EXERCISES**

**Answer the following Questions**

### **Objective Type Questions**

**State whether the following statements are True (T) or False (F).**

1. The risk and return of the securities is marked by Beta.
2. Traditional investors build maximum risk and return.
3. Beta is measured by market movements.
4. Cut-off rate determines values of existing and new securities with the change in Beta.
5. Portfolio selected by borrowings and lending line makes the efficient frontier a straight line.
6. Beta is directly related to optimal portfolio.
7. Sharpe's Mode; is called the Single Index Model.
8. Indifference curves measure risk and return.

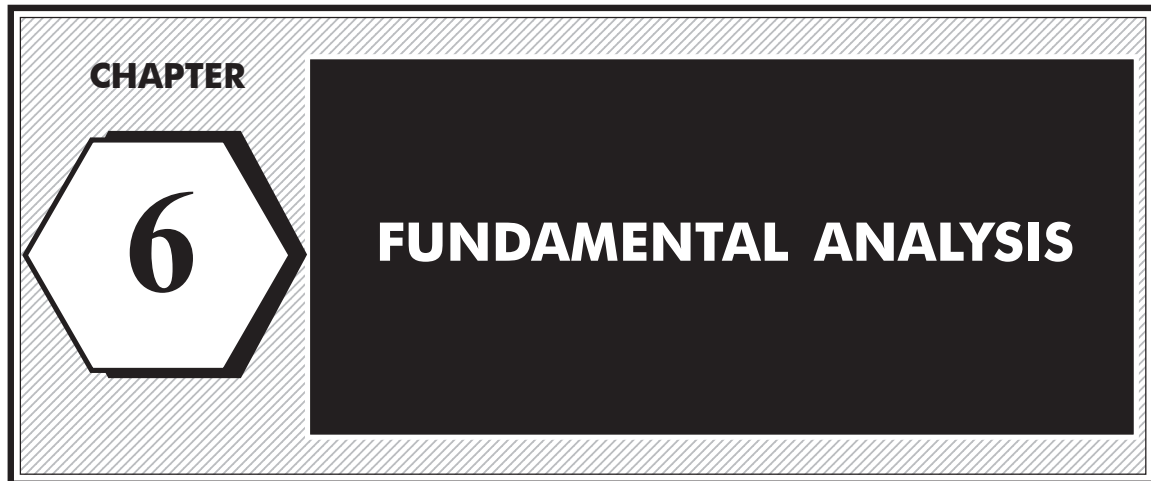
**Ans:** 1. (T), 2. (F), 3. (T), 4. (T), 5. (T), 6. (T), 7. (T), 8. (T) .

**Multiple Choice Questions**

**Choose the right Answer**

1.





### **Chapter Contents:**

- 6.1 Introduction
- 6.2 Investment Analysis
- 6.3 Fundamental Analysis
- 6.4 Macroeconomic Analysis
- 6.5 Industry Analysis
- 6.6 Company Analysis
- 6.7 Trend Analysis
- 6.8 Ratio Analysis
- 6.9 Exercises

### **6.1 INTRODUCTION**

There has been a phenomenal growth in Indian capital market in the recent years. The number of investors has grown up to 25 million. The government has initiated changes in the economic and financial policies. The liberalised schemes were announced with a view to overcome the foreign exchange crises due to adverse balance of payment in 1991. The abolition of the controller of capital issue and establishment of securities and exchange board of India have significantly contributed to changing the whole complexion of the investment scene.

A lay investor does not understand the techniques in the primary market as well as secondary market. He is not aware of the potentialities of tax planning and right investment decisions to make money in stock market. A financial manager is always a borrower of funds and generally the seller of equity interest has to bargain with the investor. This analysis involves the examination of the past performance, present condition and future prospectus.

### **6.2 INVESTMENT ANALYSIS**

An investor has to analyze the securities available for investment. Investment analysis means to make a comparative study of the type of industry, kind of security, fixed or variable securities. This helps to form beliefs regarding future behaviour of prices and stocks, the expected return and risk associated with it. All investment decisions are to be made on a scientific analysis.

The securities listed on stock exchange are equities, preference shares, bonds and debentures. These securities are traded on the stock exchange. It gives the price for each security. Trading provides liquidity to these securities. Thus, investment is promoted and savings flow into investment. The market reflects the economic and financial development in the country. The market is influenced by the flow of information and money.

### **6.3 FUNDAMENTAL ANALYSIS**

Fundamental analysis is a method of finding out the future price of a security which an investor wants to buy. The objective of fundamental analysis is to raise the intrinsic value of a security. This is an intrinsic value for each security and it can be determined by making an analysis of the fundamental factors relating to the company, industry and economy. An investor can buy undervalued securities and sell overvalued securities.

The intrinsic value of a security is that value such as assets, earnings, dividends and prospects of the company. It is also measured as the present value of all future cash inflows on the security. The prospective dividend or interest stream depends upon the economic and industrial environment in the country.

The fundamental analysis is an attempt to estimate the real worth of the security by considering the earnings potential of a company. The earning potential of a company depends on investment environmental factors such as growth of national economy. The company's survival also depends upon the economy as a whole. The growth of economy is also favourable for the stock market. The intrinsic value of a security is closely associated with the economic environment in the country.

### **6.4 MACROECONOMIC ANALYSIS**

It is very important to assess the state of the economy of making investment. If a recession is likely or undergoing the stock market is affected at certain times. On the other hand the stock market is also affected at certain times. This status of an economic activity has a major impact on overall stock market. Therefore, it is very important for the investor to assess the state of the economy and its impact on the stock market.

Investment in debt as well as ownership securities is closely associated with the economic activity of the country. An investment in the equity shares of a company is likely to be more profitable if the economy is strong and growing. The growth of a company depends basically on its ability to satisfy human wants through production of goods or creation and supply of services. Therefore, it is important to assess the state of the national economy over the next year or in long-term.

### **6.5 INDUSTRY ANALYSIS**

Industry analysis is the study of industries which are on the upswing or growing. The ideal investment is the investment in the growing industry. There are certain industries which are growing in India. The recent examples are of entertainment and computer software. Investment in these industries will definitely gain in future.

The investor should know the industry classification used in the economy. It is also necessary to know the characteristics, problems and practices in different industries. A careful analysis of growth of industries will help to select few industries for investments. The competitive position of industries is also affected due to high labour cost, change in social habits, government regulations and automation.

An investor should select few industries that are in expansion stage. Investments should not be made in the industries which are in the pioneering stage. Similarly, industries that are in the stagnation stage or declining in economic importance should be avoided. It is difficult to identify a good industry for investment

## 6.6 COMPANY ANALYSIS

The industry analysis helps to select few industries for investment in securities. There are many companies in an industry. There are thousands of listed companies from computer software industry. Therefore, an investor has to select few companies for investment.

An company analysis is a study of the variables which influence the future price of a company's shares. It is an assessment of company's competitive position, earning capacity and profitability. It is a method of finding out the intrinsic value of a company's share. This requires internal as well as external information of the company. Internal investment consists of data and events of the company. External information consists of demand, supply, pricing, etc.

The basic financial statements which are used as tools of company analysis are the income statement, the balance sheet and the statement of changes in financial position. The accuracy of financial statement can be identified from the report of auditors. The most frequently used tools for company analysis are as follows:

1. Trend analysis
2. Ratio analysis
3. Fund flow analysis
4. Common size statement analysis
5. Technical analysis

## 6.7 TREND ANALYSIS

It is a dynamic method of analysis showing the changes over a period of time. It makes easy to understand the changes in an item over a period of time and to draw conclusion regarding the changes in data. The trend should be studied at least over a period of 5 years. It indicates a direction in which a concern is going and on this basis forecast for future can be made.

## 6.8 RATIO ANALYSIS

### Balance Sheet Ratios

1. **Current ratio:** Current ratio is also known as solvency ratio or working capital ratio. Standard current ratio is 2:1 current ratio indicates the short-term financial position of the firm. It is expressed as pure ratio.

**It is calculated as:**

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

Current assets consists of all the current assets of the concern such as:

1. Debtors
2. Cash and bank balance
3. Bills receivable
4. Stock
5. Prepaid expenses

Current liabilities consist of the following:

1. Creditors
2. Bills payable

3. Outstanding expenses
  4. Bank overdraft
2. **Quick ratio:** Quick ratio is also known as liquidity ratio or acid ratio. Standard quick ratio is 1:1 greater the ratio, stronger the financial position. It indicates the solvency and financial soundness of the business. It is expressed as pure ratio.

**It is calculated as:**

$$\text{Quick ratio} = \frac{\text{Quick assets}}{\text{Quick liabilities}}$$

Quick assets consist of:

1. Debtors
2. Cash and bank balance
3. Bills receivable

Quick liabilities consists of:

1. Creditor
2. Bills payable
3. Outstanding expenses

3. **Debt assets ratio:** This ratio indicates the percentage or the proportion of the total assets created by the company through short-term and long-term debt.

**It can be calculated as:**

$$\text{Debt assets ratio} = \frac{\text{Debt}}{\text{Equity}}$$

where, Debt = all liabilities including the short-term or long-term,  
Assets = all assets, i.e., fixed and current.

4. **Debt equity ratio:** It shows the proportion of debt to assets. It is expressed pure ratio.

**It can be calculated as:**

$$\text{Debt equity ratio} = \frac{\text{Debt}}{\text{Equity}}$$

where, Debt = all liabilities including long-term and short-term  
Equity = net worth + preference capital.

5. **Stock to working capital ratio:** Stock to working capital ratio express the relationship between closing stock and working capital. This ratio expressed as pure ratio or percentage ratio.

**It can be calculated as:**

$$\text{Stock to working capital} = \frac{\text{Closing stock}}{\text{Working capital}} \times 100$$

6. **Proprietors' ratio:** This ratio indicates the proportion of proprietors' funds to the total assets of the firm.

It can be calculated as:

$$\text{Proprietors' ratio} = \frac{\text{Proprietors' funds}}{\text{Total assets}}$$

7. **Capital gearing ratio:** This ratio includes the relation between fixed income bearing securities to funds on which no fixed returns are to be paid. It is expressed as pure ratio.

It can be calculated as:

$$\text{Capital gearing ratio} = \frac{\text{Preference capital} + \text{Debentures} + \text{Term loans}}{\text{Equity share capital} + \text{Reserves and surplus}}$$

## 6.9 EXERCISES

Answer the following Questions

1. What is fundamental analysis? Explain in detail.
2. Comment on:
  - (a) Macro Economic Analysis
3. State limitation of ratio analysis.

Sums for Practice

1.

Liabilities	₹	Assets	₹
Equity share capital	6,00,000	Fixed assets	9,00,000
Reserves	2,00,000	Stock	3,00,000
6% debentures	5,00,000	Marketable investment	1,00,000
Current liabilities	2,00,000	Debtors	1,50,000
Bank overdraft	1,00,000	Cash bank balance	1,00,000
		Preliminary expense	50,000
	<b>16,00,000</b>		<b>16,00,000</b>

Re-arrange the above balance sheet in vertical form and calculate the following ratios:

- (a) Current ratio
  - (b) Liquid ratio
  - (c) Proprietary ratio
  - (d) Stock revaluation ratio
2. Given below are the information of Parekar Ltd. as on 31<sup>st</sup> March, 2004.

Debtors	30,000
Outstanding manufacturing expenses	17,000
Cash balance	23,000
Bills payable and creditors	38,000
Machinery (imported)	30,000
Income earned but not received	6,000
Bank overdraft	15,000
Bills receivable	7,000
Prepaid travelling expenses	4,000

Using above data calculate current ratio and liquid ratio and comment on it.

3. Following are the figures being given and extracted from the books of Voodoo Ltd.:

Land and building	6,00,000
Plant and machinery	5,00,000
Equity capital	5,00,000
Preference capital	2,00,000
Stock	2,40,000
Debtors	2,00,000
Cash and bank	5,50,000
Miss. Current assets	500
P and L account	2,00,000
General reserves	1,00,000
Sundry creditors	80,000
Bills payable	60,000
Misc. current liabilities	60,000
Debentures	4,00,000

You are required to calculate:

- (a) Rearrange above figures in vertical format
  - (b) Debt equity ratio
  - (c) Proprietary ratio
  - (d) Capital gearing ratio
4. The summarized final accounts of two companies are as follows:

**Balance Sheet**

Liabilities	X Ltd.	Y Ltd.	Assets	X Ltd.	Y Ltd.
Share capital	8,8000	88,000	Fixed assets	1,21,000	96,800
Reserves	42,900	35,200	Current assets	1,25,400	1,03,400
8% debentures	22,000	22,000	Less: current liabilities	93,500	65,000
	<b>1,52,900</b>	<b>1,45,200</b>		<b>1,52,900</b>	<b>1,45,200</b>

**Revenue Statement**

Income	X Ltd.	Y Ltd.
<b>Sales</b>	3,30,000	2,64,000
Less: Cost of sales	2,37,600	1,98,000
	92,400	66,000
Operating expenses	63,800	44,000
Net profit before tax	28,600	22000
Less: Tax	12,100	9,240
Profit after tax	16,500	12,780
Less: dividend	8,800	6,600
Retained earning	7,700	6,160

You are required to calculate the following ratios and comment:

- (i) Proprietary ratio
- (ii) Capital gearing ratio
- (iii) Gross profit ratio
- (iv) Operating ratio



- (v) Return on total resources ratio      (vi) Return on proprietors' equity ratio  
 (vii) Expenses ratio                              (viii) Net profit ratio
5. The following information is taken from the records of two companies in the same industry:

	A Ltd. ₹ in lakh	B Ltd. ₹ in lakh
Cash	2	3
Debtors	3	7
Stock	12	10
Plant and machinery	18	23
Total assets	35	43
Sundry creditors	9	10
12% debentures	5	10
Equity capital	11	18
Reserves and surplus	10	5
Total liabilities	35	43
Sales	60	85
Cost of goods expenses	40	65
Other operating expenses	8	10
Interest expenses	0.60	1.20
Income tax	3.40	3.80
Dividend	1.00	2.00

Answer each of the following questions by making a comparison of one or more relevant ratios:

- (a) Which company is using the shareholders' money more profitably?  
 (b) Which company is better able to meet its current debt?  
 (c) If you want to purchase the debentures of one company which company's debentures would you buy?  
 (d) Which company collects its receivable faster assuming all sales are on credit basis?  
 (e) Which company retains the larger proportion of income in the business?
6. Following information available relating to Quick Ltd. and Slow Ltd.

Particulars	Quick Ltd.	Slow Ltd.
Equity share capital (₹ 10 FV)	200	250
12% preference shares	80	100
Profit after tax	50	70
Proposed dividend	35	40
Market price per share	₹ 100	₹ 140

Calculate:

- (i) Earnings per share                              (ii) P/E ratio  
 (iii) Dividend payout ratio                              (iv) Return on equity shares.

As an analyst inform the investor, which of the two companies are worth investing?

**Multiple Choice Questions****Choose the right Answer**

1. Price earning ratios of stock reflect:
  - (i) The growth of the company
  - (ii) Earning retained and invested
  - (iii) Dividends paid to equity shareholders
  - (iv) Market expectation for future.
2. The intrinsic value of share shows:
  - (i) Cash dividends expected in future
  - (ii) Market expectations of share
  - (iii) True economic value of share
  - (iv) The performance of company in the market
3. Increase in book value per share shows:
  - (i) Increase in assets of a firm
  - (ii) Increase in net worth
  - (iii) Increase in profits and accumulated reserves
  - (iv) Risk in share prices
4. Price Earnings Ratio:
  - (i)  $\frac{\text{Market Price Per Share}}{\text{Earning Per Share}}$
  - (ii)  $\frac{\text{Equity Sahre capital + Reserves}}{\text{Total No. of Shares Outstanding}}$
  - (iii)  $\frac{\text{Pr ofit After Tax}}{\text{No. of Equity Shares}}$
  - (iv)  $\frac{\text{Earning Per Share}}{\text{Dividends Per Share}}$
5. Valuation of equity share can be calculated:
  - (i) By the same valuation model as for bonds is by valuing
  - (ii) Risk and return relationship
  - (iii) In the basis of dividends and earnings
  - (iv) With the help of mutual funds
6. Fundamental Analysis consist of:
  - (i) Reading bar charts and graphs to find out the future value of shares
  - (ii) Efficient Market Theories
  - (iii) Combining a set of securities through Markowitz Model for an efficient Portfolio.
  - (iv) Making a analysis of economic factors and company analysis.

**Ans:** 1. (iv), 2. (iii), 3. (iii), 4. (a), 5. (iii), 6. (iv).





### **Chapter Contents:**

- 7.1 Meaning of Technical Analysis
- 7.2 Fundamental vs. Technical Analysis
- 7.3 Charting Techniques
- 7.4 Technical Indicators
- 7.5 Testing Technical Trading Rules
- 7.6 Evaluation of Technical Analysis
- 7.7 Exercises

### **7.1 MEANING OF TECHNICAL ANALYSIS**

Technical analysis is a study of market data in terms of factors affecting supply and demand schedules, such as prices, volume of trading, etc. It is a simple and quick method of forecasting behaviour of share prices. The financial data and past behaviour of share price of a company are presented on charts and graphs in order to find out the history of price movements. It helps to explain and forecast changes in share prices. Technical analysis provides a simplified picture of price behaviour of a share. The analysis believe that the price of the share depends upon the supply and demand in the stock market. They get the important information about price and volume of a share in the stock market. Investors, who use technical analysis, start checking the market action of the share if it is favourable. They also examine the fundamental factors about the company and make sure that the company is sound and profitable.

Technical analysis is based on certain assumptions. These are as follows:

- (1) The price of security is related to demand and supply factors operating in the market.
- (2) There are rational as well as irrational factors which affects the supply and demand factors of a security.
- (3) The prices of securities behave in a manner that their movement is continuous in a particular direction for some length of time.
- (4) Trends in the price of securities have been seen to change when there is a shift in the demand and supply factors.

- (5) Whenever there are shifts in demand and supply, they can be detected through charts prepared specially to show the action of the market.

There are several ways the technicians think and act. At any given time, some investors gain and some of them lose. A vital factor in this analysis is volume. When the volume is increasing, it is favourable to the investors. They recognize that formations and patterns signify changes in real volume as a result of their expectations, hopes, fears and developments. They are not committed to buy and hold policy. They act more quickly to make commitments and to make profits and losses. Technical analysis, especially charts, is the most convenient method of comparison.

Technical analysis believes that their method is simple and gives an investor a bird's eye on the future of security prices by measuring the past movements. They predict the price behaviour through line charts, bar charts, and point and figure charts. There are large numbers of patterns which predict the upward and downward swing in the market. This is not an accurate method but it gives the general indication of the behaviour of prices in the stock market.

## **7.2 FUNDAMENTAL vs. TECHNICAL ANALYSIS**

Technical analysis differs from fundamental analysis in many respects. A fundamental analyst looks forward, whereas the technical analyst looks backward. A fundamental analyst attempts to forecast company's earnings and dividends of its shareholders. These earnings are then discounted to obtain the intrinsic value of a security by determining an appropriate rate of interest. The technical analyst believes that all relevant factors are reflected in the market price and volume of trading. He studies the historical price and volume patterns that provides clues for his future purpose and sales and profit from timely entering and existing from the market.

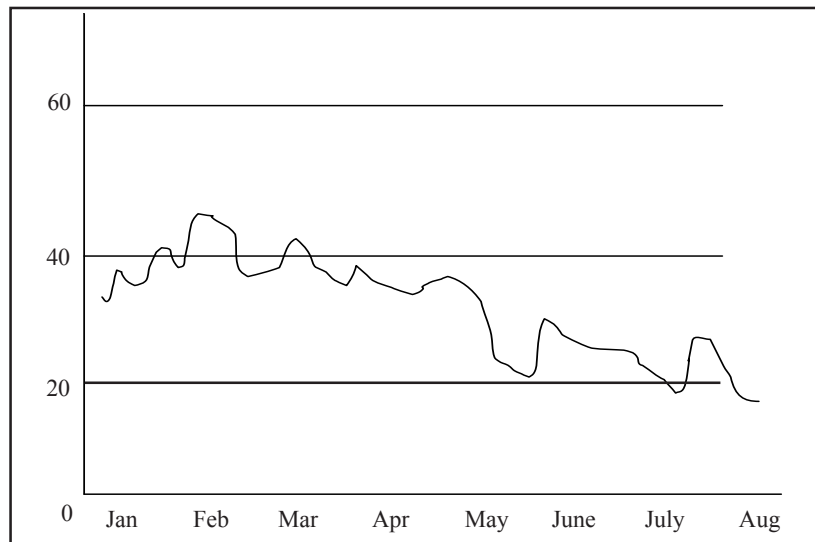
A fundamental analyst thinks from that stock market behaviour is 90% logical and 10% psychological whereas, a technical analyst thinks that it is 10% logical and 90% psychological. Fundamental analysis provides a long-run view of security pricing, whereas the technical analysis usually provides a short-run view of security pricing.

## **7.3 CHARTING TECHNIQUES**

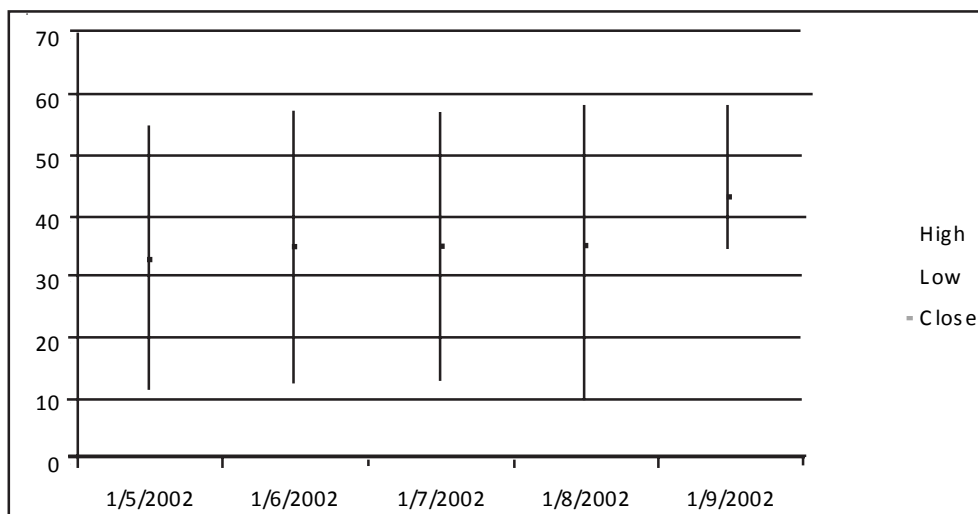
Technicians basically rely on charts of prices of stocks and trading volume of the analysis of the market movement and individual stocks. The purpose of charting technique is to determine the probable strength of demand and supply of various levels of stock prices and to predict the probable direction in which the stock will move and where it probably stop. The clues are provided by the history of stock's price movements as recorded on the charts. The basic assumption of charting technique is that the history does repeat itself. On the charts, the price fluctuations tend with remarkable consistency to fall into number of patterns, each of which signifies the relationship between buying and selling pressure. Some patterns indicate that demand is greater than supply and others suggest that supply is greater than demand. Others imply that they are likely to remain in balance of sometime. Technical analyst claims that stock prices fluctuate generally from characteristic patterns which have important predictive value. No one with experience doubts that prices move in trends and trends to continue until something happens to change the supply-demand balance. Such changes can be detected in the markets itself. Certain patterns of formulation levels or areas appear in the charts which have a meaning that can be interpreted in terms of probable future trends of stock prices. Most of them attempt to correlate a relationship between market price action and the volume of trading in stocks. The idea is that it is a sign of strength when a stock advances on a large volume of shares traded. On the other hand, when volume in the market or on the pessimism is mounting and the trend is towards reducing price. In essence, the chartists contend that a study of a stock's behaviour not only tells where a stock has been but also tells where it is going. The following are the different types of charts:

**(1) Line charts**

In this type, the closing prices of successive time-periods are connected by lines with no notice taken of the highs and lows of stock prices for each such period. For example, the following chart presents a line chart of 'A' Ltd.

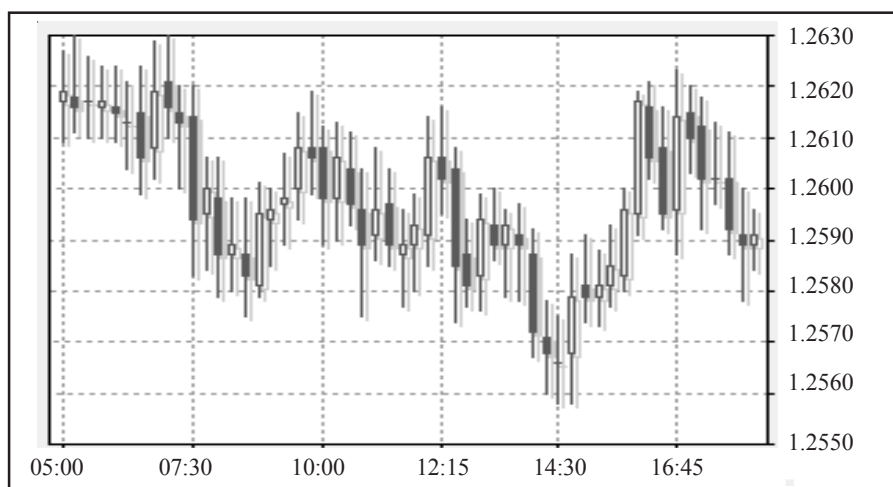
**(2) Bar chart**

In this type, the analyst draws on graphs or logarithmic paper a series of vertical line, each representing the price movement for a time period which may be a day, week, month or even a year. The vertical dimensions of lines represent the price of stock and the horizontal dimensions indicated the time involved by the chart as a whole. In a daily chart, each vertical line represents the range of each day's price activity and the chart as a whole may extend for a week or a month. The line on graph paper can be extended from the highest to the lowest of transactions for each day or weeks and make a cross-mark to indicate the closing price. Many investors are interested in charting use of bar charts because they have meanings familiar to a technical analyst and these charts are easy to draw. For example, the bar for a stock is shown below:



### (3) Candlestick chart

The candlestick chart is a modified version of a bar chart. These charts shows the stock open, close, high and low for each time-period in a modified three-dimensional format. The vertical axis shows the stock prices, and the horizontal axis reflects the successive time-periods. The basic difference between a daily candle stick chart and a bar chart is the white and black candles augmenting the daily trading range lines. If the opening prices exceeds the closing price, the body of the candles is black and when the stock is up, the candle is clear. White candle represents the stock advances while the black candles represent the stock declines. The thick portion of the entry is called the real body with the vertical line representing the wick. Various clusters of candles are given a specific name, like dark cloud cover or the hanging man, etc., for example, the candlestick chart for stock of 'A' Ltd. is given below:



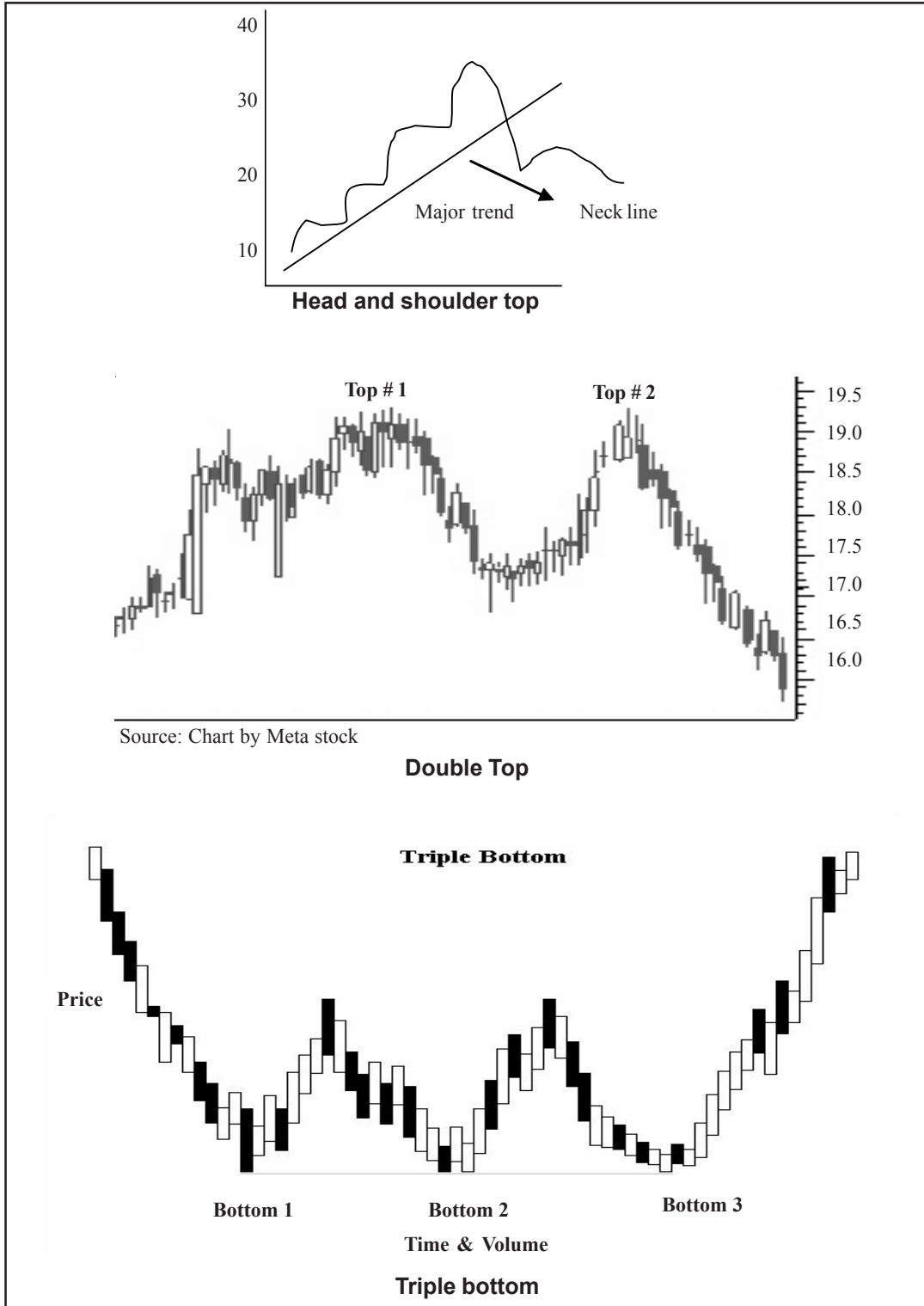
### CHART PATTERNS

Analyst uses several techniques to examine various chart patterns. Charts are a means to an end. These charts help technical analyst to decide when to buy or sell stocks. The following are various chart patterns:

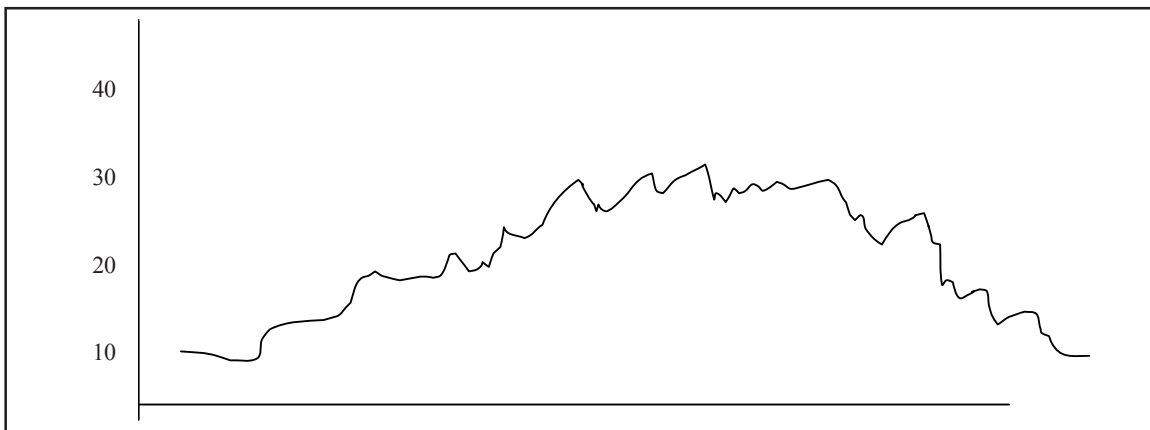
**(1) Support and resistance levels:** Identification of support and resistance levels is one of the most important aspects of charts analysis. A support level is a barrier or price decline while a resistance level is a barrier to price advancement. Though the barrier is an obstruction, it is by no means impassable. Stock prices may break support and resistance levels under abnormal circumstances. For example, the stock of 'A' Ltd. is currently trading at ₹ 35. in the recent past, it has been as low as ₹ 30 and as high as ₹ 45. when this stock trades at ₹ 30 or 50, it becomes an attractive investment because the stock has support level of ₹ 30 with a potential resistance level at ₹ 45. The investor may start buying this stock at ₹ 30 and the stock begins to advance in price. A stock breaking its support level is called technically weak and a stock breaking its resistance level is called technically strong.

**(2) Head and shoulders configuration:** Head and shoulders is the key reversal pattern. The basic reversal patterns help analysis identify the turning points so that they can decide when to buy and sell the stock. The configuration is an uptrend or downtrend in a stock. In this process, the neckline is the familiar resistance or support level. Head and shoulders formation may be analysed against the background of volume trend. When the head and shoulder top is formed, resistance to further price increase dampens investors enthusiasm. The volume decreases on each of the rally phases within the top formation. The reverse type is followed when the head and shoulders bottom is formed.

The completion of head and shoulders is not considered final until the penetration of the neckline is apparent. There may be many reversal formations. The following figures show the head and shoulders, neckline and double and triple top.



**(3) Trend analysis:** The technical analysts can establish a major trend in the prices of stocks. There may be a major uptrend or downtrend. There may be a reversal of major uptrend at a particular point. A major trend is preceded by notable advancement in stock's price. The analysts have to find out whether the stock has violated its trend. If a trend violation does not occur, it could be the forerunner or an early warning of a reversal in the major direction of the stock's price movement. A major uptrend is preceded by accumulation while distribution is generally followed by a down turn. The major uptrend and downtrend in the price of a stock are given in the figure below:



There is a reversal of major uptrend of point 'A'. This suggests that the stock has violated its trend. Similarly point 'B' is the significant distribution which signals a significant decline in the stock's price. Similarly, at point 'C' the stock penetrates its support level and therefore becomes technically weak.

**Limitations of Charts**

Technical analysts may prepare charts of major shares in the stock market. However, interpretation of charts is an important aspect. Therefore, there must be proper interpretation of charts on the basis of their patterns. The analysts also change their interpretation from time to time. Therefore, the investors are confused many a times. Investment decisions are almost and always made on the basis of the chart. Most of the investors do not have the idea of buying the stock on the basis of chart. This is a negative thinking because most of the investors know nothing about the company.

**7.4 TECHNICAL INDICATORS**

There are numerous technical indicators that collectively add up to organized confusion. But when one examines the technical indicators individually, it makes some sense. The following are some of the technical indicators:

**(1) The short interest ratio theory:** The short interest ratio is derived by dividing the reported short interest or the number of shares sold short by the average volume of about 30 days. When short sales increases relative to the total value, the indicators rise. A ratio above 150% is considered bullish, and a ratio below 100% is considered as bearish. The logic behind this ratio is that investors sell stocks at high prices in anticipation of buying them back at lower prices. Thus, increasing short sales is viewed as a sign of general market weakness and short covering as a sign of strength. An existing large short interest is considered as a sign of strength whereas an established slight short interest is considered as sign of weakness.

**(2) Confidence index:** Confidence index is a ratio of a group of lower grade bonds to a group of high grade bonds. When this ratio is high investors' confidence is likewise high which is reflected by



their purchase of relatively more of the lower grade securities. When they buy relatively more of the higher grade securities, it is taken as an indication of low confidence which is reflected in a low ratio.

**(3) Spreads:** Large spreads between yields indicates low confidence and are bearish. The market requires large consumption of business, financial and inflation risks. Small spread indicates high confidence and are bullish. Thus, larger the spread lower the ratio and less the confidence. On the other hand, smaller the spread, there is greater ratio indicating greater confidence.

**(4) Advance-Decline ratio:** The index relating advances to declines is called the advance-decline ratio. When advances are more than decline, the ratio increases and *vice versa*. When advances are more than decline the bullish condition is created. Similarly, when declines are more than advances, a bearish condition is created. The advance decline ratio tries to capture the markets underlying strength by taking into account the number of advancing and declining issues.

**(5) Market breadth index:** The market breadth index is the result of the advance-decline ratio. It is computed by taking the net difference between the number of stocks rising and the number of stocks falling added or subtracted to the previous one. The purpose of the index is to indicate whether a confirmation of some index has occurred. If both the stock index and the market breadth index increase, the market is bullish. The market is said to be bearish when the stock index increases but the market breadth index do not increase.

**(6) The odd-lot ratio:** The odd lots are the transactions of less than minimum shares in a lot. Normally the shares are traded in lots of 5, 50, 100, etc. however, the lot of demat shares is 1. All the shares are not in demat form. The odd lot transaction is measured by odd lot changes index. This index is sometimes referred to as a yardstick of uniformed sentiment or an index of contrary opinion because the odd lot theory assumes that small buyer or seller are not very bright specially at top and bottoms when they need to be brightest.

**(7) Insider transaction:** The technical analyst believes that the insider's transactions offer a clue to future earnings, dividend and stock prices performance. If the insiders start selling heavily, it is considered as bearish indicators and vice-versa. Thus, the insider's activities may be indicative of future stock prices. When insider's are buying heavily it is considered bullish trend and the investors may guess that there may be a good news about the company in the near future.

**(8) Moving average:** A moving average of underlying historical data about the stock prices. Each data point is the arithmetic average of a portion of the previous data. A ten-day moving average measures the average over the previous ten trading days. Regardless of the time period used, each day a new observation is included in the calculation and the oldest is dropped so that the constant number of prices are always being averaged. The changes in the slope of line of moving average are important. A stock whose twenty day moving average line has been trending up might become a candidate for sale if the line turns downwards.

## 7.5 TESTING TECHNICAL TRADING RULES

The technical analysts think that the only important information to work from is the picture given by the price and volume statistics. The technicians see the market, moving in definite trends which continue for significant periods. The past performance of a stock can be used to predict the future price. The direction of prices changes is as important as the relative size of the change. With the help of the following Technical Trading Rules, the technicians attempts to correctly catch changes in trend and take advantage of them:

### **(1) Dow Theory**

Dow theory proposed by Charles Dow is one of the oldest technical method which has been widely used. The theory consists of three types of market movement: (a) the major market trend, (b) secondary intermediate trend and, (c) minor movements. The major market trends last a year or more, the intermediate trends lasts for few months and minor movements lasts only for hours to a few days. The determination of the major market trends is the most important decision to the dow believer. The Dow theory is built upon the assertion that measures of stock market tends to move together. It asserts that stock prices demonstrate patterns over four to five years and these patterns are mirrored by indices of stock prices. The Dow theory implies two of the Dow Jones averages, the industrial average is rising, then the transportation average should also be rising. Such simultaneous price movements suggest the bull market. On the other hand, a decline in both the averages are moving in opposite directions, the market is uncertain as to direction of future prices.

If investors believe in Dow theory, they will try to liquidate when a sell signal becomes apparent which will drive down prices. Buy signals have the opposite effect. However, there are several problems of Dow theory. It is not a theory but the interpretation of known data. It does not explain why the two averages should be able to forecast future stock prices. There may considerable lag between actual turning points and those indicated by the forecast. Again Dow theory, can work only when a long wide upward or downward movement is registered in the market. The theory does not attempt to explain a consistent patterns of the stock price movements.

### **(2) Elliott Wave Principle**

Elliott wave principle was established by R.M. Elliott in 1930. It states that major moves takes place in five successive steps resembling tidal waves. In a major bull market, the first move is upward, the second downward, the third upward the fourth downward and the fifth and final phase upward. The waves have a reverse flow in a bear market. The Elliott wave principle, claimed to be a valuable tool for market prediction is shown in the figure given on the next page.

Elliott wave principle offers investors a basis for developing important market strategies. However, it has two major limitations – first, it is difficult to identify the turning point of each stages and second, the investor frequently cannot distinguish between a major and a minor five stage movement.

### **(3) Chaos Theory**

Chaos theory examines instances in which apparently random behavior is quite systematic or even deterministic. Investment analysts have sought a pattern in stock market behavior since the origin of the exchanges. Chaos theory eventually provides some potential answer about how security prices are determined. If the apparent randomness of security prices changes can be shown to be non random. Scientists also apply this theory to whether prediction, population growth estimates etc.

### **(4) Neutral Networks**

A neutral network is a trading system in which a forecasting model is trained to find out desired output from past trading data. The neutral network eventually learns the patterns that produces the desired output by repeatedly cycling through the data. If the desired output remains elusive, more data is included until a pattern is found. Neutral networks man also include a feedback mechanism whereby experience is gain gained from past mistakes. A problem with the concept of neutral network is that the stock market is seldom deterministic. Situations constantly change and today's prices may not necessarily prevail tomorrow. Research that tests a hypothesis using subsequent data is much more useful.

## 7.6 EVALUATION OF TECHNICAL ANALYSIS

Technical analysis has endeavoured to forecast the future of the stock market. The averages are useful and interesting in showing the course of the market and for measuring changes but not for forecasting the future. Technical analysis is not by itself, the road to riches. It is a tool which should be used with fundamental analysis and with commonsense. Despite assertions of some technicians, technical analysis is still an art. It requires talent, intuition and experience for its successful use. Investors can add a little luck and there may be difference between modest and good profit. The technical analysis has the following limitations:

- (1) All data used in technical analysis is past data. Therefore, these indices cannot take into account unexpected events such as natural disasters and economic crisis. Charts, can only show activity by insiders well before privileged information becomes public knowledge.
- (2) A chart may show a sudden, deep decline which by strict interpretation is a signal to sell. But this may be the result of one large trade of a lower than market price. The value of stock may bounce back quickly. If the technician fails to wait for confirmation, the investment decisions may go wrong.
- (3) With actively traded stocks, the prices may be result of a battle of wits. Trading profits are realized at the expense of others who are trying to achieve gains on their own terms. In such cases, the technicians must be cleverer and luckier than their rivals.

## 7.7 EXERCISES

### Answer the following Questions

1. What is technical analysis? What are its advantages and limitations?
2. What is charting technique?
3. How is technical analysis different from fundamental analysis?
4. What are charts? How are they interpreted in technical analysis?
5. Write short notes on:
  - (a) Points and figure chart
  - (b) Bar chart
  - (c) Flags
  - (d) Triangles

### Objective Type Questions

#### State whether the following statements are True (T) or False (F).

1. Technical analysis provides a simplified picture of price behaviour of a share.
2. Fundamental analysis is a simple and quick method of forecasting behaviour of a share price over technical analysis.
3. A technical analysis thinks that stock market behaviour is 90% logical and 10% psychological.
4. Bar chart is a modified version of candlestick chart.
5. A neural network is a trading system in which a forecasting model is trained to find out desired output.

**Ans:** 1. (T), 2. (F), 3. (F), 4. (F), 5. (T).

**Multiple Choice Questions**

**Choose the right Answer**

1. In the bull market \_\_\_\_\_.
  - (i) Stock prices are increasing
  - (ii) Each peak is higher than previous peak
  - (iii) Prices are falling
  - (iv) There is stability in stock prices
2. The market value of share is determined by \_\_\_\_\_.
  - (i) Demand and supply of shares
  - (ii) Beta
  - (iii) Historical past data
  - (iv) Unsystematic risk
3. Technical analysis is useful \_\_\_\_\_.
  - (i) To make an estimate of growth in stock market
  - (ii) To find out the market forces influencing stock market
  - (iii) To indicate the direction of overall market
  - (iv) To analyse the economic activity of government
4. The support level exist \_\_\_\_\_.
  - (i) When considerable demand is created, demand is created at a particular
  - (ii) When SEBI fixes the price at a stock exchange
  - (iii) When stock exchange broker fix a price
  - (iv) When the price of stock is stable

**Ans:** 1. (ii), 2. (i), 3. (iii), 4. (i).

**Match the followings**

- |                           |                        |
|---------------------------|------------------------|
| 1. Odd- lot               | 1. Confirmation        |
| 2. Historical stability   | 2. Moderate price rise |
| 3. Left shoulder          | 3. Short sales         |
| 4. Right shoulder         | 4. Group less than 100 |
| 5. Breakout               | 5. Lull                |
| 6. Technique of cover- up | 6. Below left shoulder |
| 7. Prediction of trends   | 7. Ratio of yield      |
| 8. Peak price of stocks   | 8. Relative strength   |
| 9. Confidence index       | 9. Dow Jones theory    |
| 10. Head                  | 10. Resistance Area    |

**Ans:** 1. (4), 2. (8), 3. (5), 4. (2), 5. (1), 6. (3), 7. (9), 8. (10), 9. (7), 10. (6).

1. In the bull market
  - (i) Stock prices are increasing
  - (ii) Each peak is higher than the previous peak
  - (iii) Prices are falling
  - (iv) There is stability in prices of stock

2. The market value of shares is determined by
  - (i) Demand and supply of shares
  - (ii) Beta
  - (iii) Historical past data
  - (iv) Unsystematic risk
3. Technical analysis is useful
  - (i) To make an estimate of growth in a stock market
  - (ii) To find out the market forces influencing stock market
  - (iii) To indicate the direction of the overall market
  - (iv) To analyze the economic activity of government.
4. A support level exist
  - (i) When considerable demand is created at a particular price
  - (ii) When SEBI fixes the price at the stock exchange
  - (iii) When stock exchange broker fix a price
  - (iv) When the price of stock is stable.
5. The Dow Theory was developed by
  - (i) Stock broker by the name of Dow
  - (ii) An editor of Wall Street Journal by the name of Dow
  - (iii) It was developed by Markowitz and Dow
  - (iv) It was developed by Sharpe

**Ans:** 1. (ii), 2. (i), 3. (iii), 4. (i), 5. (ii).



## CHAPTER

# 8

# EFFICIENT MARKET HYPOTHESIS

### Chapter Contents:

- 8.1 Introduction
- 8.2 Random Walk Theory
- 8.3 Efficient Market
- 8.4 Efficient Market Hypothesis
- 8.5 Random Walk and Security Analysis
- 8.6 Exercises

### 8.1 INTRODUCTION

Efficiency of market implies that all known information is immediately discounted by all investors and reflected in share prices in the stock market. In an ideal efficient market, everyone knows all possible-to-know information simultaneously, interprets it similarly and behaves rationally. In such a situation, the only price changes that would occur are those which result from new information. In an efficient market, liquid capital will channel quickly and accurately where it will do the community the most good. Efficient market will provide ready financing for worthwhile business ventures and drain capital away from corporations which are poorly managed. It is essential that a country has efficient capital markets if it is to enjoy highest possible level of wealth, welfare and education. One of the main reasons that some underdeveloped countries do not advance is that they have insufficient capital markets. In inefficient capital markets prices may be fixed or manipulated rather than determined by supply and demand. Capital may be controlled by a few wealthy people and not be fluid and flow where it is needed.

In an efficient market, all the relevant information is reflected in the current stock price. Information cannot be used to obtain excess return and the information has already been taken into account and absorbed in the prices. Thus, all prices are correctly stated and there are no bargains in the stock market. Efficiency in the security market means the ability of the capital markets to function so that prices of securities react rapidly to new information. Such efficiency will produce prices that are appropriate in terms of current knowledge and investors will be less likely to make unwise investments. The investors will also be less likely to discover great bargains and thereby earn extraordinary high rates of return. **The following are the requirements of securities market to be efficient:**

- (1) Prices must be efficient so that new innovations and better products will cause a company's securities prices rise and motivate investors to supply capital to the company.
- (2) Information must be discussed freely and quickly across the nation so all investors can react to new information.
- (3) Transaction costs are ignored (i.e., brokerage or commission).
- (4) Taxes are assumed to have no noticeable effect on investment policy.
- (5) Every investor is allowed to borrow or lend at the same rate.
- (6) Investors must be rational and able to recognize efficient assets and invest money where it is needed most.

## 8.2 RANDOM WALK THEORY

The first specification of efficient markets and their relationships to the randomness of prices for things traded in the market goes to **Samuelson and Mandelbrot** "Samuelson has proved in 1965, that if a market has zero transaction costs, if all available information is free to all interested parties, and if all market participants and potential participants have the same horizons and expectations about prices, the market will be efficient and prices will fluctuate randomly".

According to the Random Walk Theory, the changes in prices of stock show independent behaviour and are dependent on the new pieces of information that are received but within themselves are independent of each other. Whenever a new piece of information is received in the stock market, the market independently receives this information and it is independent and separate from all other pieces of information. For example, a stock is selling at ₹ 40 based on existing information known to all investors. Afterwards, the news of a strike in that company will bring down the stock price to ₹ 30 the next day. The stock price further goes down to ₹ 25. Thus, the first fall in stock price from ₹ 40 to ₹ 30 is caused because of some information about the strike. But the second fall in the price of a stock from ₹ 30 to ₹ 25 is due to additional information on the type of strike. Therefore, each price change is independent of the other because each information has been taken in, by the stock market and separately disseminated. However, independent pieces of information, when they come together immediately after each other show that the price is falling but each price fall is independent of the other price fall.

The basic essential fact of the Random Walk Theory is that the information on stock prices is immediately and fully spread over that other investors have full knowledge of the information. The response makes the movement of prices have an independent nature and therefore, the price of each day is different. The theory further states that the financial markets are so competitive that there is immediate price adjustment. It is due to the effective communication system through which information can be distributed almost anywhere in the country. This speed of information determines the efficiency of the market.

## 8.3 EFFICIENT MARKET

**Michael C. Jensen** has defined an efficient market as, "A market is efficient with respect to a given information set, if it is impossible to make profits by trading on the basis of that information set. By economic profit is meant the risk-adjusted returns net of all costs."

**Eugene F. Fama** has also defined an efficient market as, "Market efficiency requires that in setting the prices of securities at any time  $t-1$ , the market correctly uses all available information".

Thus, market efficiency means that all known information is immediately discounted by all investors and reflected in the market price of stocks. This means that no one has an information edge. In an efficient market, every one knows all possible 'to know' information simultaneously. Every one interprets it similarly and behaves rationally. The market is assumed to be efficient in many more senses. One



cannot expect to earn superior rates of return by analyzing annual reports, announcements of dividend changes, etc. The strong form asserts that not even those with privileged information can make use of it to secure superior investment results.

#### 8.4 EFFICIENT MARKET HYPOTHESIS

The Random Walk Theory is based on the efficient market hypothesis. The hypothesis that holds that the financial market is in possession of all available information which may influence the price of a share or stock that as a result there is perfect competition in the financial market. The hypothesis assumes that share prices wander in a random fashion because the investors, in a perfectly competitive market, take account of all facts about a share in determining its price. This hypothesis is supposed to take three forms – weak form, semi-strong form and strong form.

- (1) **Weak form:** The weak form implies that the knowledge of the past patterns of stock prices does not aid investors to attain improved performance. It is opposite of technical analysis which completely relies on charts and past behaviour of stock prices. In this weak form of efficient market the past prices of stocks do not provide help in giving any information about the future prices. Random Walk Theory states that the stock prices move randomly about a trend line which is based on anticipated earnings power. Therefore, analyzing past data does not permit the technician to forecast the movement of prices about the trend line and new information affecting stock prices enters the market in random fashion. Thus, the weak form of efficient market hypothesis is a direct challenge to the chartist or technical analyst.
- (2) **Semi-strong form:** The semi-strong of the efficient market hypothesis concentrates on how rapidly and efficiently market prices adjust to new publicly available information. The investor, in this form of market, will find it impossible to earn a return on the portfolio which is based on the publicly available information in excess of the return which may be said to be commensurate with the portfolio risk. Semi-strong form suggests the fruitlessness of efforts to earn superior rates of return, it represents a direct challenge to traditional financial analysis based on the evaluation of publicly available data. In the semi-strong market any new announcement would bring a reaction immediately upon the announcement. This reaction prior to or immediately after the announcement would be caused by the additional information which is not anticipated by the stock market participants.
- (3) **Strong form:** The strong form is concerned with the possession of inside information. In the strong form of the market it is stated that all information is represented in the security prices in such a way that there is no opportunity for any person to make an extraordinary gain on the basis of any information. The stock prices reflect not only what is generally known through public announcements but also what is generally known through public announcements. Certain groups have monopolistic access to information. This is the most extreme form of the efficient market hypothesis. If the strong form holds, then, any day is as good as other day to buy any stock. However, most of research work, has indicated that the efficient market hypothesis in the strongest form does not hold good. There is no doubt that access to inside information, such as that available to corporate officials and specialists, enables investors to beat the market, this is not surprising and explains why market efficiency is usually restricted to the weak and semi-strong forms.

#### 8.5 RANDOM WALK AND SECURITY ANALYSIS

Random walk is not an attempt at selecting securities or giving information about relative price movements. It does not give information about price movements of markets, industry or firms. The random walk hypothesis is consistent with upward and downward movements in prices and to some



extent it supports the fundamental analysis. If random walk theory is valid and security exchanges are efficient markets then stock prices in any point of time will represent good estimates of intrinsic or fundamental values. Thus, additional fundamental analysis is of value only when the analyst has information or new insights not already put into a stock's current market price.

Random walk hypothesis is also contrary to the technical analysts view of behaviour of stock prices. The technical analyst thinks that history repeats itself and by studying the past behaviour of stock prices, future prices can be predicted. However, random walk hypothesis is in direct opposition to the technical analysis. The most general implication of the efficient market hypothesis is that most security analysis is logically incomplete and valueless. A typical analytical report is based on public information and valueless. A typical analytical report is based on public information and indicates the prospects for either improvement or deterioration in the company's profitability. After what is often a detailed, lucid, accurate and perspectives analysis, the analyst concludes with a recommendation that the stock be bought, held, sold or sold short.

## 8.6 EXERCISES

### Answer the following Questions

1. What is Random Walk Theory? State its importance.
2. Which are the three forms of efficient market hypothesis? Do you think it is valid?
3. Define and explain the semi-strong efficient market hypothesis.

### Objective Type Questions

#### State with reasons whether the following statements is True or False

1. The Random Walk Theory is not based on the efficient market hypothesis.
2. The strong form of efficient market is not concerned with the possession of public information.
3. Random Walk Theory suggests that the successive price changes are information.
4. Noise trading refers to trading in direct relation to the technical analysis.
5. In the weak form of the market, historical prices are reflected.
6. Random Walk Theory suggests that stock market readjusts itself quickly to new equilibrium levels.
7. The strong form of the market states that no investor can continuously make profits on the stock exchange by future forecasts.
8. Run Test and Filter Tests showed market.
9. Mutual fund performance has been tested by Friend in 1972, Sharpe in 1966 and Jensen in 1969 efficiency.
10. In the weak form of the market, historical prices are reflected.
11. Random Walk Theory suggests that stock market readjusts itself quickly to new equilibrium levels.
12. The strong form of the market states that no investor can continuously make profits on the stock exchange by future forecasts.
13. Rub Test and Filter Test showed market.
14. Mutual funds performance has been tested by Friend in 1972, Sharpe in 1966 and Jensen in 1969 efficiency.

**Ans:** 1. (F), 2. (T), 3. (F), 4. (T), 5. (F), 6. (T), 7. (T), 8. (F), 9. (T), 10. (F), 11. (T), 12. (T), 13. (F), 14. (T).

**Multiple Choice Questions**

**Choose the right Answer**

1. In the weak form of the efficient market, the stock price indicates \_\_\_\_\_.
  - (i) the trading volumes and past prices of the shares
  - (ii) the past price of the shares
  - (iii) demand and supply position of the company
  - (iv) the financial position of a company
2. The efficient market theory states that \_\_\_\_\_.
  - (i) the price movement of shares depends on previous prices
  - (ii) prices of shares are indicated through patterns like line charts
  - (iii) each successive change does not depend on previous share prices
  - (iv) share prices move in the form of a trend
3. In the strong form of the efficient market, \_\_\_\_\_.
  - (i) stock prices show the performances of the firm
  - (ii) the stock prices reflect past prices of the share
  - (iii) all information is reflected on price of share
  - (iv) mutual funds are consistently superior to other investors.
4. In the weak form of the efficient market the stock price indicates
  - (i) The trading volumes and past prices of the shares
  - (ii) The past price of the shares
  - (iii) Demand and supply position of the company
  - (iv) The financial position of a company.
5. The efficient market theory states that
  - (i) The price movement of shares depends on previous prices
  - (ii) Prices of shares are indicated through patterns like line charts
  - (iii) Each successive change does not depend on previous share prices
  - (iv) Share price move in the form of a trend.
6. In the strong form of the efficient market
  - (a) Stock prices show the performance of the firm
  - (b) The stock prices reflect past price of the share
  - (c) All information is reflected on the price of the share
  - (d) Mutual funds are consistently superior to other investors.
7. An efficient market can be recognized as
  - (i) A fully automated stock exchange
  - (ii) Information which is fully reflected in the stock prices
  - (iii) A regulated market closely monitored by regulatory agencies
  - (iv) One with the presence of servers and investors.

8. The efficient market hypothesis gives credence to
- (i) Technical analysis theory
  - (ii) Fundamental school of thorough
  - (iii) Purchase of mutual fund securities to outperform the market
  - (iv) Individual investors' trends of historical prices.

**Ans:** 1. (i), 2. (iii), 3. (iii). 4. (i), 5. (iii), 6. (iii), 7. (ii), 8. (ii).



## CHAPTER

# 9

# CAPITAL ASSET PRICING MODEL

### Chapter Contents:

- 9.1 Introduction
- 9.2 CAPM Major Implications
- 9.3 Basic Assumptions from Investor's Point of View
- 9.4 Capital Market Line (CML)
- 9.5 Security Market Line (SML)
- 9.6 Exercises

### 9.1 INTRODUCTION

Modern theories related to finance provide a theoretical representation of the risks involved in pricing the financial assets in the markets. CAPM model is the theory. The CAPM was developed and modified by financial economists through the sixties – W. Sharpe and Tobin. It can be applied to all capital assets such as share debentures and Government securities.

### 9.2 CAPM MAJOR IMPLICATIONS

The major implications of CAPM can be stated as the expected return of an asset will be related to a measure of risk for that asset known as beta. CAPM specifies the manner in which expected return and beta related.

According to CAPM, the relationship between risk and return is

$$K_i = R_f + \beta (K_m - R_f)$$

where,  $K_i$  = required or expected rate of return on security

$R_f$  = Risk-free rate of return

$b$  = Beta coefficient of a security

$K_m$  = Expected rate of return on market portfolio

- A. Return:** The ROI is a realizable cash flow earned by the investor or owner during the given period of time.

- B. Expected rate of return:** It is the average return that one expects to receive on an investment over the long-term. The expected rate of return is calculated as under:

$$K = \sum_{i=1}^n P_i K_i$$

where,  $K$  = Expected rate of return

$P_i$  = Probability associated with the security returns

$K_i$  =  $i^{\text{th}}$  possible outcome, For example:

Status	Probability of occurrence	Rate of return
Boom	0.30	25%
Normal	0.50	20%
Recession	0.20	15%

Calculate expected rate of return.

$$K = (0.30 \times 25\%) + (0.50 \times 20\%) + (0.20 \times 15\%)$$

$$= 7.5 + 10 + 3 = \mathbf{20.5\%}$$

- C. Market portfolio:** It is the portfolio comprising of all the risky securities that are traded in the market.
- D. Risk:** Risk means chance of loss. It refers to the variability of possible returns associated with an investment. The greater the dispersion of possible returns, the greater the risk, there are different types of risk namely:
1. Default risk
  2. Business risk
  3. Systematic risk
  4. Interest risk
  5. Liquidity risk
  6. Market risk
  7. Credit risk
  8. Power risk etc.

The risk of a *portfolio* comprises *systematic risk*, also known as undiversifiable risk, and *unsystematic risk* which is also known as idiosyncratic risk or diversifiable risk. Systematic risk refers to the risk common to all securities — i.e., *market risk*. Unsystematic risk is the risk associated with individual assets. Unsystematic risk can be *diversified* away to smaller levels by including a greater number of assets in the portfolio (specific risks “average out”). The same is not possible for systematic risk within one market. Depending on the market, a portfolio of approximately 30-40 the securities in developed markets such as UK or the US will render the portfolio sufficiently diversified such that risk exposure is limited to systematic risk only. In developing markets a larger number is required, due to the higher asset volatilities.

A rational investor should not take on any diversifiable risk, as only non-diversifiable risks are rewarded within the scope of this model. Therefore, the required *return* on an asset, that is, the return that compensates for risk taken, must be linked to its riskiness in a portfolio context - i.e., its contribution to overall portfolio riskiness – as opposed to its “standalone riskiness”. In the CAPM context, portfolio risk is represented by higher *variance* i.e., less predictability.

In other words the beta of the portfolio is the defining factor in rewarding the systematic exposure taken by an investor.

Risk also refers to the dispersion of a probability distribution. In finance it indicates about standard deviation. The standard deviation can be more sophisticated it can be calculated as:

$$\sigma = \sqrt{\left[ \sum^n P_i - \{K - K\}^2 \right]}$$

- E. Beta:** A measure of the volatility, or systematic risk, of a security or a portfolio in comparison to the market as a whole. Beta is used in the capital asset pricing model (CAPM), a model that calculates the expected return of an asset based on its beta and expected market returns, also known as “beta coefficient”. Beta is calculated using regression analysis, and you can think of beta as the tendency of a security’s returns to respond to swings in the market. A beta of 1 indicates that the security’s price will move with the market. A beta of less than 1 means that the security will be less volatile than the market. A beta of greater than 1 indicates that the security’s price will be more volatile than the market. For example, if a stock’s beta is 1.2, it’s theoretically 20% more volatile than the market. Many utilities stocks have a beta of less than 1.

Formula : 
$$\beta = \frac{\text{Cov}(R_i, R_m)}{\sigma^2_m}$$

where,  $\text{Cov}(R_i, R_m)$  is the variance between the return on security and the return on market portfolio ‘m’

$$\frac{\text{Cov}(R_i, R_m) \sum^n (R_i - R_i) - (R_m - R_m)}{(n - 1)}$$

$\sigma^2_m$  = Variance of return on market portfolio

**9.3 BASIC ASSUMPTIONS FROM INVESTOR’S POINT OF VIEW**

1. Aim to maximize economic utilities.
2. Are rational and risk-averse.
3. Are broadly diversified across a range of investments.
4. Are price takers, i.e., they cannot influence prices.
5. Can lend and borrow unlimited amounts under the risk-free rate of interest.
6. Trade without transaction or taxation costs.
7. Deal with securities that are all highly divisible into small parcels.
8. Assume all information is available at the same time to all investors.

### 9.4 CAPITAL MARKET LINE (CML)

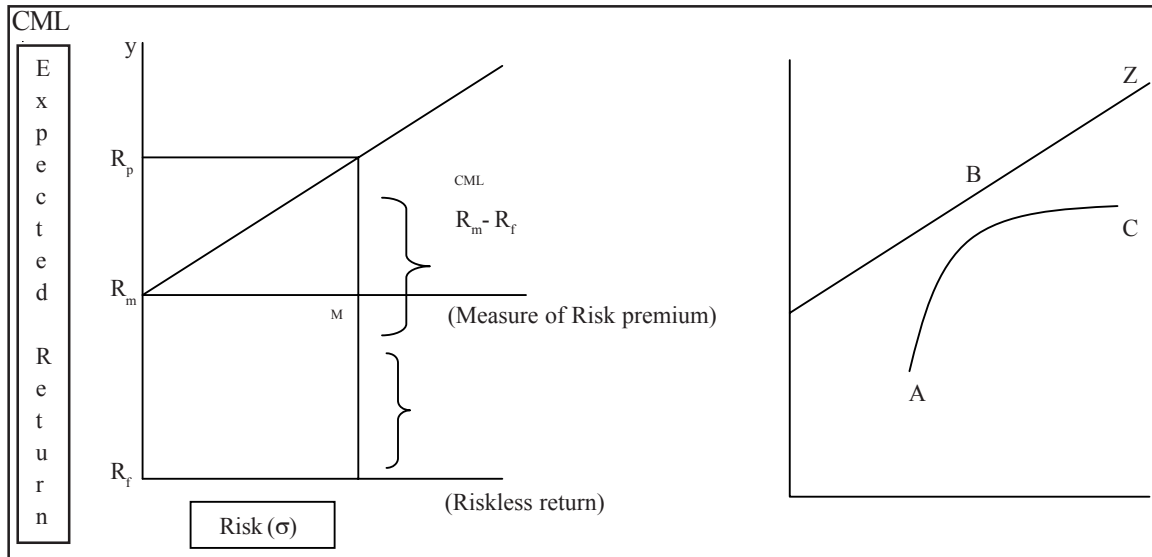


Fig. 1

Fig. 2

#### Figure 1

Point ' $R_f$ ' is the riskless interest rate. Preferred investments are plotted along the line  $R_fMZ$ , by the combination of both risky assets and risk-free assets, along with borrowing and lending. This is known as CML. It gives desirable set of investment opportunities between risk-free and risky investments. The slope of  $R_fMZ$  is the measure of the reward for risk taking.  $P$  is the risk free return.  $R_m - R_f$  is the measure of the risk premium – a return for the risk taking.

#### Figure 2

The line  $R_fB$  represents all possible combination of riskless and risky assets. The portfolio along with the path  $R_fB$  is called lending portfolio. If it crosses  $B$  it becomes borrowing portfolio. (Combination of risky portfolio with borrowing). Borrowing increases both the expected return and the risk while lending (i.e., combining risky portfolio with risk-free asset) reduces the expected return and risk.

Thus, the investors with high risk aversion will prefer to lend and thus hold a combination of risky-asset and risk-free asset. Others with less risk aversion will borrow and invest more in the risky portfolio,  $ABC$  represent efficient frontier.  $ABC$  line show the investor's portfolio of risky assets. The investors can combine risk-less asset either by lending or borrowing.

$ABC$  is concave curve represent an efficient frontier of risky portfolios.

Introduction of borrowing and lending gives us an efficient frontier that is straight-line through-out.

$$E(R_p) = R_f + \frac{E(R_m - R_f)}{\sigma_m} \times \sigma_p$$

where,  $E(R_p)$  = Portfolio's expected return.

$R_m$  = Expected return on the market portfolio.

$\sigma_m$  = Standard deviation of market portfolio.

$\sigma_p$  = Standard deviation of the portfolio.

**9.5 SECURITY MARKET LINE (SML)**

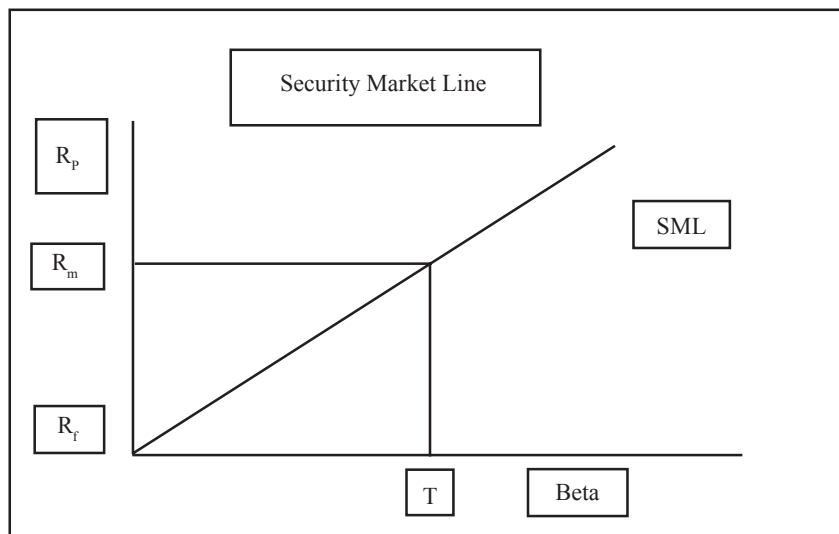
The risk-return relationship of an efficient portfolio is measured by the capital market line. All portfolios other than efficient portfolios will lie below the CML. The CML does not describe the risk-return relationship of inefficient portfolios of individual securities. The CAPM specifies the relationship between expected return and risk for all securities and all portfolios, whether efficient or inefficient.

We have seen earlier that the total risk of a security as measured by standard deviation is composed of two components; systematic risk and unsystematic risk of diversifiable risk. As investment is diversified and more and more securities are added to a portfolio, unsystematic risk tends to become zero and the only relevant risk is systematic risk measured by Beta ( $\beta$ ). Hence, it is argued that, the correct measure of security risk is beta. The beta analysis is useful for individual securities and portfolios whether efficient or inefficient.

The relationship between expected return and  $\hat{a}$  of a security can be determined graphically. Let us consider an XY graph where the expected returns are plotted on the OY-axis and beta coefficient on OX-axis. A risk-free asset has expected return equivalent to  $R_f$  and beta coefficient is zero (0). The Market Portfolio M has a beta coefficient of 1 and expected return equivalent to  $R_m$ . A straight-line joining these two points is known as the Security Market Line (SML). The SML helps to determine the expected return for a given security beta. This is explained in the following figure.

The Security Market Line provides the relationship between the expected return and beta of a security or portfolio. This relationship can be expressed in the form of the following equation:

$$E(R_j) = R_f + \alpha_j [E(R_m) - R_f]$$



Period	Return on Stock A%	Return on Market Portfolio
1	10	12
2	15	14
3	18	13
4	14	10
5	16	9
6	16	13
7	18	14



8	4	7
9	-9	1
10	14	12
11	15	-11
12	14	16
13	6	8
14	7	7
15	-8	10

Illustration 1:

Period	$R_i$	$R_m$	$R_i - \bar{R}_i$	$R_m - \bar{R}_m$	$(R_i - \bar{R}_i)(R_m - \bar{R}_m)$	$(R_m - \bar{R}_m)^2$
1	10	12	0	3	0	9
2	15	14	5	5	25	25
3	18	13	8	4	32	16
4	14	10	4	1	4	1
5	16	9	6	0	0	0
6	16	13	6	4	24	16
7	18	14	8	5	40	25
8	4	7	-6	-2	12	4
9	-9	1	-19	-8	152	64
10	14	12	4	3	12	9
11	15	-11	5	-20	-100	400
12	14	16	4	7	28	49
13	6	8	-4	-1	4	1
14	7	7	-3	-2	6	4
15	-8	10	-18	1	-18	1
<b>Total</b>	<b>150</b>	<b>135</b>	<b>10</b>	<b>9</b>	<b>221</b>	<b>624</b>

**Solution:**

$$\text{Cov}(R_i, R_m) = 221/9$$

$$= 24.56$$

$$\text{Cov}(R_i, R_m) = 624/9$$

$$= 69.33$$

$$\beta = \frac{\text{Cov}(R_i, R_m)}{\sigma^2_m} = \frac{24.56}{69.33} = 0.3542$$

Thus, the security in portfolio indicates beta of 0.3542. It indicates the portfolio is less volatile than the return on market portfolio since the beta of the security is less than 1.

**Illustration 2: Calculation of Beta**

Year	Return on Security	Return on Market Portfolio
1	10	12
2	12	10
3	13	10
4	10	12
5	8	15

6	11	14
7	16	20
8	12	15
9	18	20
10	20	22

**Solution:**

Year	$R_i$	$R_m$	$(R_i - \bar{R}_i)$	$(R_m - \bar{R}_m)$	$(R_i - \bar{R}_i) - (R_m - \bar{R}_m)$	$(R_m - \bar{R}_m)^2$
1	10	12	-3	-3	9	9
2	12	10	-1	-5	5	25
3	13	10	0	-5	0	25
4	10	12	-3	-3	9	9
5	8	15	-5	0	5	0
6	11	14	-2	2		
7	16	20	3	15		
8	12	15	-1	0		
9	18	20	5	25		
10	20	22	7	49		
<b>N = 0</b>	<b>53</b>	<b>59</b>	<b>13</b>	<b>15</b>	<b>114</b>	<b>168</b>

$$\text{Cov}(R_i, R_m) = \frac{114}{9} = 12.67$$

$$\sigma^2_m = \frac{168}{9} = 18.67$$

$$\beta = \frac{12.67}{18.67} = 0.68$$

**Illustration 3:**

Investment in Equity Shares	Initial price	Dividend/ Interest	Market Price (end of the year)	Beta risk factor
Power Ltd.	25	2	50	0.5
Coal Ltd.	35	2	60	0.6
Government bonds	100	140	1005	0.66
Steel Ltd.	45	2	135	0.4

Risk-free return may be taken at 14%.

You are required to calculate:

1. Expected rate of return of portfolio in each using CAPM model
2. Average return of portfolio

**Solution:**

1. Calculation of Expected Rate of Return

Investment in Equity Shares	Initial Price	Dividend/ Interest	Capital Gain
Power Ltd.	25	2	25
Coal Ltd.	35	2	25
Government bonds	1000	140	5
Steel Ltd.	45	2	90
<b>Total</b>	<b>1105</b>	<b>146</b>	<b>145</b>

Expected rate of return on market portfolio

$$= \frac{\text{Dividend} + \text{Capital Appreciation}}{\text{Initial Investment}} \times 100$$

$$= \frac{146 + 145}{1105} \times 100 = 26.33\%$$

Applying CAPM,

$$K_i = R_f + b (K_m - R_f)$$

$$\text{Power Ltd.} = 14 + 0.5 (26.33 - 14) = 20.165$$

$$\text{Coal Ltd.} = 14 + 0.6 (26.33 - 14) = 21.398$$

$$\text{Government bonds} = 14 + 0.66 (26.33 - 14) = 22.137$$

$$\text{Steel Ltd.} = 14 + 0.4 (26.33 - 14) = 18.932$$

$$2. \text{ Average return of portfolio} = \frac{20.165 + 21.398 + 22.137 + 18.932}{4} = 20.658\%$$

## 9.6 EXERCISES

### Answer the following Questions

1. What is CAPM model? State with assumptions.
2. Write a note on:
  - (a) Security Market Line
  - (b) Capital Market Line

### Multiple Choice Questions

#### Choose the right Answer

1. Which theory believes that the investor prefer smaller returns?
  - (i) Modern
  - (ii) Traditional
  - (iii) Jensen D. Sharpe
2. Which measures systematic or non-systematic risk of a security?
  - (i) Standard deviation
  - (ii) Variance
  - (iii) Beta
3. Modern theory \_\_\_\_\_ the relationship between risk and return.
  - (i) Analyze
  - (ii) Quantify
  - (iii) Qualify
4. CAPM model, correct measure of risk is termed as \_\_\_\_\_.
  - (i) Alpha coefficient
  - (ii) Beta coefficient
  - (iii) Financial risk

**Ans:** 1. (ii), 2. (iii), 3. (ii), 4. (ii).

### Sums for Practice

1. (a) The risk-free return is 8% and the return on market portfolio is 12% if required return on a stock is 15%, what is beta?

- (b) The risk-free return is 9%. The required return on a stock whose beta is 1.5 is 15%. What is return of the market portfolio?
2. Mr. Kaushik has a portfolio of three securities. From the following details, compute the portfolio returns and rate of return on individual securities.

Security	Price as on 31.12.94	Price as on 31.12.95	Yearly dividend
A	20	30	2
B	30	40	3
C	50	60	5

3. (a) What will be the expected return on a portfolio comprised of the following securities?

Security	Expected return %	Proportion %
A	10	25
B	15	25
C	20	50

- (b) What will be the expected return if the proportion of each security in the portfolio is 20, 30, and 50 respectively?
4. Mr. Sharma's portfolio return are given below:

Year	Securities	Return
1	X	12
1	Y	10
2	X	18
2	Y	16

Standard deviation of both the securities is 3.

Calculate:

- (a) Expected rate of return on his portfolio if it is made up of 50% of X and 50% of Y.
- (b) Covariance of X and Y.
- (c) Portfolio risk made up of 50% of X and 50% of Y.
5. A portfolio consists of 3 securities 1, 2 and 3. The proportion of these securities is 0.3, 0.5 and 0.2. The standard deviation of returns on these securities is 6, 9 and 10 respectively. The correlation coefficient among security are 1 and 2 = 0.4, 1 and 3 = 0.6 and 2 and 3 = 0.7. What is standard deviation of portfolio return?
6. A firm's current EPS is ₹ 6, its dividend payout is 40%, and growth rate of EPS is 10%. The normal P/E multiple is 15/1. What is the stock's value using the capitalization of earnings method? What is its value in 3 years using the same method?
7. Returns of X Ltd., were 12%, 13%, 12% and 11% in the last four years. Returns of Y Ltd. were 12%, 13%, 9% and 10% in the last four years. While average market returns were 14%, 15%, 14%, 13% in the last four years, return on government returns for X Ltd., and Y Ltd. (using CAPM) and offer your comments.





### **Chapter Contents:**

- 10.1 Introduction on Portfolio Management
- 10.2 Investment Constraints
- 10.3 Selection of Portfolio
- 10.4 Portfolio Execution
- 10.5 Portfolio Revision
- 10.6 Portfolio Evaluation
- 10.7 Exercises

### **10.1 INTRODUCTION ON PORTFOLIO MANAGEMENT**

An investor considering investment in securities is faced with the problem of choosing from among a large number of securities and how to allocate his funds over this group of securities. Again he is faced with problem of deciding which securities to hold and how much to invest in each. The risk and return characteristics of portfolios. The investor tries to choose the optimal portfolio taking into consideration the risk return characteristics of all possible portfolios.

As the risk return characteristics of individual securities as well as portfolios also change. This calls for periodic review and revision of investment portfolios of investors.

An investor invests his funds in a portfolio expecting to get good returns consistent with the risk that he has to bear. The return realized from the portfolio has to be measured and the performance of the portfolio has to be evaluated.

It is evident that rational investment activity involves creation of an investment portfolio.

Portfolio management comprises all the processes involved in the creation and maintenance of an investment portfolio. It deals specifically with the security analysis, portfolio analysis, portfolio selection, portfolio revision and portfolio evaluation. Portfolio management makes use of analytical techniques of analysis and conceptual theories regarding rational allocation of funds. Portfolio management is a complex process which tries to make investment activity more rewarding and less risky.

## 10.2 INVESTMENT CONSTRAINTS

When creating a policy statement, it is important to consider an investor's constraints. There are five types of constraints that need to be considered when creating a policy statement. They are as follows:

- **Liquidity Constraints:** Liquidity constraints identify an investor's need for liquidity, or cash. For example, within the next year, an investor needs \$50,000 for the purchase of a new home. The \$50,000 would be considered a liquidity constraint because it needs to be set aside (be liquid) for the investor.
- **Time Horizon:** A time horizon constraint develops a timeline of an investor's various financial needs. The time horizon also affects an investor's ability to accept risk. If an investor has a long time horizon, the investor may have a greater ability to accept risk because he would have a longer time period to recoup any losses. This is unlike an investor with a shorter time horizon whose ability to accept risk may be lower because he would not have the ability to recoup any losses.
- **Tax Concerns:** After tax returns are the returns investors are focused on when creating an investment portfolio. If an investor is currently in a high tax bracket as a result of his income, it may be important to focus on investments that would not make the investor's situation worse, like investing more heavily in tax-deferred investments.
- **Legal and Regulatory:** Legal and regulatory factors can act as an investment constraint and must be considered. An example of this would occur in a trust. A trust could require that no more than 10% of the trust be distributed each year. Legal and regulatory constraints such as this one often can't be changed and must not be overlooked.
- **Unique Circumstances:** Any special needs or constraints not recognized in any of the constraints listed above would fall in this category. An example of a unique circumstance would be the constraint an investor might place on investing in any company that is not socially responsible, such as a tobacco company.

## 10.3 SELECTION OF PORTFOLIO

Certain assumptions were made in the traditional approach for portfolio selection, which are discussed below:

- Investors prefer large to smaller returns from securities and take more risk.

- Ability to achieve higher returns depends upon investor's judgement of risk.
- Spreading money among many securities can reduce risk.

An investor can select the best portfolio to meet his requirements from the efficient frontier, by following the theory propounded by Markowitz. Selection process is based on the satisfaction level that can be achieved from various investment avenues.

**Stages in the selection process:**

The process of selecting a portfolio is very crucial in the investment management and involves four stages which are given below:

- Determination of assets, which are eligible for constructing of a portfolio.
- Computation of the expected return for the eligible assets over a holding period.
- Arriving at an acceptable balance between risk and return for constructing optimum a portfolio, i.e., selecting such a portfolio for which there is highest return for each level of risk.

**Selecting the best portfolio mix:**

When an infinite number of portfolios are available, investor selects the best portfolio by using the Markowitz portfolio theory. The investors base their selection on the expected return and standard deviation of the portfolio and decide the best portfolio mix taking the magnitude of these parameters. The investors need not,

Evaluate all the portfolios however he can look at only the available portfolios, which lie on the efficient frontier.

**The required features of the subset of portfolio are:**

They should offer maximum expected return for varying levels of risk, and also offer minimum risk for varying levels of expected returns.

If the above two conditions are satisfied then it is deemed as an efficient set, from this set investors have to select the best set of portfolios.

**Construction of efficient set of portfolios:**

Considerable effort is required to construct an efficient set of portfolios.

**Following parameters are essential for constructing the efficient set:**

- Expected returns for each security must be estimated.
- Variance of each security must be calculated.

**Optimum portfolio:**

Sharpe has identified the optimal portfolio through his single index model, according to Sharpe, the beta ratio is most important in portfolio selection. The optimal portfolio is said to relate directly to the beta value. It is the excess return to the beta ratio. The optimal portfolio is selected by finding out the cut-off rate [c]. The stock where the excess return to the beta ratio is greater than cut-off rate should only be selected for inclusion in the optimal portfolio. Sharpe proposed that desirability of any stock is directly referred to its excess returns to betas coefficient.

$$\frac{R_i - R_f}{\beta}$$

Where  $R_i$  = expected return on stock

$R_f$  = risk-free rate of return on asset

$\beta$  = expected change in the rate of return on stock one associated with 1% change in the market return

Following procedure are involved to select the stocks for the optimum portfolios.

- Finding out the stocks of different risks-return ratios
- Calculate excess return beta ratio for each stock and rank them from the highest to lowest
- Finding out the cut-off rate for each security
- Selecting securities of high rank above the cut-off rate which is common to all stocks

Thus, the optimum portfolio consists of all stocks for which  $(R_i - R_f)$  is greater than a particular cut off-point ( $c^*$ ). The selection of the number of stocks depends upon the unique cut-off rate, where all stocks with higher rate  $(R_i - R_f)$  will be selected and stocks with lower rates will be eliminated.

**10.4 PORTFOLIO EXECUTION**

The next step is to implement the portfolio plan by buying and/or selling specified securities in given amounts. This is the phase of portfolio execution which is often glossed over in portfolio management literature. For effectively handling the portfolio execution phase, we have to understand what the trading game is like, what is the nature of key players in this game, who are the likely winners and losers in this game, and what guidelines should be borne in mind while trading.

**Trading Game:**

1. In a typical securities transaction, the motive and even the identity of the other party is not known.
2. A security transaction tends to be a zero sum game. A security offers the same future cash flow stream to the buyer as well as the seller. So, apart from considerations of taxes and



differential risk-bearing abilities, the value of security is the same to the buyer as well as the seller. Hence, the constructive motives which guide the business transactions are not present in most security transactions. This means if one wins the other wins.

### Key Players

1. **Value Based Transactors:** A value based transactor (VBT) carries out extensive analysis of publicly available information to establish values. They generally serve as the anchor for the trading system and establish the framework for the operations of dealers.
2. **Information Based Transactors:** An information based transactors (IBT) transacts on the basis of information which is not publicly domain and therefore not reflected in security prices. Since he expects this information to have a significant impact on prices, he is keen to transact soon. To him, time is a great value. They generally employs 'incremental' fundamental analysis and technical analysis.
3. **Liquidity Based Transactors:** A liquidity based transactor, trades primarily due to liquidity considerations. He may be regarded as an informationless trader who is driven mainly by liquidity considerations.
4. **Pseudo-information Based Transactors:** A pseudo-information based transactor (PIBT) believes that he possesses information that can be a source of gain, even though that information is already captured or impounded in the price of the security.
5. **Dealers:** A dealer intermediates between buyers and sellers eager to transact. The dealer is ready to buy or sell with a spread which is fairly small for actively traded securities.

### Who Wins, Who Loses:

It appears that the IBT's odds of winning are the highest, assuming that his information is substantiated by the market. He is followed by the VBT, LBT, and PIBT in that order.

- The IBT seems to have a distinct edge over others.
- The VBT tends to lose against the IBT but gains against the LBT and PIBT.
- The LBT may have some advantage over the PIBT.

### Guidelines:

1. **Maintain a dialogue with the broker:** When a trade is seriously contemplated, check with the broker about the sensitivity of the stock to buying or selling pressure, the volume that can be traded without pushing the price out of the desirable range, the manipulative games, if any, being played by operators, and the degree of market resilience.
2. **Place an order which serves best interest:** The more common types of orders are: the market order, the best efforts order, the market-on-open order and the limit order. The *market order* instructs the broker to execute the transaction promptly at the best available

price. The *best efforts order* gives the broker a certain measure of discretion to execute the transaction when he considers the market condition more favourable. The *market-on-open order* instructs the broker to execute the transaction during the opening of the trading day. The limit order instructs the broker to execute the transaction only within the price limits specified in the order.

**3. Avoid serious trading errors:** The worst trading errors appear to be following:

- a VBT sells time too cheaply,
- an IBT buys time too expensively, and
- an LBT, by appearing motivated by information, evokes very defensive responses from dealers and other market participants

## 10.5 PORTFOLIO REVISION

Having constructed the optimal portfolio, the investor has to constantly monitor the portfolio to ensure that it continues to be optimal. As the economy and financial markets are dynamic, the changes take place almost daily. The investor now has to revise his portfolio. The revision leads to purchase of new securities and sale of some of the existing securities from the portfolio.

**Need for revision:**

- Availability of additional funds for investment
- Availability of new investment avenues
- Change in the risk tolerance
- Change in the time horizon
- Change in the investment goals
- Change in the liquidity needs
- Change in the taxes

## 10.6 PORTFOLIO EVALUATION

Portfolio managers and investors who manage their own portfolios continuously monitor and review the performance of the portfolio. The evaluation of each portfolio, followed by revision and reconstruction are all steps in the portfolio management.

The ability to diversify with a view to reduce and even eliminate all unsystematic risk and expertise in managing the systematic risk-related to the market by use of appropriate risk measures, namely, betas. Selection of proper securities is thus the first requirement.

**Methods of evaluation:****√ Sharpe index model:**

It depends on total risk rate of the portfolio. Return of the security compare with risk-free rate of return, the excess return of security is treated as premium or reward to the investor. The risk of the premium is calculated by comparing portfolio risk rate. While calculating return on security any one of the previous methods is used. If there is no premium Sharpe index shows negative value (-). In such a case portfolio is not treated as efficient portfolio.

$$\text{Sharpe's ratio (Sp)} = \frac{r_p - r_f}{\sigma_p}$$

Where,

Sp = Sharpe index performance model

$r_p$  = return of portfolio

$r_f$  = risk-free rate of return

$\sigma_p$  = portfolio standard deviation

This method is also called “reward to variability” method. When more than one portfolio is evaluated highest index is treated as first rank. That portfolio can be treated as better portfolio compared to other portfolios. Ranks are prepared on the basis of descending order.

**√ Treynors index model:**

It is another method to measure the portfolio performance. Where systematic risk rate is used to compare the unsystematic risk rate. Systematic risk rate is measured by beta. It is also called “reward to systematic risk”.

$$\text{Treynors ratio (Tp)} = \frac{r_p - r_f}{\beta}$$

Where,

Tp = treynors portfolio performance model

$r_p$  = return of portfolio

$r_f$  = risk free rate of return

$\beta$  = beta

If the beta portfolio is not given market beta is considered for calculation of the performance index. Highest value of the index portfolio is accepted.

**√ Jensen's index model:**

It is different method compared to the previous methods. It depends on return of security which is calculated by using CAPM. The actual security returns is less than the expected return of CAPM the difference is treated as negative (-) then the portfolio is treated as inefficient portfolio.

✓ **Jensen's index model:**  $R_p = K_i + \hat{a}(R_m - K_i)$

This method is also called “reward to variability” method. When more than one portfolio is evaluated highest index is treated as better portfolio compared to other portfolios. Ranks are prepared on the basis of descending order.

### Formula

$$1. \text{ Measure of Return: } R = \frac{MV_e - MV_b}{MV_b} \times 100$$

Where R = Return on Portfolio

$MV_e$  = Market portfolio at the end of the period

$MV_b$  = Market value of portfolio at the beginning of the period

$$2. \text{ Annualizing Returns : } [(1+r_1)(1+r_2)(1+r_3)(1+r_4)]-1$$

$$3. \text{ Sharpe's Measure = Sharpe's Index} = \frac{R - R_f}{\sigma}$$

$$4. \text{ Treynor's Measure = Treynor's Index} = \frac{R - R_f}{\beta}$$

$$5. \text{ Jensen's Measure} = R_p = K_i + \hat{a}(R_m - K_i)$$

### Illustration 1.

A portfolio has a market value of ₹. 40 lakh at the beginning of the quarter and a market value of ₹ 46 lakh at the end of the quarter .What is the return on the portfolio quarter?

### Solution:

$$\text{Measure of Return: } R = \frac{MV_e - MV_b}{MV_b} \times 100$$

$$R = \frac{46,00,000 - 40,00,000}{40,00,000} \times 100 = 15\%$$

Thus, the return of this portfolio for the quarter is 15%

### Illustration 2

A portfolio had a market value of ₹ 100 lakh at the beginning of the quarter. In the middle of the quarter the portfolio had a market of ₹ 96 lakh, so that right after the deposit of ₹ 5 lakh in the middle of the quarter the market value was ₹ 101 lakhs. At the end of the quarter the market value of the

portfolio was 103 lakh. Determine the portfolio's rate of return for the quarter.

**Solution:**

The return for the first half of the quarter would be –

$$R_1 = \frac{96 - 100}{100} \times 100 = -4\%$$

And the return for the second half of the quarter would be –

$$R_2 = \frac{103 - 101}{100} \times 100 = 1.98\%$$

These two semiquarterly returns can be converted into quarterly return by adding one to each return, multiplying the sums and then subtracting 1 from the product

$$R = [(1 - 0.04 \times 1 + 0.0198) - 1] = -2.1\%$$

The rupee weighted return method of measuring a portfolio's return for purposes of evaluation is not considered as appropriate because the return is strongly influenced by the size and timing of the cash flows over which the portfolio manager has no control.

**Illustration 3**

A and B are two portfolios. A has a sample mean of success 12% and B has a sample mean of success 16%. The respective standard deviations are 15% and 18%. The mean return for the market index is 12 and standard deviation is 8 while the risk free rate is 8%, Compute the sharpe index for the portfolio and the market.

**Solution:**

$$\text{Sharpe's Index} = \frac{R - R_f}{\sigma}$$

$$\text{Portfolio A} = \frac{12 - 8}{15} = 27\%$$

$$\text{Portfolio B} = \frac{16 - 8}{16} = 44\%$$

$$\text{Market index} = \frac{12 - 8}{8} = 50\%$$

**Ans:** Thus, it is clear that portfolio B has better Performance than portfolio A

**Illustration 4**

A mutual fund is trying to decide between two investment funds. From the past performance, they were able to calculate the following average returns and standard deviations for these funds. The current risk – free rate is 9.5 per cent and the fund will use this as a measure of the risk – free rate

Particulars	FUNDA	FUNDB
Average Return (R)	17	15
Standard Deviation ( $\sigma$ )	16	12
Risk-free rate ( $R_f$ )	9.5	9.5

**Solution:**

Using Sharpe’s Index, the risk return measurement for the two funds are given below:

$$\text{Fund A} = \frac{17 - 9.5}{16} = 47\%$$

$$\text{Fund B} = \frac{15 - 9.50}{12} = 46\%$$

**Ans:** It is clear that Fund A has a slightly better performance than Fund B

**Illustration 5**

Given are two portfolios calculate:

1. Treynor’s Index
2. Sharpe’s Index
3. Evaluate their performance
4. Sharpe’s Index for market portfolio

Portfolio	Average Return	Beta	Standard deviation
A	18%	2	3
B	12%	1.4	2

Risk-free rate is 9 %

**Solution:**

$$1. \text{ Treynor’s Index} = \frac{R - R_f}{\beta}$$

$$\text{Portfolio A} = \frac{18 - 9}{2} = 4.5$$

$$2. \text{ Sharpe's Index} = \frac{R - R_f}{\sigma}$$

$$\text{Portfolio A} = 1 \frac{18 - 9}{2} = 3$$

$$\text{Portfolio B} = \frac{12 - 9}{2} = 1.5$$

$$3. \text{ Sharpe's Market Index} = \frac{15 - 9}{6} = 1$$

**Ans:** The Performance of A is better than B and it has also outperformed the market portfolio

### Illustration 6:

Portfolio	Return on Portfolio	Portfolio Beta	Risk-free Interest
A	15	1.2	8%
B	12	0.8	8%
C	16	1.5	8%
Market index	13	1.0	8%

You are required to rank these portfolios according to Jensen's measure of portfolio evaluation

### Solution:

- a. Calculation of return on the basis of CAPM

$$\text{Portfolio} = K_r = R_f + \beta (K_m - R_f)$$

$$A = 8 + 1.2 (13 - 8) = 8 + 6 = 14\%$$

$$B = 8 + 0.8 (13 - 8) = 8 + 4 = 12\%$$

$$C = 8 + 1.5 (13 - 8) = 8 + 7.5 = 15.5 \%$$

The difference between the actual and the calculated returns are as follows:

1. Portfolio A = 15 - 14 = 1%
2. Portfolio B = 12 - 12 = 0%
3. Portfolio C = 16 - 15.5 = 0.5%

The risk adjusted performance of the three portfolio suggests that according to Jensen's Index

Rank 1 — Portfolio A

Rank 2 — Portfolio C

Rank 3 — Portfolio B

**Illustration 7**

Following Information is given in respect of three mutual Fund and market:

Portfolio	Return	Beta	Risk-free return
Birla	15%	1.2	9
Kotak	16%	1.5	9
Reliance	12%	0.8	9
Market Index	13%	1.0	9

You are required to rank these portfolios according to Jensen’s Measure of Portfolio return:

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**Solution:**

$$\text{Jensen’s Measure} = R_p = K_i + \beta (R_m - K_i)$$

$$\text{Birla} = 9 + 1.2 (13 - 9) = 9 + 4.8 = 13.8$$

$$\text{Kotak} = 9 + 1.5 (13 - 9) = 9 + 6 = 15.0$$

$$\text{Reliance} = 9 + 0.8 (13 - 9) = 9 + 3.2 = 12.20$$

The difference between actual realized returns and the calculated return for the portfolio are :

$$\text{Birla} = 15 - 13.8 = 1.2$$

$$\text{Kotak} = 16 - 15 = 1.0$$

$$\text{Reliance} = 12 - 12.20 = -0.20$$

**Ans:** Rankings Birla, Kotak, Reliance

**Portfolio Management and Framework (Exrcise)**

1. A and B are two portfolios. A has a sample mean of success 12% and B has a sample mean of success 16%. The respective standard deviation are 15% and 18%. The mean return for the market index is 12 and standard deviation is 8 while the risk-free rate is 8%. Compute the Sharpe index for the portfolios and the market.
2. You are asked to analyze the two portfolio having the following characteristics:

Particulars		Fund X	Fund Y
Average return	(R) – Per cent	17	15
Standard deviation	(σ) – Per cent	16	12
Risk-free rate	(Rf) – Per cent	9.5	9.5



3. You are asked to analyze the two portfolios having the following characteristics:

Portfolio	Average return	Beta	Standard deviation
A	18%	2	3
B	12%	1.5	2

The risk-free return is 9%. The return on the market portfolio is 15%. The standard deviation of the market is 6%.

- (i) Treynor's index.
  - (ii) Sharpe's index for market portfolio.
  - (iii) Evaluate the portfolio performance.
4. The actual results of the portfolio and the market index during the past three years are given below:

Portfolio	Return on portfolio	Portfolio beta	Risk-free interest rate
A	15	1.2	8%
B	12	0.8	8%
C	16	1.5	8%
Market index	13	1.0	8%

You are required to rank these portfolios according to Jensen's measure of portfolio evaluation.

5. The details of three portfolios are given below. Compare these portfolios on performance using the Sharpe, Treynor and Jensen's measures.

Portfolio	Average return	Standard deviation	Beta
1	15%	0.25	1.25
2	12%	0.30	0.75
3	10%	0.20	1.10
Market index	12%	0.25	1.20

The risk-free rate of return is 9%.

6. Following are the details of comparative returns of the two mutual funds schemes and market portfolio.

Year fund	Kotak growth	Birla growth	Market portfolio
2001	20	28	22
2002	25	29	6
2003	30	27	8
2004	15	20	9
2005	25	6	25

Risk-free rate of return is 10%.

Calculate Sharpe, Treynor's and Jensen's differential index for both the funds and for market portfolio. Rank their performance.

7. Consider the following data for a particular sample period:

Particulars	Portfolio X	Market portfolio
Average returns beta	30%	20%
Standard deviation	2	1.2
Risk-free return	40%	30%

Calculate the performance measures of the portfolio X and market portfolio. Compare the performances.

## 10.7 EXERCISES



# CASE STUDIES

## CASE STUDY-I

As a portfolio management consultant you are approached by an investor with investible funds of ₹ 25 Lacs. He wants to know from you that what are the investment avenues available to him which will give a stable return with minimum risks.

**Ans:** A rational investor considers two factors before making an investment decision- Returns and Risk. He expects to get high Returns while the associated risk should be low. There are various alternatives available for investment in the market. Following are the few alternatives which provide stabilized Returns with minimum Risk.

### 1. Bonds and Debentures:

Bonds are fixed income securities. Investors get interest on a regular basis from companies. Interest may be paid quarterly, half yearly or yearly. The risk involved is also limited particularly when money is deposited with a reputed company. The interest offered is higher than the interest rate offered by banks. This method is simple and cheaper than obtaining loans from commercial banks.

Gilt Edged securities i.e. Government securities and securities issued by financial institutions such as IDBI, ICICI, etc. are fully secured as they have government backing. The maturity period varies from 10-20 years. These securities are highly liquid assets as they can be sold easily. Even tax benefits are available for such securities.

### 2. Fixed Deposits:

The investor can invest in fixed deposits of banks particularly in nationalized banks as the risk involved is Zero while the returns are reasonable. The returns generated from fixed deposits are around 9- 10 % p.a. It provides Liquidity because the fixed deposits can be withdrawn before maturity in case of an emergency or a loan can be raised against F.D. There is a provision of tax saving under Sec 80C of Income Tax Act, 1961. The bank deducts tax on interest if the interest amount is 10000 or more in a year.

**3. Public Provident Fund:**

PPF is a one attractive tax sheltered investment scheme for middle class and salaried people and businessmen. The investor can deposit certain amount periodically in the post office or SBI. The returns generated are 9.5 % p.a. Withdrawals facility is available but it is limited to once in a year. It is normally for a period of 15 years but can be extended for more years. It is not transferable, but nomination facility is available. Thus it is safe and reasonable investment avenue having limited liquidity.

**4. Life Insurance Policy:**

Life insurance policy gives protection to family members through financial support in case of death of policy holders. At the same time, it is also acts as method of compulsory savings over a long period out of regular income. It provides financially independent life after retirement. LIC issues different life policies such as Whole Life insurance policy, endowment policy, money back policy, etc. It gives tax benefit even if the policy is on the name of investor's wife, son, or daughter. LIC now gives bonus to policy holders on yearly basis. Thus apart from giving financial independence, policy allows investor to earn stabilize returns with no risk involved in investment.

**5. Preference shares:**

Preference shares are different from equity shares. Investment in equity shares is risky. Investor gets dividend only if company earns profits. This is not in case of preference shares. A preference shareholder is entitled to dividend every year. If company cannot pay in particular year, then it is added to next year's dividend. If company cannot pay next year also it keeps on adding till company can pay it. Preference shareholder gets priority over ordinary shares. Equity shareholder gets dividend only after preference shareholder. If the company winds up and sells all its assets, the money that comes is given to shareholder. Even here preference shareholder first gets the money. Thus investor earns secured returns periodically & risk is also less.

**6. Mutual Fund:**

Mutual Fund Company mobilizes the saving of variance small investors & invests them in stock market securities. The returns generated are distributed amongst the investor. These companies have expertise knowledge of investment. The funds are invested in safe secured & profitable manner in companies belonging to different industries. Even tax benefit is available for the amount invested. Here the risk of loss is diversified among different investors. So individually an investor has to face minimum risk while the returns are high. Investor can expect 15% returns on mutual funds.

The best way to manage portfolio is to diversify the entire amount of investment among different securities/stock. Even if a particular security fetches you loss, there should be other securities that yield returns. Thus the overall portfolio risk of investor can be minimized. It is advisable to diversify ₹ 25 lacs

In manner:

Sr. No	Investment	Amount	%
1	Bonds/ Debentures	6,00,000	24
2	Fixed Deposits	2,00,000	8
3	Preference shares	6,00,000	24
4	LIC policy	5,30,000	21.2
5	PPF	70,000	2.8
6	Mutual fund	5,00,000	20
	<b>Total</b>	<b>25,00,000</b>	<b>100%</b>

**CASE STUDY-II**

Q. You are a PMS (Portfolio Management Services) Consultant. A Middle aged investor approaches you to seek your advice on deploying his surplus funds of 20 lacs in various shares, schemes, bonds and Govt. Securities. Present to him any five Investment schemes mentioning various merits and demerits of each scheme you may assume that he is willing to take risk to the extent of 30% of his Funds.

**Ans:** The Portfolio of an Investor can be as follows:

**Portfolio of a middle Aged Investor**

Sr.No	Investment	Amount	%
1	Shares	6,00,000	30%
2	Bonds	3,30,000	16.5%
3	Fixed Deposits	5,00,000	25%
4	Public Provident Funds	70,000	3.5%
5	Mutual Funds	5,00,000	25%
	<b>Total</b>	<b>20,00,000</b>	<b>100</b>

**1. Share:** Investment in Share risky but it provides higher returns if investment is made carefully. As the investor is willing to take risk to the extent of 30%, an amount of ₹ 6,00,000 can be invested in shares. It is a liquid investment. The shares can be sold through the broker and money can be realized within 3 days. However he should invest in blue chips like Profit making and dividend paying companies. He can invest in four to five companies from different industries like IT, Pharma, Entertainment and Banking.

**2. Bonds, 3. Fixed Deposits, 4. Public Provident Fund, 5. Mutual Fund**

IAPM CASE STUDY TIPS –

YOU WILL BE GIVEN A SPECIFIC AMOUNT N U WILL BE ASKED IN INVEST IT IN DIFFERENT INVESTMENT ALTERNATIVES BY CONSTRUCTING A PORTFOLIO.

HOW TO SOLVE???

1. IDENTIFY THE CHARACTERISTICS OF INVESTOR SUCH AS MIDDLE CLASS, UPPER MIDDLE CLASS OR LOWER MIDDLE CLASS .

THEN HOW MUCH MONEY HE HAS FOR INVESTMENT .... THEN CHECK IF ANY OTHER SPECIFICATION GIVEN IN CASE...

2. DETERMINE OBJECTIVES OF INVESTOR ON THE BASIS OF CHARACTERISTICS

FOR EXAMPLE – I MIDDLE CLASS INVESTOR WOULD LOOK FOR LIQUIDITY, TAX BENEFIT, PROTECTION TO FAMILY, PROVISION FOR OLD AGE ETC.

3. INVEST THE MONEY IN VARIOUS INVESTMENT ALTERNATIVES

A. IF INVESTOR IS WILLING TO TAKE MORE RISK, THEN INVEST IN EQUITY, MF, GOLD, ETC.

B. IF INVESTOR IS WILLING TO TAKE MODERATE RISK, THEN INVEST IN FD, MF, PPF ETC

C. IF INVESTOR IS NOT WILLING TO TAKE ANY RISK, INVEST IN FD, PPF, BONDS, N A SMALL AMT IN MF TO ENSURE GROWTH.

