PERIYAR UNIVERSITY

(NAAC 'A++' Grade with CGPA 3.61 (Cycle - 3)

State University - NIRF Rank 59 - NIRF Innovation Band of 11-50)

SALEM - 636 011

CENTRE FOR DISTANCE AND ONLINE EDUCATION

(CDOE)

MASTER OF BUSINESS ADMINISTRATION

SEMESTER - III

24PUMBA1EF1

ELECTIVE COURSE: SECURITIES ANALAYSIS AND PORTFOLIO MANAGMENT

(Candidates admitted from 2024 onwards)

PERIYAR UNIVERSITY

CENTRE FOR DISTANCE AND ONLINE EDUCATION (CDOE)

MBA 2024 admission onwards

ELECTIVE – 24PUMBA1EF1

Prepared by:

Dr.K.SASIKUMAR,

Associate Professor,

PG and Research Department of Management Studies,

Vivekanandha College of Arts and Sciences for Women (Autonomous), Tiruchengode,Namakkal.

Dr.S.NAGARAJAN,

Associate Professor,

PG and Research Department of Management Studies,

Vivekanandha College of Arts and Sciences for Women (Autonomous), Tiruchengode,Namakkal.

UNIT-I

UNIT OBJECTIVES

1.1 INTRODUCTION

SYNOPSIS

Concept of Investment

Investment refers to the allocation of money or capital to an asset, venture, or project with the expectation of generating a return or profit over time. Investments are made to grow wealth, generate income, or achieve long-term financial goals.

Importance of Investment

- **Wealth Creation:** Helps build wealth over time through compounding.
- **Future Security:** Ensures financial security after retirement or for emergencies.
- **Beat Inflation:** Investments typically offer returns that outpace inflation.
- **Tax Benefits:** Some investments offer tax deductions or exemptions.
- **Achieve Goals:** Useful for achieving financial goals like education, buying a home, etc.

Alternate Forms of Investment

1. LIC Schemes (Life Insurance Corporation of India)

- Combine insurance with savings/investment.
- Examples: Endowment plans, money-back plans, ULIPs.
- Offers risk coverage and maturity benefits.

2. Bank Deposits

- Includes Fixed Deposits (FDs), Recurring Deposits (RDs), Savings Accounts.
- Low risk, guaranteed returns, but lower interest rates.

3. Government Securities (G-Secs)

- Debt instruments issued by the government.
- Safe and secure with fixed interest returns.
- Includes T-bills, dated G-secs, state development loans.

4. Mutual Fund Schemes

- Pool of funds from investors invested in diversified portfolios.
- Types: Equity, debt, hybrid, index funds.
- Managed by professional fund managers.

5. Post Office Schemes

- Small saving schemes like PPF, NSC, MIS, Senior Citizen Scheme.
- Government-backed, safe, and tax-efficient options.

6. Provident Fund

- Retirement savings scheme (e.g., EPF, PPF).
- Tax benefits, compounded interest, long-term safety.

7. Company Deposits

- Fixed deposits offered by companies (NBFCs or corporates).
- Higher returns than bank FDs but with higher risk.

8. Real Estate

- Investment in land, residential, or commercial property.
- Potential for appreciation and rental income.
- Less liquid, requires large capital.

9. Gold and Silver

- Traditional hedge against inflation and currency devaluation.
- Can be held physically or via ETFs, sovereign gold bonds.

Growth-Adjusted Value Investing Strategy

- Focuses on buying undervalued stocks with strong growth potential.
- Combines value investing (buying below intrinsic value) with growth metrics (earnings growth, ROE).
- Long-term approach that balances valuation with future potential.

Participatory Notes (P-Notes)

- Financial instruments used by foreign investors to invest in Indian securities without registering with SEBI.
- Traded offshore; help maintain anonymity.
- Subject to regulatory oversight due to potential misuse.

Concepts of Risk and Return

Risk

- The possibility that the actual return may differ from the expected return.
- Types: Market risk, credit risk, liquidity risk, inflation risk, etc.

Return

- The gain or loss from an investment over a period.
- Measured in percentage (absolute return, annualized return, CAGR).

Measurement of Risk

Standard Deviation (σ)

- Measures the dispersion of returns from the mean.
- Higher SD = Higher risk (more volatility).

Variance (σ^2)

- Square of the standard deviation.
- Represents the average squared deviation from the mean return.

Relationship Between Risk and Return

- **Direct Relationship:** Higher the risk, higher the potential return.
- **Risk-Return Tradeoff:** Investors must balance their risk tolerance with the desired return.
- Risk-free instruments (e.g., G-Secs) offer lower returns.
- Riskier assets (e.g., equities) can offer higher returns but with more volatility.

Introduction

Investment is the employment of funds on assets with the aim of earning income or capital appreciation Investment has two attributes namely time and risk. Present consumption is sacrificed to get a return in the future. The sacrifice that has to be borne is certain but the return in the future may be uncertain. This attribute of investment indicates the risk factor. The risk is undertaken with a view to reap some return from the investment. For a layman, investment means some monetary commitment. A person's commitment to buy a flat or a house for his personal use may be an investment from his point of view. This cannot be considered as an actual investment as it involves sacrifice but does not yield any financial return.

To the economist, investment is the net addition made to the nation's capital stock that consists of goods and services that are used in the production process. A net addition to the capital stock means an increase in the buildings, equipments or inventories. These capital stocks are used to produce other goods and services.

Financial investment is the allocation of money of assets that are expected to yield some gain over a period of time. It is an exchange of financial claims such as stocks and bonds for money. They are expected to yield returns and experience capital growth over the years.

The financial and economic meanings are related to each other because the savings of the individual flow into the capital market as financial investments, to be used in economic investment. Even though they are related to each other, we are concerned only about the financial investment made on securities. Thus, investment may be defined as "a commitment of funds made in the expectation of some positive rate of return". Expectation of return is an

essential element of investment. Since the return is expected to be realized in future, there is a possibility that the return actually realized is lower than the return expected to be realized. This possibility of variation in the actual return is known as investment risk. Thus, every investment involves return and risk.Bottom of Form

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Investment is an activity that is engaged in by people who have savings. But all savers are not investors. Investment is different from savings. It means many things to many persons; one person may purchase gold in large quantity for the purpose of price appreciation and consider it as his investment. Another person may take an insurance policy to avail so many benefits it offers in future. A farmer buying a piece of agricultural land. A cricket fan betting on the outcome of a cricket match. A government employee buying mutual fund units. An officer buying 100 shares of TCS Ltd for Rs.1000. That is his investment yet another person may lend some amount to somebody with an intention to get interest at a future date and may consider the same as his investment.

In all these cases, one thing is common i.e, the amount is invested with the aim of achieving some additional income or growth in value or the prospects expected

are always greater than what they invested now. Hence, it involves the commitment of resources that have been saved in the hope that some benefits will accrue in future.

Characteristics of Investment

All investments are characterized by certain features. Let us analyse these characteristic features of investment.

Return All investments are characterized by the expectation of a return. In fact, investments are made with the primary objective of deriving a return. The return may be received in the form of yield plus capital appreciation. The difference between the sale price and the purchase price is capital appreciation. The dividend or interest received from the investment is the yield. Different types of investments promise different rates of return. The return from an investment depends upon the nature of the investment, the maturity period and a host of other factors

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Risk Risk is inherent in any investment. This risk may relate to loss of capital, delay in repayment of capital, non-payment of interest, or variability of returns. While some investments like government securities and bank deposits are almost riskless, others are more risky. The risk of an investment depends on the following factors. 1. The longer the maturity period, the larger is the risk. 2. The lower the credit worthiness of the borrower, the higher is the risk. 3. The risk varies with the nature of investment. Investments in ownership securities like equity shares carry higher risk compared to investments in debt

instruments like debentures and bonds. Risk and return of an investment are related. Normally, the higher the risk, the higher is the return.

Safety The safety of on investment implies the certainty of return of capital without loss of money or time. Safety is another feature which an investor desires for his investments. Every investor expects to get back his capital on maturity without loss and without delay. Liquidity An investment which is easily saleable or marketable without loss of money and without loss of time is said to possess liquidity. Some investments like company deposits, bank deposits, P.O. Deposits, NSC, NSS, etc. are not marketable.

Some investment instruments like preference shares and debentures are marketable, but there are no buyers in many cases and hence their liquidity is negligible. Equity shares of companies listed on stock exchanges are easily marketable through the stock exchanges.

An investor generally prefers liquidity for his investments, safety of his funds, a good return with minimum risk or minimization of risk and maximization of return.

Objectives of Investment

An investor has various alternative avenues of investment for his savings to flow to. Savings kept as cash are barren and do not earn anything. Hence, savings are invested in assets depending on their risk and return characteristics. The objectives of the investor are minimizing the risk involved in investment and maximize the return from the investment. Our savings kept as cash are not only barren because they do not earn anything, but also loses its value to the extent of rise in prices. Thus, rise in prices or inflation erodes the value of money. Savings are invested to provide a hedge or protection against inflation. If the investment cannot earn as much as the rise in prices, the real rate of return would be negative. Thus, if inflation is at an average annual rate of ten percent, then the return from an investment should be above ten percent to induce savings to flow into investment.

Thus, the objectives of an investor can be stated as:

Maximisation of return. ➢➢ Minimization of risk ➢➢ Hedge against inflation. ➢➢ Investors, in general, desire to earn as large returns as possible with the minimum of risk. Risk here may be understood as the probability that actual returns realized from an investment may be different from the expected return. If we consider the financial assets available for investment, we can classify them into different risk categories. Government securities would constitute the low risk category as they are practically risk free. Debentures and preference shares of companies may be classified as medium risk assets. Equity shares of companies would form the high risk category of financial assets. An investor would be prepared to assume higher risk only if he expects to get proportionately higher returns. There is a trade-off between risk and return. The expected return of an investment is directly proportional to its risk. Thus, in the financial market, there are different financial assets with varying risk-return combinations.

Unit III

Fundamental Analysis:

- Focuses on a company's financial health, management, industry trends, and economic conditions
- Analyzes financial statements, revenue growth, profit margins, and other fundamental data
- Aims to determine a company's intrinsic value and potential for long-term growth
- Often used for investment decisions with a long-term perspective

FUNDAMENTAL ANALYSIS:

Fundamental analysis is the study of economic factors, industrial environment and the factors related to the company. The earnings of the company, the growth rate and the risk exposure of the company have a direct bearing on the price of the share. These factors in turn rely on the host of other factors like economic development in which they function, the industry belongs to, and finally companies' own performance. The fundamental school of thought appraised the intrinsic value of shares through

- Economic Analysis
- Industry Analysis
- Company Analysis

ECONOMIC ANALYSIS:

The state of the economy determines the growth of gross domestic product and investment opportunities. An economy with favorable savings, investments, stable prices, balance of payments, and infrastructure facilities provides a best environment for common stock

investment. If the company grows rapidly, the industry can also be expected to show rapidly growth and vice versa. When the level of economic activity is low, stock prices are low, and when the level of economic activity is high, stock prices are high reflecting the prosperous outlook for sales and profits of the firms. The analysis of macro economic environment is essential to understand the behaviour of the stock prices.

The commonly analyzed macro economic factors are as follows:

- **Gross domestic product (GDP):**

GDP represents the aggregate value of goods and services produced in the economy. It consists of personal consumption expenditure, gross private domestic investment and government expenditure on goods & services and net export of goods & services. It indicates rate of growth of economy. The estimate on GDP available on annual basis.

- **Business Cycle:**

Business cycles refer to cyclical movement in the economic activity in a country as a whole. An economy marching towards prosperity passes through different phases, each known as a component of a business cycle. These phases are:

a. Depression: Demand level in the economy is very low. Interest rates and Inflation rates are high. These affect profitability and dividend pay out and reinvestment activities.
b. Recovery: Demand level starts picking up. Fresh investment by corporate firms shows increasing trend.
c. Boom: After a consistent recovery for a number of years, the economy starts showing signs of boom which is characterized by high level of economic activities such as demand, production and profits.
d. Recession: The boom period is generally not able to sustain for a long period. It slows down and results in the recession.

- **Savings & investment:**

The growth requires investment which in turn requires substantial amount of domestic savings. Stock market is a channel through which the savings of investors are made available to the corporate bodies. Savings are distributed over various assets like equity shares, deposits, mutual fund unit, real estate and bullion. The saving and investment pattern of the public effect the stock to great extent.

❖ **Inflation:**

The inflation is raise in price, where its rate increases, than the real rate of growth would be very little. The demand is the consumer product industry is significantly affected. The industry which comes under the government price control policy may lose the market. If the mild level of inflation, it is good to the stock market but high rate of inflation is harmful to the stock market.

❖ **Interest rates:**

The interest rate affects the cost of financing to the firms. Higher interest rates increase the cost of funds and lower interest rates reduce the cost of funds resulting in higher profit. There are several reasons for change in interest rates such as monetary policy, fiscal policy, inflation rate, etc,

❖ **Monetary Policy, Money supply and Liquidity:**

The liquidity in the economy depends upon the money supply which is regulated by the monetary policy of the government. RBI regulate the money supply and liquidity in the economy. Business firms require funds for expansion projects. The capacity to raise funds from the market is affected by the liquidity position in the economy. The monetary policy is designed with an objective to maintain a balance in liquidity position. Neither the excess liquidity nor the shortage are desirable. The shortage of liquidity will tend to increase the interest rates while the excess will result in inflation.

❖ **Budget**:

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

❖ **Tax structure:**

Every year in March, the business community eagerly awaits the government's announcement regarding the tax policy. Concessions and incentives given to the certain industry encourage investment in particular industry. Tax relief given to savings encourages savings. The minimum alternative tax (MAT) levied by finance minister in 1996 adversely affected the stock market. Ten years of tax holiday for all industries to be set up in the northeast is provided in the 1999 budget. The type of tax exemption has impact on the profitability of the industries.

❖ **Monsoon and agriculture:**

Agriculture is directly and indirectly linked with the industries. For example, sugar, cotton, textile and food processing industries depend upon agriculture for raw material. Fertilizer and insectide industries are supplying inputs to agriculture. A good monsoon leads to higher demand for input and results in bumper crop. This would lead to buoyancy in the stock market. When the monsoon is bad, agricultural and hydro power production would suffer. They cast a shadow on a share market.

❖ **Infrastructure facilities:**

Infrastructure facilities are essential for the growth of industrial and agricultural sector. A wide network of communication system is a must for the growth of the economy. Good infrastructure facilities affect the stock market favourably. The government are liberalized its policy regarding the communication, transport and power sector.

❖ **Demographic factors:**

The Demographic data provides details about the population by age, occupation, literacy and geographic location. This is needed to forecast the demand of customer goods. The population by age indicates the availability of able work force.

❖ **Economic forecasting:**

To estimate the stock price changes, an analyst the macro economic environment and the factor peculiar to industry concerned to it. The economic activities affect the corporate profits, Investors, attitude and share prices.

❖ **Economic indicators**:

The economic indicators are factors that indicate the present status, progress or slow down of the economy. They are capital investment, business profits, money supply, GNP, interest rate, unemployment rate, etc. The economic indicators are grouped into leading, coincidental and lagging indicators. The indicators are selected on the following criteria

Economic significance,
Statistical adequacy, Timing,
conformity.

❖ **Diffusion index:**

Diffusion index is a composite index or consensus index. The diffusion index consist of leading, coincidental and lagging indicators. This type of index has been constructed by the National Bureau of Economic Research in USA. But it is complex in nature to calculate and the irregular movements that occur in individual indicators cannot be completely eliminated.

❖ **Econometric model building:**

For model building several economic variables are taken into consideration. The assumptions underlying the analysis are specified. The relationship between the independent and dependent variables is given mathematically. While using the model, the analyst has to think clearly all

inter-relationship between the variables. This model use simultaneous equations.

Other factors:

a. Industrial growth rate
b. Fiscal policy of the Government
c. Foreign exchange reserves
d. Growth of infrastructural facilities
e. Global economic scenario and confidence
f. Economic and political stability.

INDUSTRY ANALYSIS

An industry is a group of firms that have similar technological structure of production and produce similar products. E.g.: food products, textiles, beverages and tobacco products, etc. These industries can be classified on the business cycle i.e. classified according to their relations to the different phases of the business cycle. They are classified into

- Growth industry
- Cyclical industry
- Defensive industry
- Cyclical Growth industry

➢ **Growth industry:**

The growth industry has special features of high rate of earnings and growth in expansion, independent of the business cycle. The expansion of the expansion of the industry mainly depends upon the technological change.

➢ **Cyclical industry:**

The growth and the profitability of industry move along with the business cycle. During the boom period they enjoy the growth and during depression they suffer set back.

➢ **Defensive industry:**

Defensive industry defies the movement of business cycle. The stock of defensive industries can be held by the investor for income earning purpose. They expand and earn income in the depression period too, under the government's of production and are counter-cyclical in nature.

➢ **Cyclical Growth industry**

This is a new type of industry that is cyclical and at the same time growing. The changes in technology and introduction of new models help the automobile industry to resume their growth path.

INDUSTRY LIFE CYCLE

The life cycle of the industry is separated into four well defined stages such as

- Pioneering stage
- Rapid growth stage
- Maturity and stabilization stage
- Declining stage

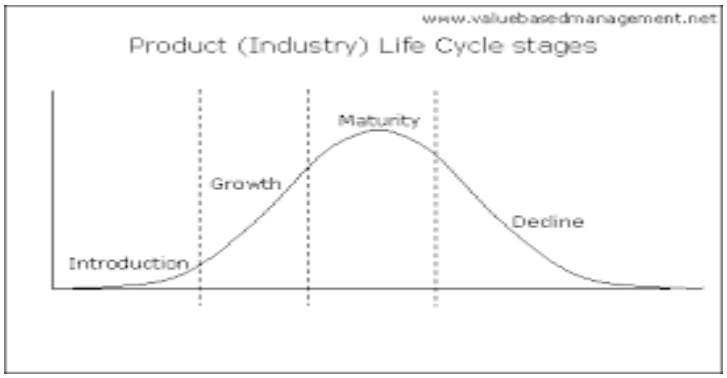


Fig.5

Industry Life Cycle

Stage	Features
Pioneering	• high sales • high competitive pressure • huge entry to the market • high risk and return
Expansion	• less number of companies; • moderate growth; • considerable investment; • moderate dividend payments
Stabilisation	• standardised products • slower growth of sales • high dividend payments
Declining	• declining sales • lower growth prospects • negative return

Pioneering stage:

The prospective demand for the product is promising in this stage and the technology of the product is low. The demand for the product attracts many producers to produce the particular product. There would be severe competition and only fittest companies this stage. The producers try to develop brand name, differentiate the product and create a product image. This would lead to non-price competition too. The severe competition often leads to the change of position of the firms in terms of market shares and profit. In this situation, it is difficult to select companies for investment because the survival rate is unknown.

Rapid growth stage:

This stage starts with the appearance of surviving firms from the pioneering stage. The companies that have withstood the competition grow strongly in market share and financial performance. The technology of the production would have improved resulting in low cost of productions and good quality products. The companies have stable growth rate in this stage and they declare dividend to the share-holders. It is advisable to invest in the shares of these companies.

Maturity and stabilization stage:

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

Declining stage:

In this stage, Demand for the particular product and the earnings of the companies in the industry decline. The specific feature of the declining stage is that even in the boom period; the growth of the industry would be low and decline at a higher rate during the recession. It is better to avoid investing in the shares of the low growth industry even in the boom period. Investment in the shares of these types of companies leads to erosion of capital.

KEY FACTORS IN INDUSTRY ANALYSIS:

1. The past performance of the industry.
2. The performance of the product and technology of the industry.
3. Role of government in the industry.
4. Labour conditions relating to the industry.
5. Competitive conditions in the market
6. Inter-linkages with other industries

DETERMINING THE SENSITIVITY OF THE INDUSTRY:

1. Sensitivity to sales.
2. Operating leverage
3. Financial leverage.

SWOT ANALYSIS FOR THE INDUSTRY

Strength: Strength of the industry refers to its capacity and comparative advantage in the

economy. For example, the existing research and development facilities and greater dependence on allopathic drugs are two elements of strength to the pharmaceutical industry in India.

Weakness: Weakness refers to the restrictions and inherent limitations in the industry, which keep the industry away from meeting its target. For example, Lack of infrastructure facility, rail-road links, etc., are weakness of the tourism industry in India.

Opportunities: Opportunities refers to the expectation of favourable situation for an industry. For example, with increase in purchasing power with the people, demand for pharmaceutical industry will increase and likewise, changing preference from gold to diamond jewellary has brought a lot of opportunities for the diamond industry.

Threats: Threat refers to an unfavourable situation that has a potential to endanger the existence of an industry. For example, after liberalization of import policy in India, import of Chinese goods has threatened many industries in India, such as toys, novelties, etc.

III. COMPANY ANALYSIS

Effect of a business cycle on an individual company may be different from one industry to another. Here, the main point is the relationship between revenues and expenses of the firm and the economic and industry changes. The basic objective of company analysis is to identify better performing companies in an industry .These companies would be identified for investment.

The processes that may be taken up to attain the objective are as follows:

a. Analysis of management of the company to evaluate its trust-worthiness, capacity and efficiency.
b. Analyse the financial performance of the company to forecast its future expected earnings.
c. Evaluation of long-term vision and strategies of company in terms of organizational strength and resources of company.
d. Analysis of key success factor for particular industry.

SOURCES OF INFORMATION:

Information and data required for analysis of earnings of a firm are primarily available in the annual financial statements of the firm. It include,

- ➢ Balance sheet or Position statement
- ➢ Income statement or Profit & Loss account.
- ➢ Financial statement analysis (Ratio analysis)
- ➢ Cash flow statement, the statement of sources and uses of cash and also
- ➢ Top level management people in the company.

I.BALANCE SHEET (BS):

It is the most significant and basic financial statement of any firm. It is prepared by a firm to present a summary of financial position at a given point of time, usually at the end of financial year. It shows the state of affairs of the firm at a point of time. In fact, the total assets must be equal to the total claim against the firm and this can be stated as,

Total assets =Total claim (Debt +Share holders)

=Liabilities +Share holders equity

The different items contained in BS can be grouped into,

1. Assets
2. Liabilities
3. Shareholder's funds.

a. **ASSETS:** An asset of the firm represents the investments made by the firm in order to generate earnings. It can be classified into (a).Fixed Asset (b).Current assets.

i. **FIXED ASSET** – Those which are intended to be for a longer period .These are permanent in nature, relatively less liquid and are not easily converted into cash in short run. Fixed asset include,

plant & machinery, furniture & fixtures, buildings, etc. The value of fixed asset is known as book value, which may be different from market value or replacement cost of the assets. The amount of depreciation is anon-cash expense and does not involve cash out flow. It is taken as an expense item and is included in the cost of goods sold or indirect expense.

ii. **CURENT ASSET** - It is the liquid asset of the firm and is convertible into cash within a period of one year. It includes cash and bank balance, receivables, inventory (raw material, finished goods, etc), prepaid expenses, loan, etc.

b. **LIABILITIES:** It is also called as debts. It is claimed by the outsiders against the assets of the firm. The liabilities refer to the amount payable by the firm to the claim holders. The liabilities are classified into long term and short term liabilities.

i. **LONG TERM LIABILITIES**: It is the debt incurred by the firm, which is not payable during the period of next one year. It represents the long term borrowings of the firm.

ii. **CURRENT LIABILITITES:** It is the debt which the firm expects to pay within a period of one year. It is related to the current assets of the firm in the sense that current liabilities are paid out of the realization of current assets.

3. **SHAREHOLDERS EQUITY (SE):** It represents the ownership interest in the firm and reflects the obligations of the firm towards its owners. It the direct contribution of the shareholders to the firm. The retained earnings on the other hand reflects the accumulated effect of the firms earnings. SE is also called as net worth. The liabilities and the SE must be equal to the total assets of the firm.

II.INCOME STATEMENT OR PROFIT & LOSS ACCOUNT (IS):

It shows the result of the operations of the firm during a period. It gives detail sources of income and expenses; Income statement is a flow report against the balance sheet which is a stock report or status report. It helps in understanding the performance of the firm during the period under consideration. It can be grouped into three classes. (i) Revenues (ii) Expenses & (iii) Net profit or

loss

REVENUES- It is the inflow of resources\cash that arise because of operation of the firm. The revenue arises from the sale of goods and services to the customer and other non-operating incomes. The firm may also get revenue from the use of its economic resources elsewhere. E.g. – some of the funds might have been invested in some other firm. The income by way of interest or dividend is also a revenue.

EXPENSES- The cost incurred in the earning the revenues is called the expenses. Expenses like, salaries, general expenses, repairs, etc. It occurs when there is a decrease in assets or increase in liabilities

III.CASH FLOW STATEMENT AND FUND FLOW STATEMENT:

The balance sheet and the income statement are the two common financial statements and are also known as traditional financial statements. It is essential to know the movement of cash during the period. It is a historical record of where the cash came from and how was it used.

IV. FINANCIAL STATEMENT ANALYSIS:

Financial statement analyses are ratio like:

a. Profitability ratios
b. Liquidity ratios
c. Solvency ratios

1. CLASSIFICATION OF INDUSTRY.

An industry means a group of firms doing similar business. An industry is a group of firms that have similar technological structure of production and produce similar products. Classification of industry further classified by Product and Business Cycle.

A). Classification by Product.

The companies in a particular industry are almost using similar materials, technology manpower skill and distribution system. They target the same customer segment. Following is the industry wise classification given by the Reserve Bank of India.

B). Classification According to Business Cycle.

Industries can also be classified on the basis of the business cycle or classified according to their reactions to the different phases of the Business Cycle.

a). Growth Industry.

b). Cyclical Industry.

c). Defensive

Industry.

d). Cyclical Growth Industry.

a) Growth Industry.

The industry which is growing at faster rate is termed as growth industry. This industry is growing at high rate when compared to other industry and to certain extent

independent of the economy life cycle. In other words the growth industry growth rate is high when compared to the growth rate of economy and other sectors. For instance the Indian Software and Information technology enabled services industry and Infrastructure industry is considered as growth industry.

a) Cyclical Industry.

The Cyclical Industries' growth depends on the growth of economy. For example the consumer goods industry such as consumer white goods industry (colour television, washing machine, fridge etc.,) growth rate depends on the growth of general economic conditions such as Boom period and Depression period.

b) Defensive Industry

The Defensive industry to certain extend is independent from the ups and downs of the other sectors. For example the growth of industry which is producing consumer essential goods such as food, cloth and basic requirements of the consumer are steady always.

c) Cyclical Growth Industry

This is a new type of industry that is cyclical and at the same time growing. For example the automobile industry experience periods of stagnation and decline but they grow tremendously. The changes in technology and introduction of new models help the automobile industry to resume their growth path.

Unit IV

Technical Analysis:

- Focuses on patterns and trends in price charts and trading volumes
- Uses indicators, such as moving averages and relative strength index (RSI), to identify buy and sell signals

- Aims to predict short-term price movements based on historical patterns
- Often used for trading decisions with a short-term perspective

TECHNICAL ANALYSIS

It is a process of identifying trend reversal at earlier stages to formulate the buying and selling strategy. With the help of various indicators they analyse the relationship between price& volume, supply & demand, etc. An investor who does this analysis is called technician.

ASSUMPTIONS:

1. The market value is determined by the interaction of supply and demand.
2. The market discounts everything. The information regarding the issuing of bonus shares and right issues may support the prices. These are some of the factors which cause shift in demand & supply and change in direction of trends.
3. The market always moves in trend, except for certain minor deviations. The trend may either be increasing or decreasing. It may continue in same manner or reverse.
4. In the rising market, many purchase shares in greater volume. When the market moves down, people are interested in selling it. The market technicians assume that past prices predict the future.

THEORIES USED IN THIS ANALYSIS:

1. Dow theory
2. Elliot wave theory

DOW THEORY:

This theory was developed by Charles H Dow. He did research and published in journal in 1984 mainly for trend analysis. According to his theory, the price patterns do not move just like that and it follows some trend. There are 3 types of trend.

- Primary trend – It is broad upward or downward movement which last for a year or two.
- Secondary trend or Correction trend – It last for 3 weeks to some months.
- Minor trend. –It refers to the day to day price. Its also knows as fluctuations

These 3 trends are compared to tide, waves and ripples of the sea. Diagrammatic representations of these trends are depicted below:

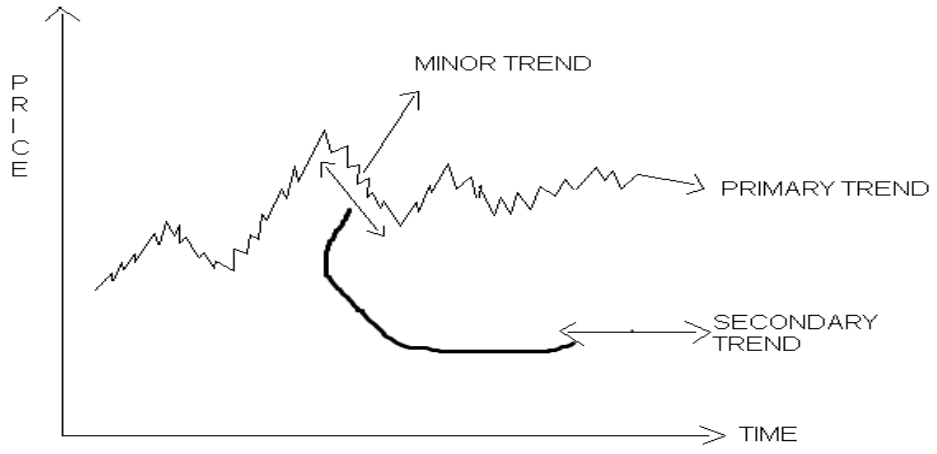


Fig.6

PRIMARY TREND:

The security price may be either increasing or decresing.When market exhibits increasing trend, its called bull market.The graph below show three clear cut peaks.

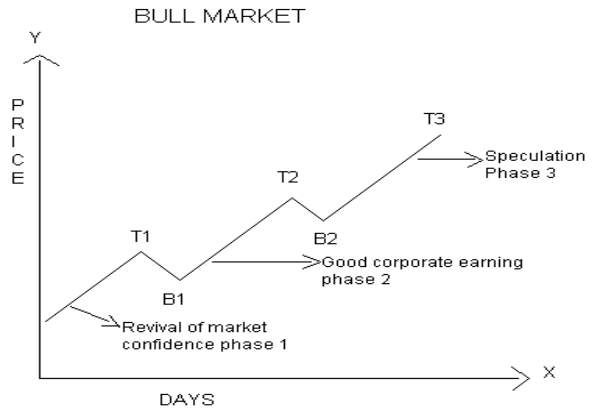


Fig.7

Each peak is higher than the previous peak.The revival period encourages more and more investors to buy scripts,their expectation about the future is high.In the next phase, increased profits or corporate would result in further price rise.In the final phase,the price advance due to inflation and speculation.

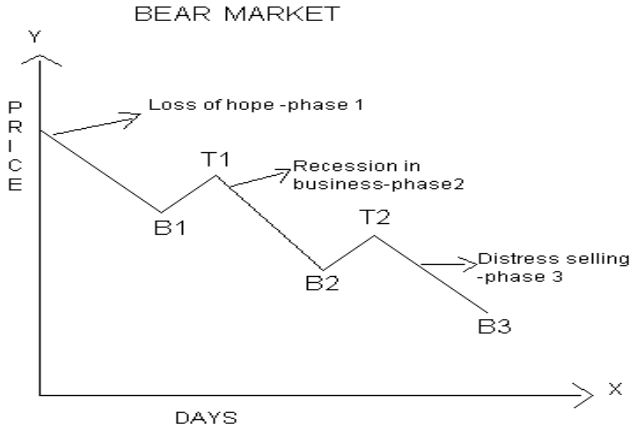


Fig.8

the above graph depicts bear market.The contrary of bull market happens here .In the first phase ,the prices are coming down,this would result in lowering of profit in second phase.The final phase is characrterised by distress sale of share.

SECONDARY TREND

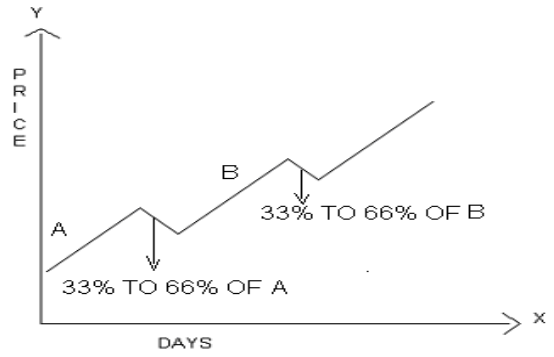


Fig.9

In the bull market the secondary trend results in fall of about 33-66% of earlier rise. In bear market, it carries the price upward and corrects the main trend. It provides breathing space to market.

MINOR TREND :

Its also called as random wiggles. They are the daily price fluctuations. It tries to carry the secondary trend movement. It's better for the investors to carry primary or secondary than this trend.

ELLIOT WAVE THEORY-

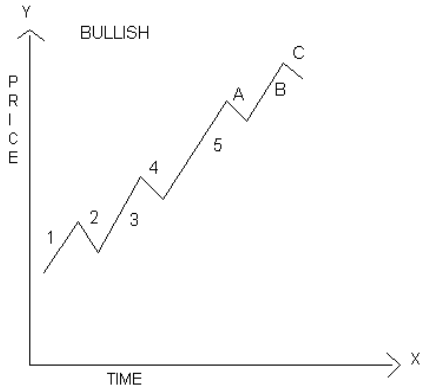


Fig.10

The above graph depicts bullish wave, 1,3,5 –
impulsive waves
2,4 - correction waves

In starting wave, only few people invest and the waves keep moving high. It indicates the prices of shares are moving high and hence they sell it. As they get more profit they will again invest in the same company and there will be few more investors. This makes the wave to move higher. Same process keeps going everyday. In the 5th wave investors will be more interested in investing and to gain profit. Since people buy lot of shares here, it is called as buying wave. After these five waves get over A,B,C waves or correction waves will occur. It these 8 waves get over and if the same trend occur, again we may face bully's wave or else we have beary's wave.

TYPES OF PRICES

1. **The open price**.

2. **The close price**.
3. **The high price**.
4. **The low price**.

TOOLS AND TECHNIQUES USED IN TECHNICAL ANLYSIS

CHARTS

What are stock charts

It is a graphical representation of how a stock's price or trading volumes have changed over time. This relationship can be presented in a number of ways, through the use of different types of charts. It is your job, as a technical analyst, to identify the type that will bring out a hidden trend most effectively.

Stock charts, like all other charts, have two axis—the vertical axis and the horizontal axis. The horizontal axis represents the historical time periods for which a technical chart has been constructed. The vertical axis displays the stock price or the trading volume corresponding to each period.

There are many types of charts that are used for technical analysis. However, the four types that are most common are—line chart, bar chart, point and figure chart and candlestick chart. We will discuss these technical charts extensively later. However, we have illustrated three types of stock charts below. The bar chart looks a lot like the candlestick chart. All the charts displayed below are stock price charts. The nature of the input may, however, have to be altered when you move from one chart type to another.

Line charts: A line chart is the figure that, perhaps, automatically comes to mind when you think of a chart. The line chart has the stock price or trading volume information on the vertical or y-axis and the corresponding time period on the horizontal or x-axis). Trading volumes refer to the number of stocks of a company that were bought and sold in the market on a particular day. The closing stock price is commonly used for the construction of a line chart.

Once the two axes have been labelled, preparation of a line chart is a two-step process. In the first step, you take a particular date and plot the closing stock price as on that date on the graph. For this, you'll put a dot on the chart in such a way that it is above the concerned date and alongside the corresponding stock price.

Let's suppose that the closing stock price on December 31, 2014 was Rs 120. For plotting it, you'll put a dot in such a way that it is simultaneously above the marking for that date on the x-axis, and alongside the mark that says Rs 120 on the y-axis. You will do this for all dates. In the second step, you will connect all the dots plotted with a line. That's it! You have your line chart below:

Fig. Line Chart

Fig.11

Point and figure charts:

A point and figure chart essentially displays the volatility in a stock's price over a chosen period of time. On the vertical axis, it displays the number of times stock prices rose or fell to a particular extent. On the horizontal axis, it marks time intervals. Markings on the chart are exclusively in the form of X's and O's. X's represent the number of times the stock rose by the specified limit, while O's represent the number of times it fell by it. The specified amount used is called box size. It is directly related to the difference between markings on the y-axis.

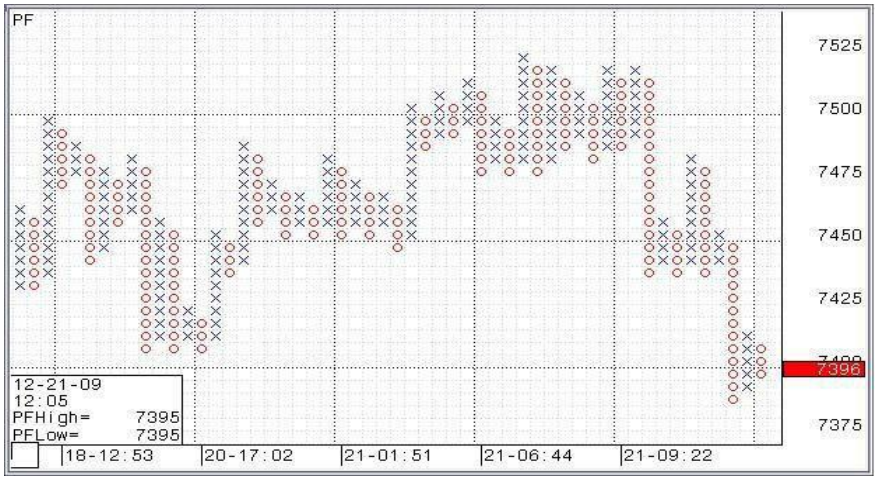
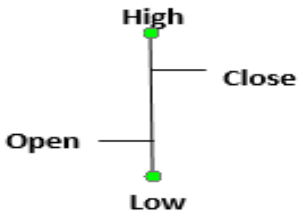


Fig. Point and Figure Chart

Fig.12

- **Bar charts:** A bar chart is similar to a line chart. However, it is much more informative. Instead of a dot, each marking on a bar chart is in the shape of a vertical line with two horizontal lines protruding out of it, on either side. The top end of each vertical line signifies the highest price the stock traded at during a day while the bottom point signifies the lowest price at which it

traded at during a day. The horizontal line to the left signifies the price at which the stock opened the trading day. The one on the right signifies the price at which it closed the trading day. As such, each mark on a bar chart tells you four things. An illustration of the marks used on a bar chart is given below:



A bar chart is more advantageous than a line chart because in addition to prices, it also reflects price volatility. Charts that show what kind of trading happened that day are called Intraday charts. The longer a line is, the higher is the difference between opening and closing prices. This means higher volatility. You should be interested in knowing about volatility because high volatility means high risk. After all, how comfortable would you be about investing in a stock whose price changes frequently and sharply?

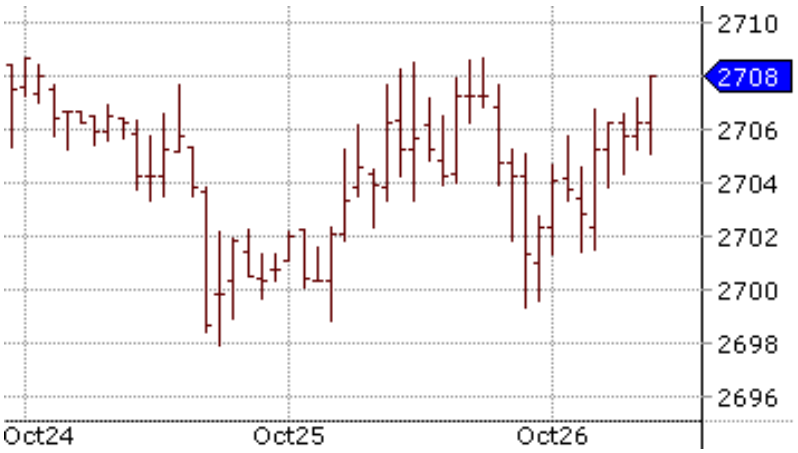


Fig. Bar Chart

Fig.13

- **Candlestick charts:** Candlestick charts give the same information as bar charts. They only offer it in a better way. Like a bar chart is made up of different vertical lines, a candlestick chart is made up of rectangular blocks with lines coming out of it on both sides. The line at the upper end signifies the day's highest trading price. The line at the lower end signifies the day's lowest trading price. The day's trading can be shown in Intraday charts. As for the block itself (called the body), the upper and the lower ends signify the day's opening and closing price. The one that is higher of the two, is at the top, while the other one is at the bottom of the body.

  What makes candlestick charts an improvement over bar charts is that they give information about volatility throughout the period under consideration. Bar charts only display volatility that occurs within each trading day. Candles on a candlestick chart are of two shades-light and dark. On days when the opening price was greater than the closing price, they are of a lighter shade (normally white). On days when the closing price was higher than the opening price, they are of a darker shade (normally black).A single day's trading is represented by Intraday charts. Higher the variation in colour, more volatile was the price during the period. The appearance of candles on a candlestick chart is as follows:

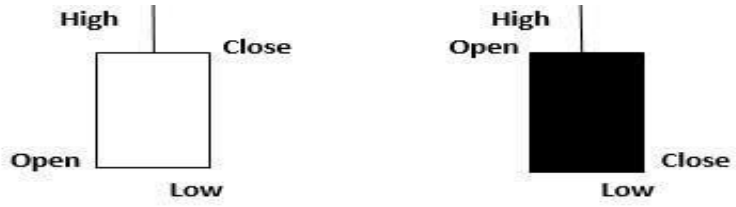


Fig. Candle stick chart

Fig.14

PRICE PATTERNS

Price Patterns are formations which appear on stock with the help of charts which have shown to have a certain degree of predictive value. Some of the most common patterns include: Head & Shoulders (bearish), Inverse Head & Shoulders (bullish), Double Top (bearish), Double Bottom (bullish), Triangles, Flags.

CONTINUATION PATTERNS

A price pattern that denotes a temporary interruption of an existing trend is known as a continuation pattern. A continuation pattern can be thought of as a pause during a prevailing trend – a time during which the bulls catch their breath during an uptrend, or when the bears

relax for a moment during a downtrend. While a price pattern is forming, there is no way to tell if the trend will continue or reverse. As such, careful attention must be placed on the trendlines used to draw the price pattern and whether price breaks above or below the continuation zone. Technical analysts typically recommend assuming a trend will continue until it is confirmed that it has reversed. In general, the longer the price pattern takes to develop, and the larger the price movement within the pattern, the more significant the move once price breaks above or below the area of continuation.

If price continues on its trend, the price pattern is known as a continuation pattern. Common continuation patterns include:

- Pennants, constructed using two converging trendlines
- Flags, drawn with two parallel trendlines
- Wedges, constructed with two converging trendlines, where both are angled either up or down

FLAGS & PENNANTS

Flags and Pennants are short-term continuation patterns that represent a consolidation following a sharp price movement before a continuation of the prevailing trend. Flag patterns are characterized by a small rectangular pattern that slopes against the prevailing trend, while pennants are small symmetrical triangles that look very similar.

Figure – Pennant Example – Source: StockCharts.com

Fig.15

The short-term price target for a flag or pennant pattern is simply the length of the 'flagpole' or the left vertical side of the pattern applied to the point of the breakout, as with the triangle patterns. These patterns typically last no longer than a few weeks, since they would then be classified as rectangle patterns or symmetrical triangle patterns.

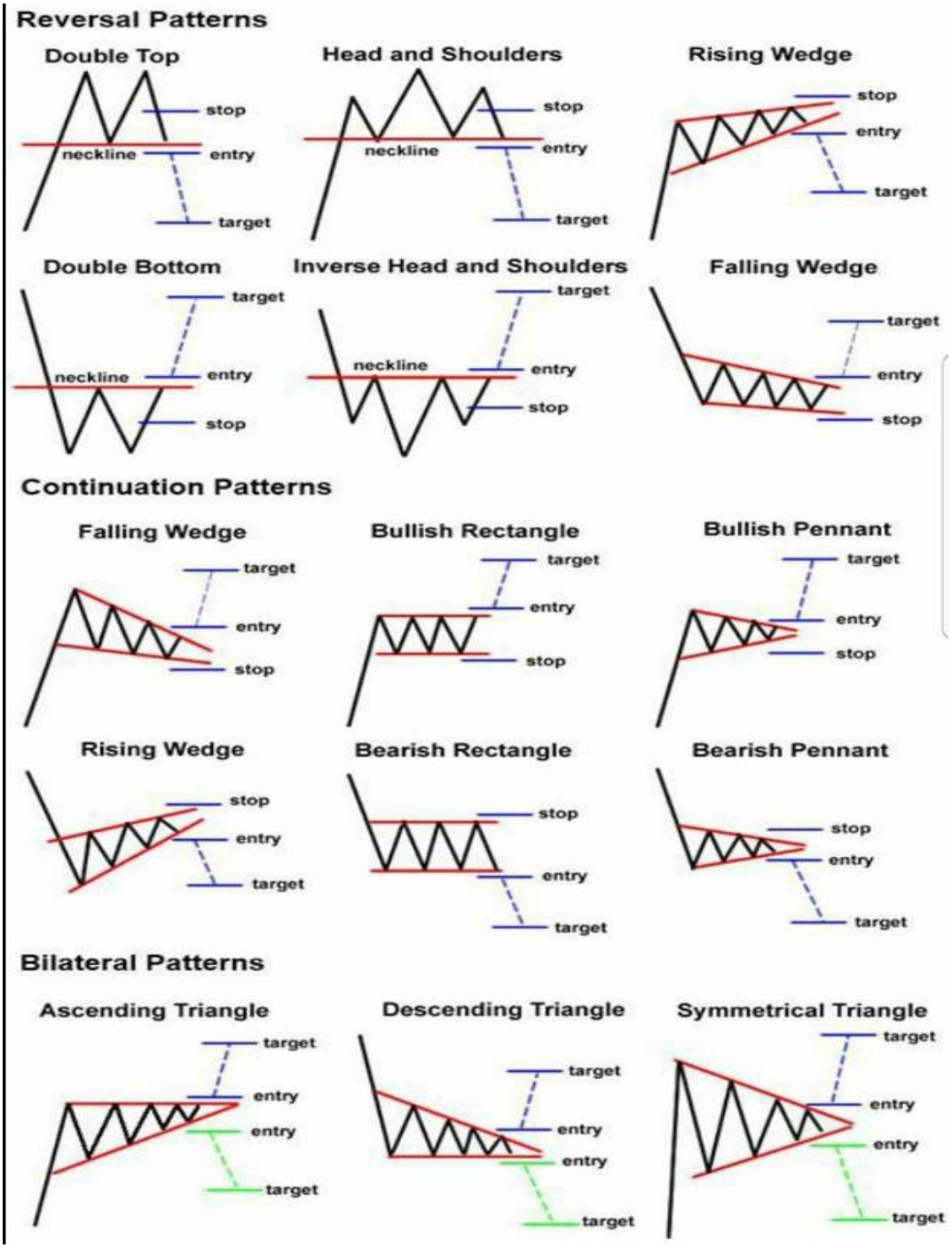

Reversal Patterns
Double Top
stop
neckline
entry
target
Head and Shoulders
stop
neckline
entry
target
Rising Wedge
stop
entry
target
Double Bottom
target
neckline
entry
stop
Inverse Head and Shoulders
target
neckline
entry
stop
Falling Wedge
target
entry
stop
Continuation Patterns
Falling Wedge
target
entry
stop
Bullish Rectangle
target
entry
stop
Bullish Pennant
target
entry
stop
Rising Wedge
stop
entry
target
Bearish Rectangle
stop
entry
target
Bearish Pennant
stop
entry
target
Bilateral Patterns
Ascending Triangle
target
entry
entry
target
Descending Triangle
target
entry
entry
target
Symmetrical Triangle
target
entry
entry
target

Fig.16

TRIANGLES

Triangles are among the most popular chart patterns used in technical analysis since they occur frequently compared to other patterns. The three most common types of triangles are symmetrical triangles, ascending triangles, and descending triangles. These chart patterns can last anywhere from a couple weeks to several months.

Figure Symmetrical Triangle Example – Source: StockCharts.com

Fig.17

Symmetrical triangles occur when two trend lines converge toward each other and signal only that a breakout is likely to occur – not the direction. Ascending triangles are characterized by a flat upper trend line and a rising lower trend line and suggest a breakout higher is likely, while descending triangles have a flat lower trend line and a descending upper trend line that suggests a breakdown is likely to occur. The magnitude of the breakouts or breakdowns is typically the same as the height of the left vertical side of the triangle.

REVERSAL PATTERNS

A price pattern that signals a change in the prevailing trend is known as a reversal pattern.

These patterns signify periods where either the bulls or the bears have run out of steam. The established trend will pause and then head in a new direction as new energy emerges from the other side (bull or bear). For example, an uptrend supported by enthusiasm from the bulls can pause, signifying even pressure from both the bulls and bears, then eventually giving way to the bears. This results in a change in trend to the downside. Reversals that occur at market tops are known as distribution patterns, where the trading instrument becomes more enthusiastically sold than bought. Conversely, reversals that occur at market bottoms are known as accumulation patterns, where the trading instrument becomes more actively bought than sold. As with continuation patterns, the longer the pattern takes to develop and the larger the price movement within the pattern, the larger the expected move once price breaks out.

When price reverses after a pause, the price pattern is known as a reversal pattern. Examples of common reversal patterns include:

- Head and Shoulders, signaling two smaller price movements surrounding one larger movement
- Double Tops, representing a short-term swing high, followed by a subsequent failed attempt to break above the same resistance level
- Double Bottoms, showing a short-term swing low, followed by another failed attempt to break below the same support level

HEAD AND SHOULDERS

The Head and Shoulders is a reversal chart pattern that indicates a likely reversal of the trend once it's completed. A Head and Shoulder Top is characterized by three peaks with the middle peak being the highest peak (head) and the two others being lower and roughly equal (shoulders). The lows between these peaks are connected with a trend line (neckline) that

represents the key support level to watch for a breakdown and trend reversal. A Head and Shoulder Bottom – or Inverse Head and Shoulders – is simply the inverse of the Head and Shoulders Top with the neckline being a resistance level to watch for a breakout higher.

Figure Head and Shoulders – Source: StockCharts.com

Fig.18

DOUBLE TOPS AND BOTTOMS

The Double Top or Double Bottom pattern are both easy to recognize and one of the most reliable chart patterns, making them a favorite for many technically-orientated traders. The pattern is formed after a sustained trend when a price tests the same support or resistance level twice without a breakthrough. The pattern signals the start of a trend reversal over the intermediate- or long-term.

Figure – Double Top Example – Source: StockCharts.com

Fig.19

MARKET INDICATORS

Market indicators are a subset of technical indicators used to predict the direction of major financial indexes or groups of securities. Most market indicators are created by analyzing the number of companies that have reached new highs relative to the number that created new lows, known as market breadth, since it shows where the overall trend is headed.

- **Market Breadth** indicators compare the number of stocks moving in the same direction as a larger trend. For example, the Advance-Decline Line looks at the number of advancing stocks versus the number of declining stocks.

- **Market Sentiment** indicators compare price and volume to determine whether investors are bullish or bearish on the overall market. For example, the Put Call Ratio

looks at the number of put options versus call options during a given period.

MOVING AVERAGES

Moving averages "smooth" price data by creating a single flowing line. The line represents the average price over a period of time. Which moving average the trader decides to use is determined by the time frame in which he or she trades. For investors and long-term trend followers, the 200-day, 100-day and 50-day simple moving average are popular choices.

There are several ways to utilize the moving average. The first is to look at the angle of the moving average. If it is mostly moving horizontally for an extended amount of time, then the price isn't trending, it is ranging. If the moving average line is angled up, an uptrend is underway. Moving averages don't predict though; they simply show what the price is doing, on average, over a period of time.

Crossovers are another way to utilize moving averages. By plotting a 200-day and 50-day moving average on your chart, a buy signal occurs when the 50-day crosses above the 200-day. A sell signal occurs when the 50-day drops below the 200-day. The time frames can be altered to suit your individual trading time frame.

Fig.20

When the price crosses above a moving average, it can also be used as a buy signal, and when the price crosses below a moving average, it can be used as a sell signal. Since price is more volatile than the moving average, this method is prone to more false signals, as the chart above shows.

Moving averages can also provide support or resistance to the price. The chart below shows a 100-day moving average acting as support (i.e., price bounces off of it).

Fig.21

PART – A

1. What do you mean by Security Analysis?
2. Difference between Fundamental Analysis and Technical Analysis.
3. What do you mean by Industry Analysis? What are the factors would you look for in analysis of a particular industry?

4. How is minor trend explained?
5. Explain any two types of Charts used in Technical Analysis.
6. List out and explain various Price Pattern Analysis.
7. Write short note on Simple Moving Average and Breadth of the Market.
8. What is a weak form under Efficient Market Theory.
9. Draw and explain Point and Figure chart.
10. Write short note on GDP, Inflation, Business cycle and Interest rate.

PART – B

1. Explain the various tools and techniques used in Technical Analysis.
2. Explain in detail the EIC approach in Fundamental Analysis.
3. Draw and explain various Charting Techniques in Technical Analysis.
4. What do you mean by Company Analysis? What are the factors would you look in for analysis of a particular Company?
5. Describe Efficient Market Hypothesis.
6. Explain in detail the Dow Theory and how is it used to determine the direction of stock market?
7. Write short note on Elliot Wave Theory.
8. Write short note on Dow Theory
9. How is Technical Analysis different from Fundamental Analysis? Evaluate the usefulness of Technical Analysis.
10. What is "SWOT" Analysis? Carry out SWOT Analysis for anyone industry of your choice.

Reference:

7. Investment Analysis and Portfolio Management, 6th Edition,Prasanna Chandra,McGraw Hill Education (India) Private Limited,Chennai 600116.
8. Security Analysis and Portfolio Management, 2nd Edition,Pandian Punithavathy,Vikas Publishing Hose Pvt.ltd.,New Delhi 110014.
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V.K. Bhalla. S. Chand Publishing, New Delhi 110055.

UNIT 5

PORTFOLIO MANAGEMENT

INTRODUCTION

Portfolio Management is defined as the art and science of making decisions about the investment mix and policy, matching investments to objectives, asset allocation for individuals and institutions, and balancing risk against performance. It is mainly concerned with allocating assets while downsizing risk.

"Never put all your eggs in one basket" is what is meant by diversification. Instead of investing

all funds in one asset, the funds be invested in a group of assets.

Diversification helps in reducing the risk of investing. Total risk of one investment is the sum of the impact of all the factors that might affect the return from that investment. However, investors need not suffer risk inherent with individual investments as it could be reduced by holding a diversity of investments.

For example, return from a single investment in a cold drink company is subject to weather conditions. This investment is a risky investment. However, if a second investment can be made in an umbrella company, which is also subject to weather changes, but in an opposite way, the return from the portfolio of two investments will have a reduced risk-level. This process is known as **diversification**.

Portfolio is the combination of securities or diversified investment in securities.

PORTFOLIO MANAGEMENT:

Portfolio management may be defined as the process of construction, maintenance, revision and evaluation of a portfolio.

The objective of portfolio management is to build a portfolio which gives a return commensurate with the risk preference of the investor.

Portfolio management specifically deals with security analysis, analysis and selection of portfolio, revision of portfolio and evaluation of portfolio.

Objectives of Portfolio Management

a) Capital appreciation

b) Maximising returns on investment
c) To improve the overall proficiency of the portfolio
d) Risk optimisation
e) Allocating resources optimally
f) Ensuring flexibility of portfolio
g) Protecting earnings against market risks

Who is a Portfolio Manager ?

An individual who understands the client's financial needs and designs a suitable investment plan as per his income and risk taking abilities is called a portfolio manager. A portfolio manager is one who invests on behalf of the client.

A portfolio manager counsels the clients and advises him the best possible investment plan which would guarantee maximum returns to the individual.

A portfolio manager must understand the client's financial goals and objectives and offer a tailor made investment solution to him. No two clients can have the same financial needs.

Types of Portfolio Management

Active portfolio management

In this type of management, the portfolio manager is mostly concerned with generating maximum returns. Resultantly, they put a significant share of resources in the trading of securities. Typically, they purchase stocks when they are undervalued and sell them off when their value increases.

Passive portfolio management

This particular type of portfolio management is concerned with a fixed profile that aligns perfectly with the current market trends. The managers are more likely to invest in index funds with low but steady returns which may seem profitable in the long run.

Discretionary portfolio management

In this particular management type, the portfolio managers are entrusted with the authority to invest as per their discretion on investors' behalf. Based on investors' goals and risk appetite, the manager may choose whichever investment strategy they deem suitable.Non-discretionary management

Under this management, the managers provide advice on investment choices. It is up to investors whether to accept the advice or reject it. Financial experts often recommended investors to weigh in the merit of professional portfolio managers' advice before disregarding them entirely.

Who Should Opt for Portfolio Management?

The following should consider portfolio management –

a) Investors who intend to invest across different investment avenues like bonds, stocks, funds, commodities, etc. but do not possess enough knowledge about the entire process.
b) Those who have limited knowledge about the investment market.
c) Investors who do not know how market forces influence returns on investment.
d) Investors who do not have enough time to track their investments or rebalance their investment portfolio.

Portfolio Management Process

Typically, professionals use these following ways to manage investment portfolio –

Asset allocation

Essentially, it is the process wherein investors put money in both volatile and non-volatile assets in such a way that helps generate substantial returns at minimum risk. Financial experts suggest that asset allocation must be aligned as per investor's financial goals and risk appetite.

Diversification

The said method ensures that an investors' portfolio is well-balanced and diversified across different investment avenues. On doing so, investors can revamp their collection significantly by achieving a perfect blend of risk and reward. This, in turn, helps to cushion risks and generates risk-adjusted returns over time.

Rebalancing

Rebalancing is considered essential for improving the profit-generating aspect of an investment portfolio. It helps investors to rebalance the ratio of portfolio components to yield higher returns at minimal loss. Financial experts suggest rebalancing an investment portfolio regularly to align it with the prevailing market and requirements.

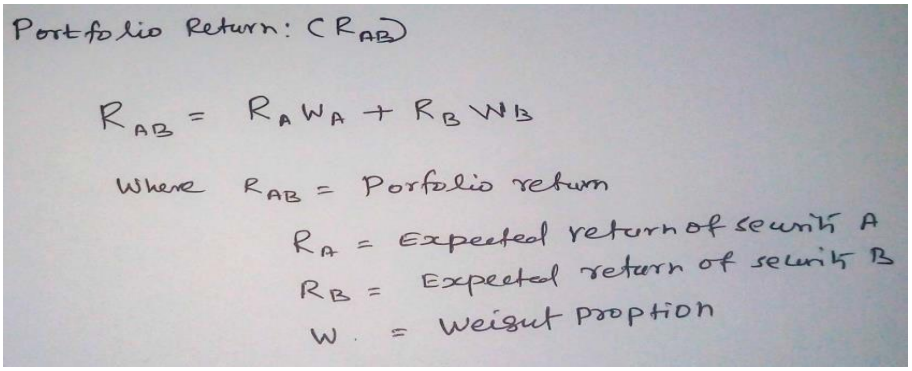
Once investors have selected a suitable strategy, they must follow a thorough process to implement the same so that they can improve the portfolio's profitability to a great extent.

Portfolio Risk and Return

i. Portfolio Return:

The expected return of a portfolio represents weighted average of the expected returns on the securities comprising that portfolio with weights being the proportion of total funds invested in each security (the total of weights must be 100).

The following formula can be used to determine expected return of a portfolio:

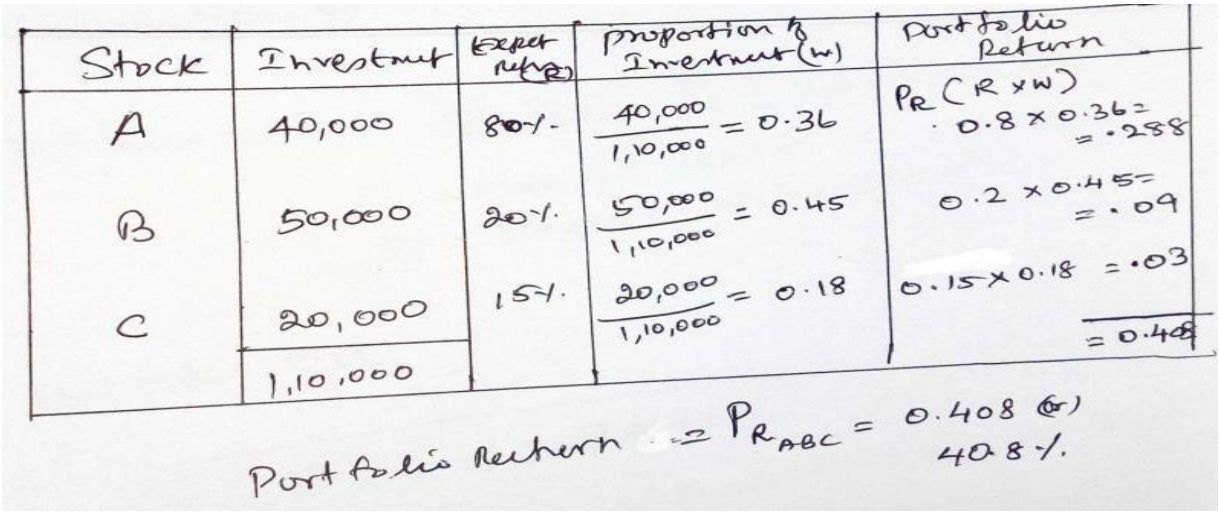


Calculation of Portfolio Return

1. Mr.Anbu has the following stocks with the following expected market return. determine Anbu's Portfolio return.

Stock	Amount of Investment	Expected Return
A	40000	80%
B	50000	20%
C	20000	15%

Computation of Portfolio Return:



Stock	Investment	Expected Return (R)	Proportion of Investment (W)	Portfolio Return
A	40,000	80%	$\frac{40,000}{1,10,000} = 0.36$	$P_R (R \times W)$ $0.8 \times 0.36 = .288$
B	50,000	20%	$\frac{50,000}{1,10,000} = 0.45$	$0.2 \times 0.45 = .09$
C	20,000	15%	$\frac{20,000}{1,10,000} = 0.18$	$0.15 \times 0.18 = .03$
	1,10,000			$= 0.408$

Portfolio Return $= P_{R_{ABC}} = 0.408$ (or) 40.8%.

ii. Portfolio Risk:

Unlike the expected return on a portfolio which is simply the weighted average of the expected returns on the individual assets in the portfolio, the portfolio risk, σp is not the simple, weighted average of the standard deviations of the individual assets in the portfolios. \

It is for this fact that consideration of a weighted average of individual security deviations amounts to ignoring the relationship, or covariance that exists between the returns on securities. In fact, the overall risk of the portfolio includes the interactive risk of asset in relation to the others, measured by the covariance of returns. Covariance is a statistical

measure of the degree to which two variables (securities' returns) move together. Thus, covariance depends on the correlation between returns on the securities in the portfolio.

PART – A

1. What do you mean by portfolio management? What are the elements of portfolio management?
2. Explain how portfolio return is calculated.
3. What is an efficient portfolio?
4. Explain the concepts of risk and return in the context of portfolio management.
5. Write short note on: Random Diversification and Efficient Diversification.
6. Explain the steps in construction of portfolio.
7. Write short notes on: Systematic Risk and Diversification.
8. What is Covariance?
9. What are the various measures of risk used in portfolio selection?
10. "Correlation Coefficient is relative measure for Portfolio selection" – Discuss.

PART – B

1. Discuss briefly the key steps involved in the portfolio management process.
2. In understanding the portfolio risk, why is the concept of correlation relevant and important? Explain.
3. Explain with suitable example, the calculation of return and risk of a two security portfolio.
4. Explain with suitable example, the calculation of return and risk of a three security portfolio.
5. Calculate the Variance, Co-variance S.D and co-coefficient for the two securities. The

portfolio Proportion of two securities are 1/3 and 2/3 respectively and also calculate the portfolio risk and return.

Probability	Return of Security X	Return of security Y
0.5	4	0
0.4	2	3
0.1	0	3

6. Calculate Portfolio Return and Portfolio Risk consisting of Three Securities X,Y,Z

Particulars	Return	S.D
X	10	10
Y	12	15
Z	8	5

The COV of X & Y is 0.3, and X&Z is 0.5 and Y & Z is 0.4, The Investment ox X ,Y,Z is 20%, 20% and 60% Respectively.

7. The following are the expected return and risk of two securities A and B:

PORTFOLIO SELECTION AND REVISION

Risk and return are two basic factors for construction of a portfolio. While constructing a portfolio, an investor wants to maximize the return and to minimize the risk. The risk can be reduced by diversification. A portfolio which has highest return and lowest risk is termed as an **optimal portfolio**. The process of finding an optimal portfolio is known as the **portfolio selection**.

If the investments can be made with certainty of returns, then the returns from different investments would be the only consideration for making portfolio. However, in case of uncertainty, decision regarding investments cannot be made only on the basis of returns. Risk (uncertainty) should also be considered. The following are the theoretical relationship between the risk and return and can be used to construct a portfolio.

- MARKOWITZ MODEL or PORTFOLIO THEORY

- CAPITAL ASSET PRICING MODEL

Markovitz Portfolio theory

Modern Portfolio Theory is Markowitz's theory regarding maximizing the return investors could get in their investment portfolio considering the risk involved in the investments. MPT asks the investor to consider how much the risk of one investment can impact their entire portfolio.

Modern Portfolio Theory (MPT) was first espoused by American economist **HarryMarkowitz**. For his work, Markowitz was awarded the Nobel Prize in Economics in 1990. In his1952 paper published by The Journal of Finance, he first proposed the theory as a means to create and construct a portfolio of assets to maximize returns within a given level of risk, or to devise one with a desired, specified, and expected level of return with the least amount of risk. Markowitz theorized that investors could design a portfolio to maximize

returns by accepting a quantifiable amount of risk.In other words, **investors could reduce risk by diversifying their assets and asset allocation of their investments using a quantitative method**. MPT is a mathematical justification for asset allocation within a portfolio, as it amounts to a weighted average of the expected returns on individual assets.

To begin with, Markowitz **assumed that most investors are risk-averse**. That means they are more personally comfortable with less risk, and nervous and anxious with increased risk. This also translates into the belief that it is better to not lose money than to find or gain it. So, given a choice between a higher return possibility with greater risk, and a lower return possibility with less risk, most people will naturally prefer the portfolio with the least risk, even if it means a lower return.

This gets to the heart of Markowitz's theory. Given two portfolios, an investor will naturally prefer one that indicates the highest return possibility with the least risk.

Efficient Frontier

The Efficient Frontier is the set of optimal portfolios that offer the highest expected return for a defined level of risk or the lowest risk for a given level of expected return.

Portfolios that lie below the efficient frontier are sub-optimal because they do not provide enough return for the level of risk. The Efficient Frontier arising from a feasible set of portfolios of risky assets is concave in shape.

The efficient frontier is curved because there is a diminishing marginal return to risk. Each unit of risk added to a portfolio gains a smaller and smaller amount of return.When an investor is assumed to use riskless lending and borrowing in his investment activity the shape of the efficient frontier transforms into a straight line.

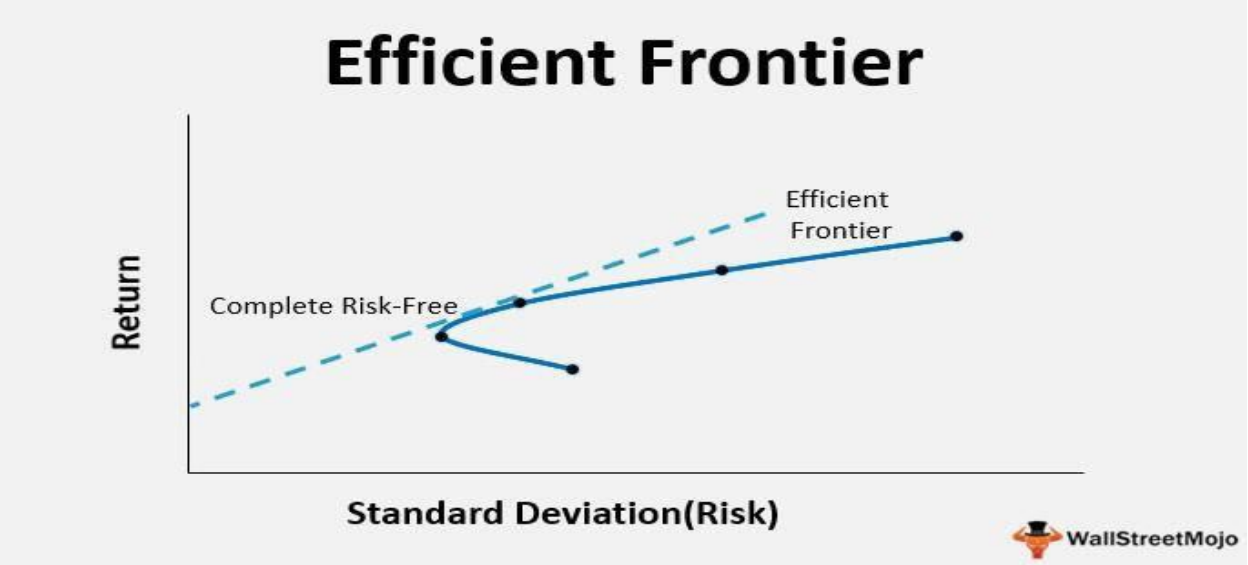


Fig.22

Sharpe Single Index Model

The **Single-Index Model (SIM)** is a simple asset pricing model to measure both the risk and the return of a stock. The model has been developed by William Sharpe in 1963.

Markowitz Model had serious practical limitations due to the rigors involved in

compiling the expected returns, standard deviation, variance, covariance of each security to every other security in the portfolio.

Sharpe Model has simplified this process by relating the return in a security to a single Market Index. Firstly, this theoretically reflects all well-traded securities in the market. Secondly, it reduces and simplifies the work involved in compiling elaborate matrices of variances as between individual securities.

Thus, if the Market Index is used as a surrogate for other individual securities in the portfolio, the relation of any individual security with the Market Index can be represented in a Regression line or characteristic line.

This optimal portfolio of **Sharpe** is called the **Single Index Model**. The method involves selecting a cut-off rate for inclusion of securities in a portfolio. For this purpose, excess return to Beta ratio given above has to be calculated for each stock and rank them from highest to lowest.

The **Simple Index Model** is based on the following

assumptions:

- Most stocks have a positive covariance because they all respond similarly to macroeconomic factors.
- However, some firms are more sensitive to these factors than others, and this firm-specific variance is typically denoted by its beta (β), which measures its variance compared to the market for one or more economic factors.
- Co-variances among securities result from differing responses to macroeconomic

factors.

Hence, the covariance of each stock can be found by multiplying their betas and the market variance

Capital Assets Pricing Model

The **Capital Asset Pricing Model (CAPM)** was developed in mid-1960s by three researchers William Sharpe, John Lintner and Jan Mossin independently. Consequently, the model is often referred to as **Sharpe-Lintner-Mossin Capital Asset Pricing Model**.

The Capital Asset Pricing Model (CAPM) is a relationship explaining how assets should be priced in the capital markets. It gives the nature of the relationship between the expected return and the systematic risk of a security.

The relationship between risk and return established by the Security Market Line (SML) is known as the Capital Asset Pricing Model. It is basically a simple linear relationship. The higher the value of beta, higher would be the risk of the security and therefore, larger would be the return expected by the investors.

In other words, all securities are expected to yield returns commensurate with their riskiness. This relationship is valid not only for individual securities, but is also valid for all portfolioswhether efficient or inefficient. The expected return on any security or portfolio can be determined from the CAPM formula if we know the beta of that security

or portfolio.

The specific **assumptions** underlying Capital Asset Pricing Model are:

1) Investors make decisions based solely upon risk-and-return assessments. These judgments take the form of expected values and standard deviation measures.

2) The purchase or sale of a security can be undertaken in infinitely divisible units. Investors can short sell any amount of shares without limit.

3) Purchases and sales by a single investor cannot affect prices i.e. there is perfect

competition where investors in total determine prices by their actions. Otherwise, monopoly power could influence prices (returns).

4) There are no transaction costs. Where there are transaction costs, returns would be sensitive to whether the investor owned a security before the decision period.

5) The purchase or sale of securities is done in the absence of personal income taxes i.e. investors are indifferent to the form in which the return is received (dividends or capital gains).

6) The investor can borrow or lend any amount of funds desired at an identical riskless rate

(example: the Treasury bill
rate).

7) Investors share identical expectations with regard to the relevant decision period, the necessary decision inputs, their form and size. Thus investors are presumed to have

identical planning horizons and to have identical expectations regarding expected returns, variances of expected returns, and covariances of all pairs of securities. Otherwise, there would be a family of efficient frontiers because of differences in expectations.

CAPM describes the expected return for all assets and portfolios of assets in the economy. The difference in the expected returns of any two assets can be related to the difference in their betas. The model postulates that systematic risk is the only important ingredient in determining expected return. As investors can eliminate all unsystematic risk through diversification, they can be expected to be rewarded only for bearing systematic risk. Thus, the relevant risk of an asset is its systematic risk and not the total risk.

The **CAPM** lets investors quantify the expected return on investment given the risk, risk- free rate of return, expected market return, and the beta of an asset or portfolio. The **Arbitrage Pricing Theory** is an alternative to the CAPM that uses fewer assumptions and can be harder to implement than the CAPM.

The **CAPM** has serious **limitations** in real world, as most of the assumptions, are unrealistic. Many investors do not diversify in a planned manner. Besides, Betacoefficient is unstable, varying from period to period depending upon the method of compilation. They may not be reflective of the true risk involved.

Characteristic Lines

1) **Capital Market Line (CML)**: It is the graph of the required return and risk (as measured by standard deviation) of a portfolio of a risk-free asset and a basket of risky assets that offers the best risk-return trade-off.

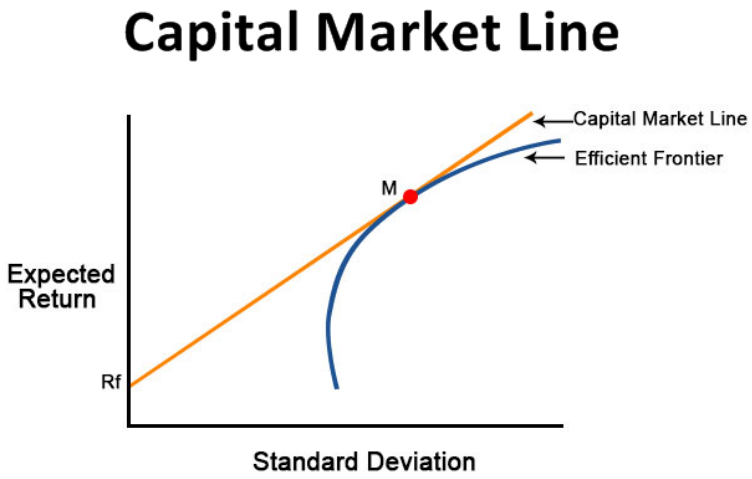


Fig.23

All investors are assumed to have identical (homogeneous) expectations. Hence, all of them will face the same efficient frontier. Every investor will seek to combine the same risky portfolio with different levels of lending or borrowing according to his desired level of risk. Because all investors hold the same risky portfolio, then it will include all risky securities in the market. This portfolio of all risky securities is referred to as the market portfolio M. Each security will be held in the proportion which the market value of the security bears to the total market value of all risky securities in the market. All investors will hold combinations of only two assets, the market portfolio and a riskless security. All these combinations will lie along the straight line representing the efficient frontier.

This line formed by the action of all investors mixing the market portfolio with the risk free asset is known as the capital market line (CML). All efficient portfolios of all investors will lie along this capital market line.

The CML provides a risk return relationship and a measure of risk for efficient portfolios. The appropriate measure of risk for an efficient portfolio is the standard deviation of return of the portfolio. There is a linear relationship between the risk as measured by the standard deviation and the expected return for these efficient portfolios.

CML shows the risk-return relationship for all efficient portfolios. They would all lie along the capital market line. All portfolios other than the efficient ones will lie below the capital market line. The CML does not describe the risk-return relationship of inefficient portfolios or of individual securities.

2) **Security Market Line (SML):** It is a line drawn on a chart that serves as a graphical representation of the Capital Asset Pricing Model (CAPM), which shows different levels of systematic, or market, risk of various marketable securities plotted against the expected return of the entire market at a given point in time.

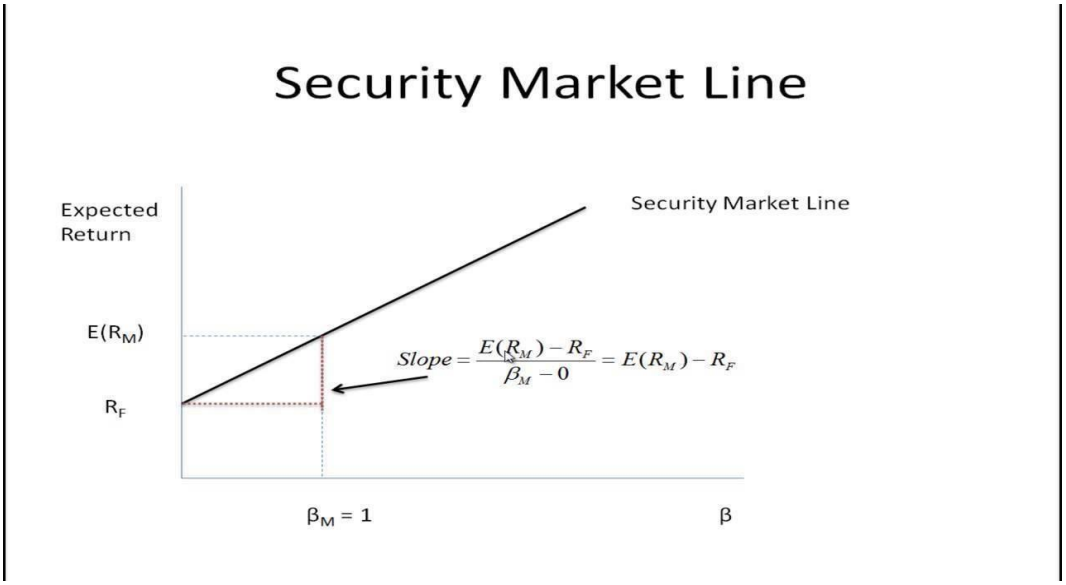


Fig.24

The Capital Asset Pricing Model specifies the relationship between expected return and risk for all securities and all portfolios, whether efficient or inefficient. The total risk of a security as measured by standard deviation is composed of two components: systematic risk and unsystematic risk or diversifiable risk. As an investment is diversified and more and more securities are added to a portfolio, the unsystematic risk is reduced. For a very well diversified portfolio, unsystematic risk tends to become zero and the only relevant risk is systematic risk measured by beta. Hence, it is argued that the correct measure of a security's risk is beta.It follows that the expected return of a security or of a portfolio should be related to the risk of that security or portfolio as measured by Beta which is a measure of the security's sensitivity to changes in market return.

Beta value greater than one indicates higher sensitivity to market changes, whereas beta value less than one indicates lower sensitivity to market changes. A value of one indicates that the security moves at the same rate and in the same direction as the market.

It is necessary to contrast SML and CML. Both postulate a linear (straight line) relationship between risk and return.

1) In CML the risk is defined as total risk and is measured by standard deviation, while in

SML the risk is defined as systematic risk and is measured by beta.

2) Capital market line is valid only for efficient portfolios while security market line is valid for all portfolios and all individual securities as well.

3) CML is the basis of the Capital Market Theory while SML is the basis of the Capital Asset

Pricing Model.

Optimum Portfolio

An **Optimal Portfolio** is one that minimizes your risk for a given level of return or maximizes your return for a given level of risk. The optimal portfolio concept falls under the portfolio theory. The theory assumes that investors fanatically try to minimize risk while striving for the highest return.

Optimal portfolio is a term used in portfolio theory to refer to the one portfolio on the Efficient Frontier with the highest return-to-risk combination given the specific investor's tolerance for risk. It's the point where the Efficient Frontier (supply) and the Indifference Curve (demand) meet.

Limitations of CAPM:

1. Beta calculation difficult (tedious).

2. Assumptions are hypothetical and are impractical.

3. Required rate of return is only a rough approximation.

PORTFOLIO EVALUATION

Portfolio evaluation is the process of measuring and comparing the returns (actually) earned on a portfolio with returns (estimates) for a benchmarks.

Evaluation factors:

1. **Risk-return Trade-off:**

   The performance evaluation should be based on risk and return not on either of them. Risk without return and return without risk level are impossible to be interpreted. Investors are risk-averse. But it does not mean that they are not ready to assume risk. They are ready to take risk provided the return is commensurate. So, in the portfolio performance evaluation, risk-return trade-off be taken care of.

2. **Appropriate Market Index:**The performance of one portfolio is benchmarked either against some other portfolio (for comparative position) or against some market index.

3. **Common Investment Time Horizon:**

Investment period horizon of the portfolio being evaluated and the time horizon of the benchmark must be same. Suppose, a mutual fund scheme announces that it has earned the highest return, it must be verified before accepting whether the highest return has been earned during current year or during last 3 years or 5 years, etc.

4. **Objectives or Constraints of Portfolio:**

The objectives for which the portfolio has been created has to be evaluated.

Measures of Portfolio Performance

There are several measures for evaluation of portfolio performance. They are

1. Return per unit of risk

The return earned over and above the risk-free return is the risk-premium and is earned for bearing risk. The risk-premium may be divided by risk factor to find out the reward per unit of risk undertaken. This is also known as reward to risk ratio. There are two methods of measuring reward to risk ratio:

a) Sharpe Ratio (Reward to Variability Ratio)

The Sharpe Index measures the risk premium of the portfolio relative to the total amount of risk in the portfolio. The larger the index value, the better the portfolio has performed.

$$\text{Sharpe Ratio} = \frac{RP - IRF}{\sigma P}$$

b) Treynor Ratio(Reward to Volatility Ratio)

The Treynor Index measures the risk premium of the portfolio related to the amount of systematic risk present in the portfolio.

$$\text{Treynor Ratio} = \frac{RP - IRF}{\beta P}$$

II. Differential Return:

c) Jensen Ratio:

Michel Jensen has developed another method for evaluation of performance of a portfolio. This measure is based on differential returns. The Jensen's Ratio is based on the difference between the actual return of a portfolio and required return of a portfolio in view of the risk of the portfolio.

$$\text{Jensen's Index} = \frac{\alpha}{\beta}$$

$\alpha P = RP - RS$

RP = Acutal Return on portfolio

RS = Expected Return on portfolio

$RS = IRF + (RM - IRF)\,\beta$

PART – A

1. What do you mean by Portfolio selection? Write the assumptions of Harry Markowitz Model.
2. What is Efficient Frontier or Dominating Portfolio?
3. Explain the usefulness of Utility curves in portfolio selection.
4. What are the limitations of Harry Markowitz Model.
5. Briefly explain the assumptions of CAPM Model.
6. Write short notes on: SML and CML.
7. List out the different measures for evaluation of performance of a portfolio.
8. Differentiate between the Sharpe's ratio and Treynor's ratio.
9. How to calculate Jensen's Performance Index.
10. What is Portfolio Revision? Give out the various plans in portfolio revision.

PART – B

1. Explain the risk-return relationship formulated by HM Model. How the efficient portfolio is built as per HM Model?
2. What is capital market line? How it is derived? What is the relevance of CML?
3. What do you mean by introduction of risk-free lending and borrowing in arriving of CML?
4. What is Security Market Line? How is it different from Capital Market Line?
5. "Portfolio risk may be reduced without sacrificing returns if securities are combined correctly. "examine in the light of Markowitz diversification
6. Explain the CAPM Model of Portfolio selection.

7. Following information is available in respect of two securities:

Portfolio	A	B
Expected Return	22%	17%
Beta Factor	1.5	0.7

Assume Risk Free Interest rate I_{RF} 10% and R_M 18%. Find out whether the securities A and B are correctly priced?

8. Following information is available regarding four Mutual Funds:

Mutual Fund	Return (R)	Risk (SD)	Beta
A	13%	16%	.90

B	17%	23%	.86
C	23%	39%	1.20
D	15%	25%	1.38

Evaluate the performance of these Mutual Funds using Sharpe Ratio and Treynor's Ratio. Comment on the evaluation after ranking the funds, given that the risk-free rate is 9%.

9. Following information is available in respect of certain securities:

Fund	Beta	Expected Return
I	1.4	22%
II	1.2	16%
III	1.1	14%

The market return is 16% and the risk-free rate is 6%. Calculate Jensen's Index.

10. Following information is available in respect of 3 securities X, Y, and Z:

Fund	Expected Return	Beta
X	15%	1.1
Y	19%	1.2
	23%	1.4

The market return and the risk-free rate are 16% and 6% respectively. Calculate Jensen's Index.

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