

V SEMESTER, BBA- STUDY MATERIAL

### **5.3 INVESTMENT MANAGEMENT**

## UNIT-1

### Introduction:

Investment is an economic activity in which every person is engaged in one form or another. Even though the basic objective of making investment is earning profits, not everybody who makes investment benefits from it. Those who incur losses have not managed their funds scientifically and have just followed blindly. All investments are risky to some degree or other as risk and return go together. The art of investment is to see that the return is maximized with the minimum degree of risk.

### Meaning of Investment:

Investment is a Process of “Sacrificing Something now for the prospect of gaining something later.” “a commitment of funds made in the expectation of some positive rate of return”

According to economics “ Investment is the utilization of resources in order to increase income or production output in the future”

Investment Management is a generic term that most commonly refers to the buying and selling of investments within a portfolio. Investment management also referred as money management which covers the professional management of different securities and assets such as bonds, shares, real estate and other securities. Proper investment management aims to meet particular investment goals for the benefit of the investors.

### Nature of Investment Management:

- 1) Higher the risk, higher the expected return
- 2) One can take decision only after analyzing entire process of investment that starts with fund contribution and ends with getting expectations fulfilled.
- 3) Higher the time period of investment, lesser the uncertainties of investment.
- 4) Cash has an investment opportunity when you decide to invest it you are deprived of this opportunity to earn a return on that cash.
- 5) When the general price level raises the purchasing power of cash declines- larger the increase in inflation, the greater the depletion in the buying power of cash.
- 6) Classification of investment avenues are Based on risk

### Scope of Investment management

- 1) Identification of Investors’ Requirements: Investors differ from each other in terms of objectives , preferences and constraints. The foundation of investment management is thus, collection of data relating to investors’ requirements. The analysis of this data gives an idea about the assets and securities to be selected.
- 2) Formulation of Investment Policy and Strategy: The policy will lay down the different asset classes of investment viz shares, debentures, bonds etc. and the proportion of funds to be invested in each class. After formulating the investment policy, the next stage is to prepare the investment strategy. Investment strategy will be formulated for

income and capital appreciation and for a level of risk tolerance. The investment strategy will have to be correlated with the expectation of the capital market and the individual sectors of industry. On the basis of investment policies, a strategy and investors' expectation of the market, a particular combination of investments is selected.

- 3) Execution of strategy: Next strategy is the implementation and execution of investment process. This process requires a lot of research, analysis and judgment. The portfolio thus, constructed may relate to the needs of a given level of income, liquidity, safety, high yielding growth stocks etc. The success of the portfolio would depend upon the initiative, innovation and judgment of the person constructing the portfolio.
- 4) Monitoring of Portfolio: The performance of the portfolio is evaluated and adjustments are made in the portfolio composition from time to time. Thus is called monitoring and risk structuring of the portfolios. This process is an adjustment of the components of the portfolio to improve the performance to make it optimal and efficient. The changes in investors conditions, market conditions and in industry performance are taken into account in the portfolio adjustments.

### **Types of Investments/ Investment Avenues**

Nonnegotiable securities Deposits earn fixed rate of return. Even though bank deposits resemble fixed income securities they are not negotiable instruments. Some of the deposits are dealt subsequently.

**a) Bank deposits :** It is the simplest investment avenue open for the investors. He has to open an account and deposit the money. Traditionally the banks offered current account, Saving account and fixed deposits account. Current account does not offer any interest rate. The drawback of having large amount in saving accounts is that the return is just 4 percent. The saving account is more liquid and convenient to handle. The fixed account carries high interest rate and the money is locked up for a fixed period. With increasing competition among the banks, the banks have handled the plain saving account with the fixed account to cater to the needs of the small savers.

**b) Post office deposits :** Post office also offers fixed deposit facility and monthly income scheme. monthly income scheme is a popular scheme for the retired . an interest rate of 9 percent is paid monthly .the term of the scheme is 6 years, at the end of which a bonus of 10 percent is paid .the annualized yield to maturity works out to be 15.01 per annum. after three years, premature closure is allowed without any penalty .if the closure is one year, a penalty of 5 percent is charged.

### **NBFC deposits**

In recent years there has been a significant increase in the importance of non-banking financial companies in the process of financial intermediation. The NBFC come under the purview of the RBI. The Act in January 1997, made registration compulsory for the NBFCs

- 1) Period the period ranges from few months to five years.
- 2) Maximum limit the limit for acceptance of deposit has been on the credit rating of the company.
- 3) Interest NBFCs have been debarred from offering an interest rate exceeding 16% per annum and a brokerage fee over 2% on public deposit. The interest rate differs according to maturity period.

### **Tax sheltered saving scheme**

The important tax sheltered saving scheme is

**a) public provident fund scheme (PPF) :** PPF earn an interest rate of 8.5% per annum compounded annually which is exempted from the income tax under sec 80 C. The individuals and Hindu undivided families can participate in this scheme. There is a lock in period of 15 years. PPF is not indented for those who are liquidity and short term returns. at the time of maturity no tax is to be given.

**b) National saving scheme (NSS):** This scheme helps in deferring the tax payment. Individuals and HUF are eligible to open NSS account in the designated post office.

**c) National saving certificate :** This scheme is offered by the post office. These certificate come in the denomination of Rs. 500, 1000, 5000 and 10000. the contribution and the interest for the first five years are covered by sec 88. the interest is cumulative at the rate of 8.5% per annum and payable biannually is covered by sec 80 L.

**Life insurance:** Life insurance is a contract for payment of a sum of money to the person assured on the happening of event insured against. Usually the contract provides for the payment of an amount on the date of maturity or at a specified date or if unfortunate death occurs. The major advantage of life insurance is given below;

- 1) Protection saving through life insurance guarantees full protection against risk of death of the saver. The full assured sum is paid, whereas in other schemes only the amount saved is paid.
- 2) Easy payments for the salaried people the salary saving schemes are introduced. Further there is an installment facility method of payment through monthly, quarterly, half yearly or yearly mode.
- 3) Liquidity loans can be raised on the security of the policy
- 4) Tax relief tax relief in income tax and wealth tax is available for amounts paid by way of premium for life insurance subject to the tax rates in force.

### **INVESTMENT V/S SPECULATION**

Investment is the application of money for earning more money. Investment also means savings or savings made through delayed consumption. According to

economics, investment is the utilization of resources in order to increase income or production output in the future. An amount deposited into a bank or machinery that is purchased in anticipation of earning income in the long run is both examples of investments

**Speculation :** Speculation is the practice of engaging in risky financial transactions in an attempt to profit from short or medium term fluctuations in the market value of a tradable good such as a financial instrument, rather than attempting to profit from the underlying financial attributes embodied in the instrument such as capital gains, interest, or dividends. Many speculators pay little attention to the fundamental value of a security and instead focus purely on price movements. Speculation can in principle involve any tradable good or financial instrument. Speculators are particularly common in the markets for stocks, bonds, commodity futures, currencies, fine art, collectibles, real estate, and derivatives.

### **Difference between Investment and Speculation**

1. Investment is all about value creation (e.g. manufacturing products and providing services) while speculation is concerned about price movement. In the latter, you profit purely from price differences. The price movement is mostly influenced by the psychology of the market.
2. Investment is has lower risk but need more capital to generate more value while speculation is challenging, has higher risk but requires less capital. This explains why most people are speculating because its entry requirement (capital) is lower.
3. Investment is about getting what market offers you while speculation is about trying to get more by doing more in believing that you can beat the market.
4. Investment is about doing least since you let the companies or industries work for you by owning a piece of their businesses while speculation is about doing the most (unconsciously) and it is more involving because you keep chasing the price movement. You need to keep buying and selling to generate profit.
5. Investment is over long term while speculation is of shorter term. For the former, the success rate is highest by maximizing the holding period of a position while for the latter; the success rate will peak if the position is kept open for the shortest time possible. This also explains why people like to speculate because it provides “shortcuts” to wealth.
6. Investment is about simplicity while speculation is about complexity (timing market, predicting market direction, stock picking...). That’s why most people fail when speculating. It gives a false sense of simplicity.
7. Investment = growing system (like a living organic creature) while speculation = zero- sum game (one person’s gain is another person’s loss). The former will grow over time while the latter remains constant or shrinking over time.

## **Factors to be considered in investment decision or Investment attributes / Objectives or Characteristics of Investment:**

- 1. Return:** Return refers to expected rate of return from an investment. Return is an important characteristic of investment. Return is the major factor which influences the pattern of investment that is made by the investor. Investor always prefers high rate of return for his investment. Returns could be in the form of dividend, interest, capital gain etc. Returns depend upon the factors such as nature of the investment, the maturity period, stability of earnings etc.
- 2. Risk:** If an investor is risk averse, he can invest in bank deposits, government securities, life insurance, provident fund, PPF, debentures etc. If an investor is a risk taker he can choose the equity shares, precious metals, real estate and mutual funds etc. Higher risk will lead to higher return. But in practice higher risk may always not guarantee higher return.
- 3. Safety:** Safety is another feature which an investor desires for his investments. Safety implies the certainty of return of capital without loss of money or time. Every investor expects to get back his capital on maturity without loss and without delay. In other words safety refers to the protection of investor's principal amount and expected rate of return.
- 4. Liquidity:** An investor which is easily saleable or marketable without loss of money without loss of time is said to possess liquidity. Liquidity means that investment is easily realizable, saleable or marketable. When the liquidity is high, then the return may be low.
- 5. Marketability:** Marketability refers to buying and selling of securities in market. Marketability means transferability or saleability of an asset. Securities are listed in a stock market which are more easily marketable than which are not listed. Public Limited Companies shares are more easily transferable than those of private limited companies.
- 6. Capital Growth:** Capital Growth refers to appreciation of investment. Capital growth has today become an important characteristic of investment. Growth of investment depends upon the industry growth.
- 7. Stability of Income:** It refers to constant return from an investment. Another major characteristic feature of the investment is the stability of income. Stability of income must look for different path just as security of principal. Every investor always considers stability of monetary income.
- 8. Tax shelter:** An investor can avail tax exemptions by investing in the government securities, PF, PPF, Indira Vikas Patras, Insurance and selected mutual funds.

## **INVESTMENT PROCESS:**

1. **Investment Policy:** Investment policy is the first stage of the investment process. The investor formulates the policy for systematic functioning. It determines the following aspects of the investor:
  - a. Availability of funds i.e. savings or borrowings for investment
  - b. Main objective of investment is to earn return, need for regular income and liquidity.
  - c. Investor should have adequate knowledge of investment alternatives, avenues, risk associated, returns, operations of stock exchanges and brokers.
2. **Security Analysis:** Security analysis is the second stage of the investment process . Once the investment policy is formulated , then the securities have to be scrutinized through:
  - a. Economic analysis: GDP and inflation growth are reflected in stock prices. Stock prices fluctuate in short run, but move in trends in the long run
  - b. Industry analysis: Industries contribute a lot of output as well as to the economic growth.
  - c. Company analysis: It helps the investor make better decisions. Company's earnings, profitability, operating efficiency, capital structure and management must be screened.
3. **Investment valuation:**

Valuation of the securities is the third stage of the investment process. This stage involves

  - a. Valuation of stocks
  - b. Valuation of Debentures and Bonds
  - c. Valuation of other assets

Valuation helps the investor determine the return and risk expected from the investment. There are 2 values:

  - i. Intrinsic value: It is measured through the book value of the share and P/E ratio.( ratio of a company's share price to EPS)
  - ii. Future value: Future value of the securities could be estimated by using a statistical technique like trend analysis. The analysis of the historical behavior of the price enables the investor to predict future value.
4. **Portfolio Construction:** Under portfolio construction stage, the investor has to allocate the wealth to different stocks. Investors need to appreciate that the risk of portfolio comes down if the portfolio is diversified. While including stocks in the portfolio, the investor has to watch its impact on the overall portfolio return and risk and also examine whether it is consistent with the initial investment objective.
5. **Portfolio Evaluation:** The portfolio has to be managed efficiently. it consist of 2 steps:

- a. Appraisal: the return and risk performance of the security vary from time to time. The variability in returns of the securities is measured and compared. The developments in the economy, industry and relevant companies from which the stocks are bought have to be appraised.
- b. Revision: Revision depends on the result of the appraisal. The low yielding risky securities are replaced with high yielding less risk securities. To keep the return at a particular level necessitates the investor to revise the components of the portfolio periodically.

### **Concept of risk and return**

Any rational investor, before investing his or her investable wealth in the stock, analysis the risk associated with the particular stock. The actual return he receives from a stock may vary from his expected return and is expressed in the variability of return. Risk The dictionary meaning of risk is the possibility of loss or injury; risk the possibility of not getting the expected return. The difference between expected return and actualreturn is called the risk in investment. Investment situation may be high risk, medium and low risk investment;

1.Buying government securities	low risk
2.Buying shares of an existing Profit making company	Medium risk
3. Buying shares of a new company	High risk

### **Types of risk**

**Systematic risk:** The systematic risk is caused by factors external to the particular company and uncontrollable by the company. The systematic risk affects the market as a whole.

### **Sources of risk**

- Interest rate risk: Interest rate risk is the variation in the single period rates of return caused by the fluctuations in the market interest rate. Most commonly the interest rate risk affects the debt securities like bond, debentures
- Market risk: Jack clark francis has defined market risk as that portion of total variability of return caused by the alternating forces of bull and bear market. This is a type of systematic risk that affects share .market price of shares move up and down consistently for some period of time.
- Purchasing power risk: Another type of systematic risk is the purchasing power risk .it refers to the variation in investor return caused by inflation.

**Unsystematic risk:** In case of unsystematic risk the factors are specific, unique and related to the particular industry or company.

- **Business risk:** Every company operates with in a particular operating environment, operating environment comprises both internal environment within the firm and external environment outside the firm. Business risk is thus a function of the operating conditions faced by a company and is the variability in operating income caused by the operating conditions of the company.
- **Financial risk:** It refers to the variability of the income to the equity capital due to the debt capital. Financial risk in a company is associated with the capital structure of the company. The debt in the capital structure creates fixed payments in the form of interest this creates more variability in the earning per share available to equity share holders .this variability of return is called financial risk and it is a type of unsystematic risk.
- **Credit Risk/ Default Risk:** The credit risk deals with the probability of meeting a default. The chances that the borrower will not pay can stem from a variety of factors. The borrower's credit rating might have fallen suddenly and he became default prone and its extreme form it may lead to insolvency. In such cases, the investor may get no return or negative returns.
- **Other Risk:** In addition to above major risks there are many more risks particularly associated with the investment in foreign securities. These risks are monetary value risk, political environment risk and inability of foreign government to meet its indebtedness. The investor,who buys foreign bonds or securities of foreign corporations, should weigh carefully the possibility of additional risk associated with foreign investments against his expected return.
- Individual and Group Risks
- Financial & Non Financial Risks
- Pure & Speculative Risk
- Static & Dynamic Risks
- Quantifiable & Non-quantifiable

### **Return**

The major objective of an investment is to earn and maximize the return. Return on investment may be because of income, capital appreciation or a positive hedge against inflation .income is either interest on bonds or debenture, dividend on equity, etc Rate of return: The rate of return on an investment for a period is calculated as follows:

Rate of return =annual income + (ending price –beginning price)/ Beginning price

## UNIT-2

### Security Analysis

Active portfolio managers undertake a variety of different types of analysis in order to attempt to select outperforming equities for the portfolios they manage. There are 2 extremes are fundamental analysis & Technical analysis.

### Fundamental Analysis

It is logical & systematic approach to estimating the future dividends and share price. It is a method of evaluating a security or asset by attempting to measure its intrinsic value by examining economic financial & other quantitative and qualitative factors.

Fundamental analysis is the examination of the underlying forces that affect the well being of the economy, industry groups, and companies. As with most analysis, the goal is to derive a forecast and profit from future price movements. At the company level, fundamental analysis may involve examination of financial data, management, business concept and competition. At the industry level, there might be an examination of supply and demand forces for the products offered. For the national economy, fundamental analysis might focus on economic data to assess the present and future growth of the economy. To forecast future stock prices, fundamental analysis combines economic, industry, and company analysis to derive a stock's current fair value and forecast future value. If fair value is not equal to the current stock price, fundamental analysts believe that the stock is either over or under valued and the market price will ultimately gravitate towards fair value. Fundamentalists do not heed the advice of the random walkers and believe that markets are weak-form efficient. By believing that prices do not accurately reflect all available information, fundamental analysts look to capitalize on perceived price discrepancies.

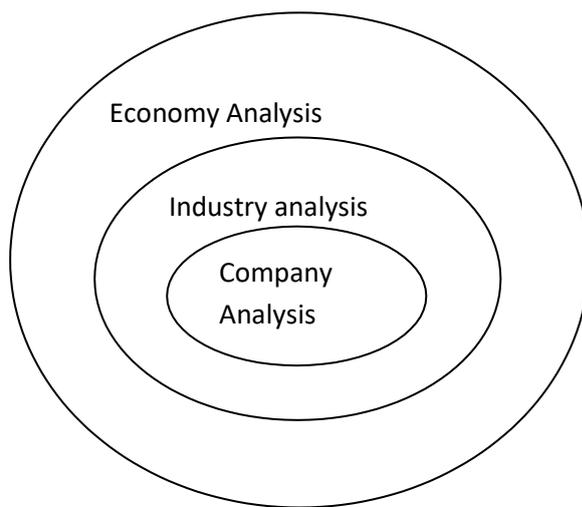
### Objectives:

- To conduct a company's stock valuation & predict its probable price evolution.
- To make a projection on its business performance
- To evaluate its management & make internal business decisions.
- To calculate its risk

### Uses/application of Fundamental analysis:

1. It is used to evaluate a lot of information about the past performance and the expected future performance of company industry and the economy as a whole before taking investment decision.
2. It is performed on historical and present data but with the goal of making financial forecasts.
3. It attempts to study everything that can affect the security's value, including macroeconomic factors and individually specific factors.

4. This approach is based on in-depth and all-around study of the underlying forces of the economy, conducted to provide data that can be used to forecast future prices and market development.
  5. Fundamental analysis can be composed of 3 layer analysis of economic, industry and company. A combination of the data is used to establish the true current value of the underlying assets, to determine whether they are over or under valued and to predict the future value of the underlying asset based on this information.
  6. It helps an investor obtain information about the overall state of market , attractiveness and state of a specific security as compared to other securities.
- 3 layer analysis:



#### Economic Analysis:

The performance of a company depends much on the performance of the economy if the economy is in Boom, the industries and companies in general said to be prosperous. On the other hand, if the economy is in Recession, the performance of companies will be generally poor. The key economic variables are as follows that an investor must monitor as a part of the fundamental analysis.

1. GNP/GDP
2. Savings & Investment
3. Inflation
4. Agriculture
5. Interest Rates
6. Government Revenue, expenditure & deficits
7. Political stability
8. Infrastructure
9. Monsoon

#### Industry analysis:

An industry is a group of firms that have similar technological structure of production and produce similar products. Industry analysis refers to an evaluation of the relative strengths & weaknesses of particular industry. It is a market assessment tool designed to provide a

business with an idea of the complexity of a particular industry. Porter's five force model is a framework for industry analysis to determine the competitive intensity. Following are the components of industry analysis:

### Competitive structure

1. Permanence
2. Phase of life cycle
3. Vulnerability to external shocks
4. Regulatory and Tax condition
5. Labor condition
6. Historical financial performance
7. Financial & financing issues
8. Industry stock price valuation

### Company analysis:

It deals with return and risk of individual share and security. The analyst tries to forecast the future earning which has direct effect on share price. It involves a close investigative scrutiny of the company's financial aspects with a view to identifying its strength, weaknesses and future business prospects. The financial statement analysis is the study of a company's financial statement from various viewpoints. The statement gives the historical and current information about the company's operation. There are three steps of company analysis.

- Measuring earnings
- Forecasting earnings
- Applied valuations

### Tools of company analysis:

1. Balance sheet
2. P&L account
3. Comparative financial statements
4. Trend analysis
5. Common size statements
6. Fund flow analysis
7. Cash flow analysis
8. Ratio analysis

### Dow theory

#### The basic assumptions

##### 1. The market has three movements

- The "main movement", primary movement or major trend may last from less than a year to several years. It can be bullish or bearish.

- The "medium swing", secondary reaction or intermediate reaction may last from ten days to three months and generally retraces from 33% to 66% of the primary price change since the previous medium swing or start of the main movement.
- The "short swing" or minor movement varies with opinion from hours to a month or more.

The three movements may be simultaneous, for instance, a daily minor movement in a bearish secondary reaction in a bullish primary movement.

2. Market trends have three phases Dow theory asserts that major market trends are composed of three phases: an accumulation phase, a public participation (or absorption) phase, and a distribution phase.

- The accumulation phase (phase 1) is a period when investors "in the know" are actively buying (selling) stock against the general opinion of the market. During this phase, the stock price does not change much because these investors are in the minority demanding (absorbing) stock that the market at large is supplying (releasing).
- Eventually, the market catches on to these astute investors and a rapid price change occurs (phase 2). This occurs when trend followers and other technically oriented investors participate.
- This phase continues until rampant speculation occurs. At this point, the astute investors begin to distribute their holdings to the market (phase 3).

3. The stock market discounts all news Stock prices quickly incorporate new information as soon as it becomes available. Once news is released, stock prices will change to reflect this new information. On this point, Dow theory agrees with one of the premises of the efficient-market hypothesis.

4. Stock market averages must confirm each other In Dow's time, the US was a growing industrial power. The US had population centers but factories were scattered throughout the country. Factories had to ship their goods to market, usually by rail.

- Dow's first stock averages were an index of industrial (manufacturing) companies and rail companies. To Dow, a bull market in industrials could not occur unless the railway average rallied as well, usually first.
- According to this logic, if manufacturers' profits are rising, it follows that they are producing more. If they produce more, then they have to ship more goods to consumers. Hence, if an investor is looking for signs of health in manufacturers, he or she should look at the performance of the companies that ship the output of them to market, the railroads. The two averages should be moving in the same direction.
- When the performances of the averages diverge, it is a warning that change is in the air. Both Barron's Magazine and the Wall Street Journal still publish the daily

performance of the Dow Jones Transportation Average in chart form. The index contains major railroads, shipping companies, and air freight carriers in the US.

5. Trends are confirmed by volume Dow believed that volume confirmed price trends. When prices move on low volume, there could be many different explanations. An overly aggressive seller could be present for example. But when price movements are accompanied by high volume, Dow believed this represented the "true" market view. If many participants are active in a particular security, and the price moves significantly in one direction, Dow maintained that this was the direction in which the market anticipated continued movement. To him, it was a signal that a trend is developing.

6. Trends exist until definitive signals prove that they have ended Dow believed that trends existed despite "market noise". Markets might temporarily move in the direction opposite to the trend, but they will soon resume the prior move. The trend should be given the benefit of the doubt during these reversals. Determining whether a reversal is the start of a new trend or a temporary movement in the current trend is not easy. Dow Theorists often disagree in this determination. Technical analysis tools attempt to clarify this but they can be interpreted differently by different investors.



### Technical Analysis:

Technical analysis is a method of evaluating securities by analyzing the statistics generated by market activity, such as past prices and volume. Technical analysts do not attempt to measure a security's intrinsic value, but instead use charts and other tools to identify patterns that can suggest future activity.

Just as there are many investment styles on the fundamental side, there are also many different types of technical traders. Some rely on chart patterns, others use technical indicators and oscillators, and most use some combination of the two. In any case, technical analysts' exclusive use of historical price and volume data is what separates them from their fundamental counterparts. Unlike fundamental analysts, technical analysts don't care whether a stock is undervalued - the only thing that matters is a security's past trading data and what information this data can provide about where the security might move in the future.

The field of technical analysis is based on three assumptions:

1. The market discounts everything.
2. Price moves in trends.
3. History tends to repeat itself.

1. **The Market Discounts Everything:** A major criticism of technical analysis is that it only considers price movement, ignoring the fundamental factors of the company. However, technical analysis assumes that, at any given time, a stock's price reflects everything that has or could affect the company - including fundamental factors. Technical analysts believe that the company's fundamentals, along with broader economic factors and market psychology, are all priced into the stock, removing the need to actually consider these factors separately. This only leaves the analysis of price movement, which technical theory views as a product of the supply and demand for a particular stock in the market.

2. **Price Moves in Trends:** In technical analysis, price movements are believed to follow trends. This means that after a trend has been established, the future price movement is more likely to be in the same direction as the trend than to be against it. Most technical trading strategies are based on this assumption.

3. **History Tends To Repeat Itself :** Another important idea in technical analysis is that history tends to repeat itself, mainly in terms of price movement. The repetitive nature of price movements is attributed to market psychology; in other words, market participants tend to provide a consistent reaction to similar market stimuli over time.

Technical analysis uses chart patterns to analyze market movements and understand trends. Although many of these charts have been used for more than 100 years, they are still believed to be relevant because they illustrate patterns in price movements that often repeat themselves. A chart pattern is a distinct formation on a stock chart that creates a trading signal, or a sign of future price movements. Chartists use these patterns to identify current trends and trend reversals and to trigger buy and sell signals.

As above we talked about the three assumptions of technical analysis, the third of which was that in technical analysis, history repeats itself. The theory behind chart patterns is based on this assumption. The idea is that certain patterns are seen many times, and that these patterns signal a certain high probability move in a stock.

Based on the historic trend of a chart pattern setting up a certain price movement, chartists look for these patterns to identify trading opportunities. While there are general ideas and

components to every chart pattern, there is no chart pattern that will tell you with 100% certainty where a security is headed.

This creates some debate as to what a good pattern looks like, and is a major reason why charting is often seen as more of an art than a science.

Technical analysis is based on mainly which are mostly seen in different types as follows:

1. Line chart
2. Bar chart
3. Candlestick chart

Efficient Market Hypothesis:

Random Walk theory: It is that the market information and immediately and fully spread so that all investors have the full knowledge of the information and changes price of the security in the stock market, which all are independent of each other.

The hypothesis state that thr capital market is efficient in processing information according to the efficient market model market is actually concerned with the spread of information with which information is incorporated into the security raises.

The technique before that the past price sequences contents the information about the future price movements because all type of information is slowly incorporated in the security prices.

The efficient market has internal and external efficiency there are 3 forms of efficient market hypothesis (EMH)

1. Weak form.
2. Semi strong form
3. Strong form

Weak form: this is the type of form that current prices of stock fully reflect all the historical information. Weak form contradicts technical analysis, which state that prices move in predictable manner and historical price movement can help to focus the future price trends.

Semi-Strong Form: This form of market is testing whether publicly available information is fully reflected in current stock prices. And the information, communication, technology has made the application of semi strong form, possibly in developing country.

Strong Form: this form of EMH represents the most extreme case of market efficiently possible. According to this form the prices of securities is fully reflected all available information both public and private, under this form two basic conditions are there:

- 1) Successive price changes or returns are independent
- 2) Successive price changes or returns changes are identically distributed

## Testing Techniques of EMH:

### Weak form:

- 1) Correlation test
- 2) Run test
- 3) Filter test

### Semi-strong form

- 1) Market relation test
- 2) Impact test
  - Earnings
  - Block trade
  - Bonus
  - Secondary offering

### Strong Form:

- 1) Trading by Stock exchange officials
- 2) Trading by Mutual fund managers

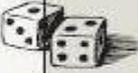
## **Tax benefits Under section 80 (c)**

Section 80C replaces the Section 88 with more or less same investment mix available in Section 88. Section 80C of the Income Tax Act allows certain investments and expenditure to be tax-exempt. One must plan investments well and spread it out across the various instruments specified under this section to avail maximum tax benefit. Unlike Section 88, there are no sub-limits and is irrespective of how much you earn and under which tax bracket you fall.

The total limit under this section is Rs 1.50 lakh from Financial year 2014-15 / Assessment Year 2015-16. Before FY 2014-15 the limit was Rs. 1 Lakh. Under this heading many small savings schemes like NSC, PPF and other pension plans. Payment of life insurance premiums and investment in specified government infrastructure bonds are also eligible for deduction under Section 80C. Besides these investments, the payments towards the principal amount of your home loan are also eligible for an income deduction. Education expense of children is increasing by the day. Under this section, there is provision that makes payments towards the education fees for children eligible for an income deduction

Sec 80C of the Income Tax Act is the section that deals with these tax breaks. It states that qualifying investments, up to a maximum of Rs.1.50 Lakh are deductible from your income. This means that your income gets reduced by this investment amount (up to Rs.1.50 Lakh), and you end up paying no tax on it at all.

This benefit is available to everyone, irrespective of their income levels. Thus, if you are in the highest tax bracket of 30%, and you invest the full Rs.1.50 Lakh, you save tax of Rs. 45,000.

Instrument	PPF	EPF & VPF	NSC	Tax-Saving FDs	Life Insurance	Pension Plans	NPS	Equity-Linked Savings Schemes (ELSS)	Retirement Mutual Funds	ULIPs	Sukanya Samriddhi Yojana
<b>Return</b>	8.70%	8.75%	8.5% for 5 years	7.75-8.25%	May vary as per tenure	Market-linked	Market-linked	Linked to stock markets	Market-linked	Market-linked	9.2%
<b>Liquidity</b> 	Low, locked in for 15 years. Limited withdrawals after 5 years	Low. You can withdraw only for specific purposes	Can be used as collateral 	No premature exits allowed	Pay premium for the entire terms or policy is liable to lapse	Can withdraw after three years with exit load 	Withdrawals at vesting age. At least 40-60% to buy annuity	Can withdraw full amount after three years. Can opt for dividend option for cash flows. Dividend is tax free	Can withdraw but with exit load 	No surrender charges after 5 years	Can only invest for girl child up to 10 years. Partial withdrawal facility once the child is 18 years old
<b>Tax Treatment</b>	Interest and maturity amount is tax free	Interest and the total corpus is tax free if withdrawn after 5 years	Interest income is taxable as per applicable income slab	Interest income is taxable as per the applicable income slab	Amount on maturity and periodic payouts are tax free	Dividend and maturity amount are tax free	Annuity income is tax free	Dividend and maturity amount are tax free	Dividend and maturity amount are tax free	All gains are tax free	Interest and maturity amounts are tax free
<b>Minimum and Maximum Investment Limit</b>	₹500 per annum and maximum of ₹1.5 lakh	EPF- 12% of basic+DA, VPF - any part of salary besides EPF	₹500 per annum	₹100 and a maximum of ₹1.5 lakh	NA 	₹2,000-25,000 	₹6,000 per annum	SIP: ₹500-1,000, Lumpsum: 5,000	SIP: ₹500 and Lumpsum ₹5,000	₹2000-25000	Minimum ₹1000 and maximum ₹1.5 lakh
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## Unit-3

Concept of portfolio analysis: Portfolio analysis is the determination of future risk and return in holding various combinations of individual securities. A portfolio which has highest return and lowest risk is termed as an optimal or efficient portfolio and the process of finding an optimal portfolio is known as portfolio analysis or selection.

Kinds of portfolio analysis

- Traditional portfolio analysis
- Modern portfolio analysis

Modern portfolio analysis:

The modern portfolio theory believes in the maximization of return through a combination of securities. It discussed the relationship between different securities and then draws inter relationships of risk between them. The theory states that by combining securities of low risks with securities of high risks, success can be achieved to an investor in making a choice of investment outlets. Combination of securities can be made in many ways out of the following 3 forms of diversification.

- 1) Simple diversification investment: It is merely a random selection view of portfolio construction. The layman could make superior returns on his investment by making a random diversification in his investment.
- 2) Over diversification: It refers to the investors spreading himself in so many investments on his portfolio. Investor finds it impossible to manage the assets on his portfolio because the management of large number of assets requires knowledge of the liquidity of each investment.
- 3) Efficient diversification: It refers to combination of securities of low and high risk after considering the expected return from an individual security and its interrelationship with the expected return from all other securities that comprise the portfolio.

### **Markowitz Model:**

Dr. Harry Markowitz is credited with developing the first modern portfolio analysis model i.e., risk return optimization which is found in an article presented by Harry Markowitz in 1952 in journal of finance. Markowitz used mathematical programming and statistical analysis in order to arrange the optimum allocation of assets/securities within portfolio. He has provided a conceptual framework and analytical tool for the selection of an optimal portfolio.

Markowitz showed that the variance of the rate of return was a meaningful measure of portfolio risk under reasonable set of assumption, and he derived the formula for computing the variance of a portfolio. As the Harry Markowitz Model (HM Model) is based on the expected return (mean) and the standard deviation (variance) of different portfolios, it is called Mean-Variance Model. Through this model, the investor can find out the efficient set of portfolio by finding out the trade-off between risk return, between the limits of zero and infinity.

### Assumption of Markowitz Model:

- The market is efficient, all investors react with full facts about all securities in the market.
- Investors make decisions on the basis of expected utility maximization.
- By combining the assets, the security returns are correlated to each other.
- Investor combines his investments in such a way that he gets maximum return and surrounded by minimum risk.
- Investor is able to get higher return for each level of risk by determining the efficient set of securities
- The investor can reduce his risk if he adds investments in his portfolio.
- Once investors have determined the efficient set of portfolio, they select from this efficient set of the portfolio corresponding to their preferences.

### Process of portfolio selection

On the basis of above assumptions, Markowitz has suggested that the process of portfolio selection may be approached by-

- Making probabilistic estimates of the future performance of securities i.e. identifying risk and return opportunity set.
- Analyzing those estimates to determine an efficient set of portfolio i.e. determining attainable efficient set.
- Selection from that set the portfolio best suited to the investor's preference i.e. selection of the optimal portfolio.

### Identifying Risk and return opportunity set:

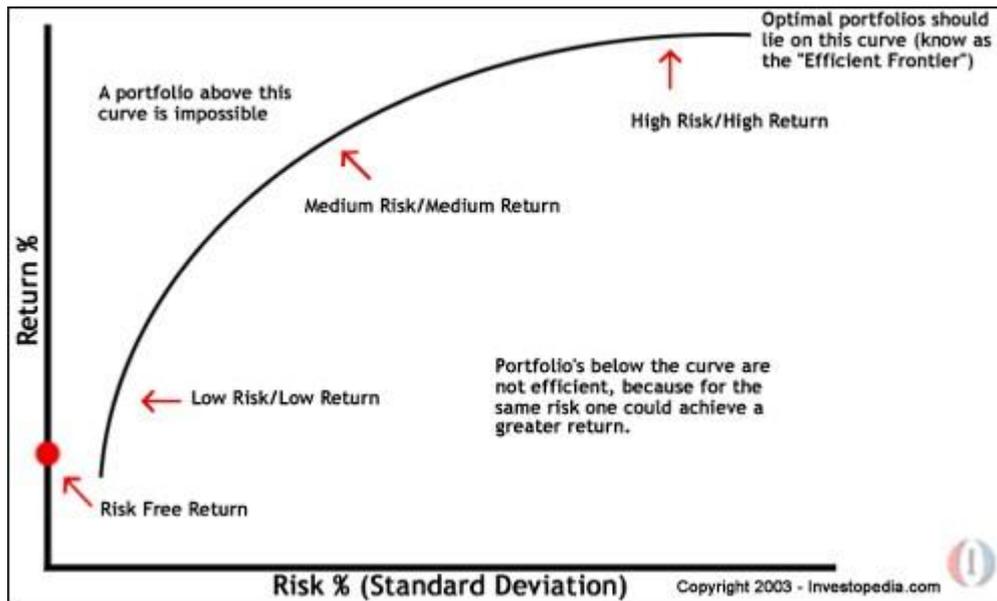
The process of selection of optimum portfolio starts with the identification of the opportunity set of various portfolios in terms of risk and return. When an investors invests his funds in various securities, the effect of one security purchase over the effects of the other security purchase taken into consideration with 3 variables namely return, standard deviation, coefficient of correlation.

### Efficient set of portfolio:

Markowitz has formulated the risk return relationship and developed the concept of efficient portfolio. An efficient portfolio is one which provides the maximum expected return for any particular degree of risk, or the lowest possible degree of risk for any given rate of interest. To understand the concept of efficient portfolios, compare various combinations of securities with the risk and expected return. (refer class notes example) . The selection of portfolios by the investor will be guided by three criteria:

- 1) Given two portfolio with the **same expected return**, the investor would prefer the one with the **lower risk**.
- 2) Given two portfolio with the **same risk**, the investor would prefer the one with the **higher expected return**.
- 3) Given portfolio with **higher expected return**, the investor would prefer the one with the **lower risk**.

From the efficient portfolio investor will select a minimum risk portfolio or a maximum risk portfolio or some other portfolio, depends upon how much risk he would like to take and the minimum return he expects from his investment. Generally investors are rational, hence they would prefer more return and they are risk averse, so would prefer less risk. According to graphical presentation below given chart shows efficient frontier, this is a boundary of the attainable set. **The efficient frontier is the set of optimal portfolios that offers 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.**



As each

possible portfolio in the opportunity set or feasible set of portfolios has an expected return and standard deviation association with it, each portfolio would be represented by a single point in the risk-return space enclosed within two axes of the graph given above.

“The efficient frontier is a concave curve in the risk-return space that extends from the minimum variance portfolio to the maximum return portfolio”

Selection of optimal portfolio:

The portfolio selection problem is really the process of delineating the efficient portfolios and then selecting the best portfolio from the set. Rational investor will obviously prefer to invest in the efficient portfolios. The particular portfolio that an individual investor will select from the efficient frontier will depend on that investor’s degree of aversion to risk. **A highly risk averse investor will hold a portfolio on the lower left hand segment of the efficient frontier, while an investor who is not risk averse will hold one on the upper portion of the efficient frontier.** Markowitz used the expected return and risk of each security under consideration and the covariance estimates for each pair of securities, he calculated risk return for all possible portfolio. The process is repeated with different values of expected return, the resulting minimum risk portfolios constitute the set of efficient portfolio.

Limitations of MarkowitzModel:

- 1) Large number of calculations: In this model, each time a change in the existing portfolio is to be made for which entire population of possible securities must be reevaluated in order to maintain the desired risk-return balance. This requires a larger number of mathematical calculations, because from a given set of securities, a large number, or sometimes an infinite number of portfolios can be constructed.
- 2) Uneconomic transaction cost: The complex and numerous mathematical computation give rise to large, and uneconomic costs as the help of computer is required to find out the securities which lie on the efficient frontier. This could be true even if portfolio managers reviewed their holdings less often than daily or weekly.
- 3) Unsound academic approach: the purchasing investment managers are unable to understand the conceptual mathematics involved, because the academic approach to portfolio management is suspicious and unsound.

## CAPITAL ASSET PRICING MODEL

The Capital Asset Pricing Model was developed by William E.Sharpe, the Nobel Laureate and many economists through the sixties. CAPM provides the link between return

and non-diversifiable or systematic risk. Investors can use CAPM to assess the extent of additional return over risk free return for a given level of systematic risk of a risky investment. The excess return earned over and above the risk free return is called the risk premium which is the reward for undertaking the risk. Thus, the basic theme of CAPM is that expected return of a security increases linearly with systematic risk, measured by beta. It uses the results of capital market theory to derive the relationship between expected return and systematic risk of individual securities portfolios.

The CAPM can be expressed in the form of equation as follows:

$$R = R_f + \beta(R_m - R_f)$$

R= Expected rate of return from any individual security or portfolio of securities

R<sub>f</sub>= Risk free rate of return

R<sub>m</sub>= Expected rate of return on market portfolios

B= The beta factor i.e market sensitivity index or measure of systematic risk of individual security or portfolio of securities.

For example, if the Future Capital Holdings has invested in equity shares of a blue chip company and its.

Risk free return =9%

Expected total return = 16%

$\beta = 0.8$

The expected rate of return as per CAPM will be

$$R = R_f + \beta(R_m - R_f)$$

$$= 9 + 0.8 (16-9)$$

$$= 9 + 0.8 \times 7$$

$$= 9 + 5.6$$

$$= 14.6\%$$

CAPM explains the behaviour of security prices and provides a mechanism whereby investors could assess the impact of a proposed security investment on the overall portfolio risk and return. It suggests that the prices of securities are determined in such a way that the risk premium or excess returns are proportional to systematic risk, which is indicated by the beta coefficient. The model is used for analysing the risk – return implications of holding securities. CAPM refers to the manner in which securities are valued in line with their anticipated risks and returns. A risk – averse investor prefers to invest in risk free securities. For a small investor having few securities in his portfolio , the risk is greater. To reduce the unsystematic risk, he must build up well diversified securities in his portfolio.

ASSUMPTIONS:

The CAPM is based on several assumptions which are as follows:

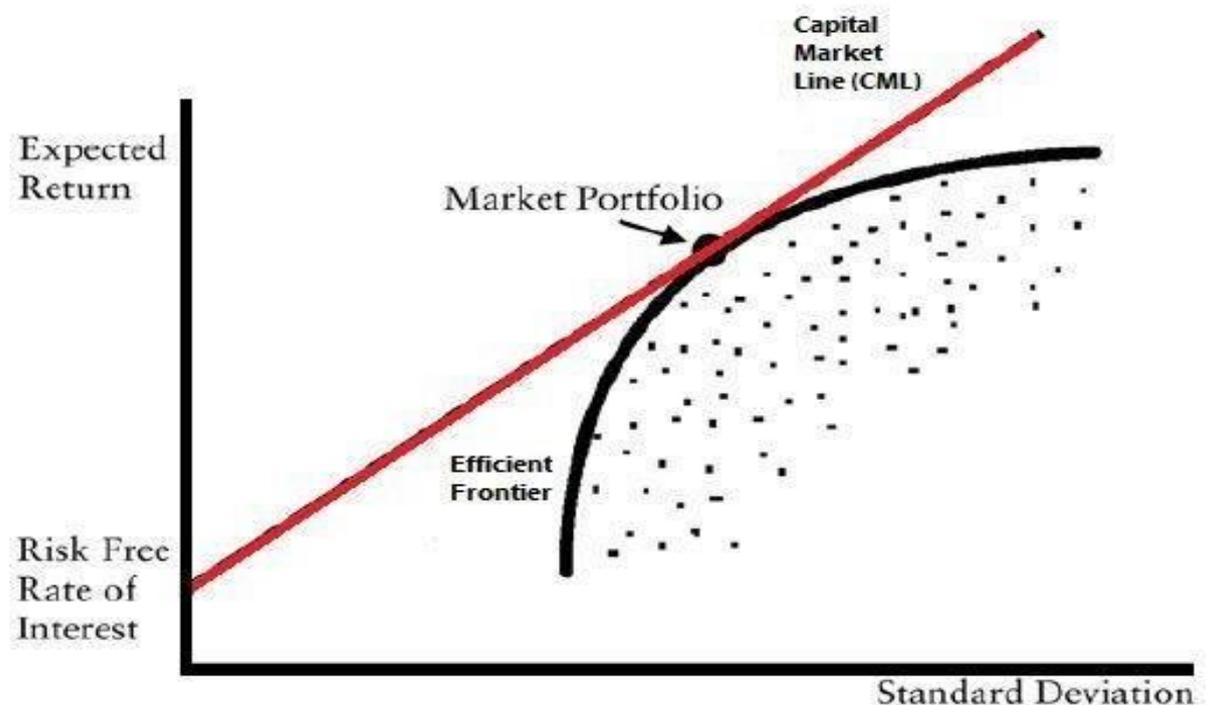
- Market is Perfect: This means that all assets are marketable and that there are no transaction cost or taxes
- Risk – free Rate: There is a single risk free rate of return. Investors can freely borrow or invest at such risk free rate.
- Homogenous Expectations: Investors have homogenous expectations about return. Return in turn is dependent on dividends and capital gains. Inflation and its effect on dividends and capital gains are ignored.
- Time period: Forecasts are for one time period only.
- Rational Investors: All investors are rational, that is , for a higher risk, they expect a higher return.
- Divisible: All stocks are infinitely divisible, and it will be possible for investors to invest in a fraction of a stock.
- Diversification: Investors hold well diversified portfolios.

CAPITAL MARKET LINE (CML)

The Capital Asset Pricing Model (CAPM) consists of two elements: the Capital Market Line and the Security Market Line(SML). The Capital Market Line (CML) defines the relationship between total risk and expected return for portfolios consisting of the risk-

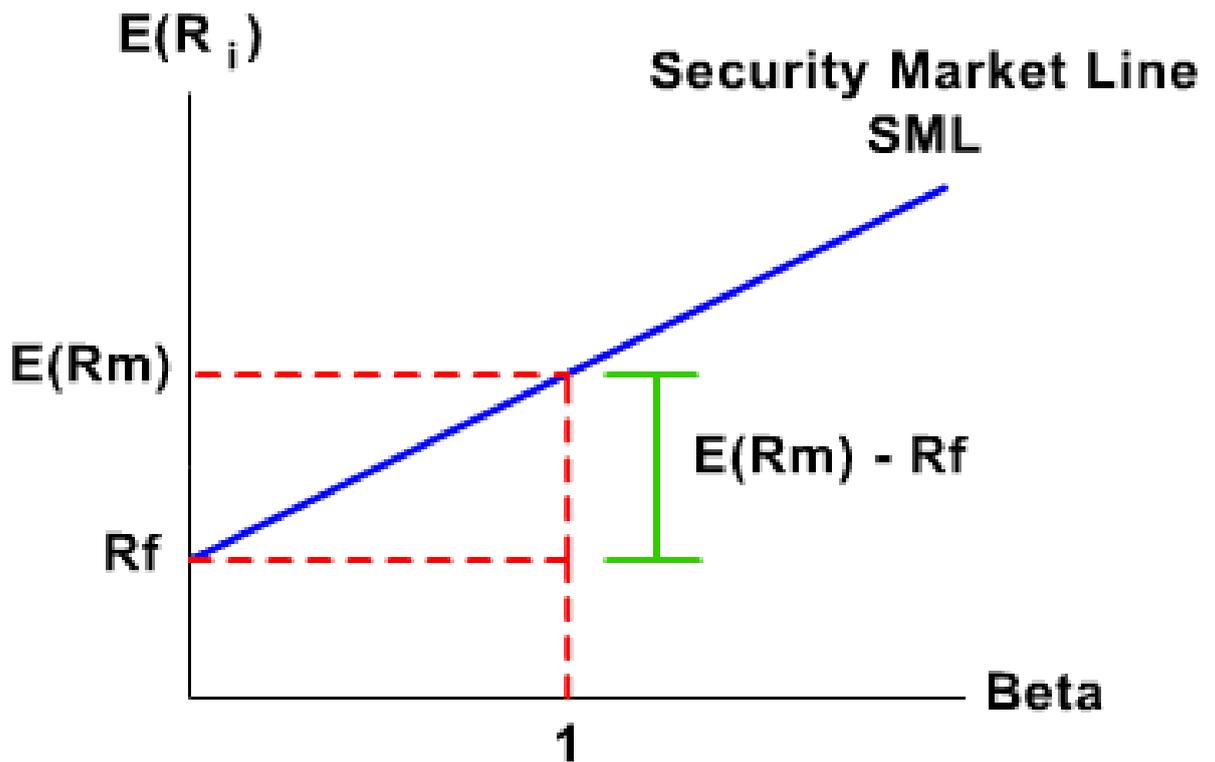
free asset and the market portfolio. If all the investors hold the same risky portfolio, then in equilibrium it must be the market portfolio. CML generates a line on which efficient portfolios can lie. Those which are not efficient will however lie below the line. Portfolios having maximum return at each level of risk (standard deviation) are the efficient portfolios. Thus, the CML represents the equilibrium condition that prevails in the market for portfolios consisting of risk-free and risky investments. All combinations of risky and risk-free investments are bound by the CML and in equilibrium, all investors will end up with portfolio on the CML. It says that the expected return on the portfolio is equal to the risk-free rate plus a risk premium. The risk premium is equal to the market price of risk times the quantity of risk. The CML line also shows trade-off between Lending and borrowing of funds above the market portfolio is borrowing while below the market portfolio is lending because those securities will have very less risk so investor can choose to lend. So, the CML shows the trade-off between the expected returns and risk for portfolios and the risk is measured by the standard deviation of the portfolio. the equation for CML is:

$$R_p = R_f + (R_m - R_f) \sigma_p / \sigma_m$$



#### SECURITY MARKET LINE(SML):

A graphical representation of CAPM is the Security Market Line (SML). This line indicates what rate of return is required to compensate for a given level of risk. Having known how expected return is computed, we can proceed to calculate the required return of a stock for various levels of  $\beta$  including for a beta of zero as risk-free investments.



Difference Between SML and CML: The SML is very similar to the Capital Market line but there are differences between the two. The main points of differences are as under:

1. Measure of Risk: the basic difference between the two is the measure of risk. The CML measures the total risk of a portfolio and is measured in terms of  $\sigma$ . On the other hand, the SML is concerned only with the systematic risk of security as measure by the beta factor  $\beta$ . So, in CML, return is plotted the total risk of the portfolio, whereas in SML, the return is plotted against only that risk which cannot be diversified away.
2. Efficient Portfolio: All the portfolios lying on the CML are the efficient portfolios and inefficient portfolios lie below the Cml. However, the SML shows only those securities which are correctly priced in view of the systematic risk associated with the security. SML provides a benchmark for evaluation of investment performance. It provides the minimum required rate of return that will compensate the investor for risk taken

Benefits of CAPM:

1. Risk Adjusted Return: CAPM provides a reasonable basis of estimating the required return on an investment after taking into account the risk inbuilt into the investment. Hence, it can be used as the risk adjusted discount rate in capital budgeting.
2. No Dividend Company: This method is useful in computing the cost of equity of a company, which does not actually declare any dividend.
3. Undervalued or Overvalued stocks: The CAPM is not only an academic model. It can put to practical use to decide whether one should buy, sell or hold shares by comparing the required rate of return with the expected return.

4. Analysis of Risk of Project: The investment is risky project having real assets can be evaluated of its worth in view of expected return.
5. Minimization of Risk: CAPM suggests the diversification of portfolio in minimization of risk.

Limitations:

- Reliability of Beta: A statistically reliable beta factor might not exist for the shares of many companies. Since beta is at the heart of CAPM, it may not be possible to figure out the cost of equity of all companies using CAPM. Further all the limitations that apply to Beta factor applies to CAPM as well.
- Other Risks: By concentrating only on systematic risk, other aspects of risk are excluded. These unsystematic elements will be of relevance to those shareholders who do not hold a well –diversified portfolio.
- End and Not Means: The model focusses only on return and not how return is earned. It assigns equal prominence to both capital gains and dividends whereas one may be better than the other on account of differential taxation.
- Information Collection: It is difficult to determine some crucial information such as risk free interest rate and the expected return on market portfolio. For one, there are multiple risk free rates and for other markets are volatile and it varies over time.

## **Arbitrage Pricing Theory**

Arbitrage pricing theory (APT) is a well-known method of estimating the price of an asset. The theory assumes an asset's return is dependent on various macroeconomic, market and security-specific factors. finance, arbitrage pricing theory (APT) is a general theory of asset pricing that holds that the expected return of a financial asset can be modeled as a linear function of various macro-economic factors or theoretical market indices, where sensitivity to changes in each factor is represented by a factor-specific beta coefficient. The model-derived rate of return will then be used to price the asset correctly - the asset price should equal the expected end of period price discounted at the rate implied by the model. If the price diverges, arbitrage should bring it back into line. The arbitrage refers to buying in the low priced market and selling in the high priced one to gain from price differences for bringing about equilibrium in the market price of a security. The buying and selling activities of the arbitrageur reduces and eliminates the profit margin, and thus, bringing the market price to the equilibrium level.

Assumptions

- The investors have homogenous expectations.
- The investors are risk averse and utility maximisers.
- A perfect competition prevails in the market and there is no transaction cost.
- The security returns are generated according to factor model.
- Risk return analysis is not the basis.

The APT Model

Returns of the security are influenced by a number of macroeconomic factors which explains the risk/ risk premium relationship of a particular security. The objective of security analysis is to identify these factors in the economy and the sensitiveness of security return to movements in these factors. The APM which was developed by Stephen Ross has given a four factor model which explains the risk/ risk premium relationship of a particular security as follows: REFER TO CLASS NOTES FOR THE EQUATION

Factors

In APT Model, the basic question is what are these factors? They are the underlying economic forces that have primary influences on the stock market. Following are some of the factors:

- Changes in level of industrial production in the economy.
- Changes in the real interest rate.
- Changes in the inflation rate.
- The level of personal consumption.
- The level of money consumption. Etc

Limitations of APT:

1. **Undefined factors:** In APT model. The factor are not well defined, Hence the investor find it difficult to establish equilibrium relationship. The well-defined market portfolio is a significant advantage of the CAPM leading to the wide usage of model in the stock market.
2. **Lack of Consistency:** The factor that have impact on the one group of security may not effect another group of security. There is a lack of consistency in the measurement of the APT model.
3. **Lack of independence:** Further the influence of the factor is not independent of each other .it may be difficult to identify the influence that corresponds exactly to each factor. Apart from this, not all variable that exert influence on a factor are measurable.

### **Sharpe's Single Index Model:**

- Willian F. Sharpe found his theory on the assumption that return index like the market index. The basic notion underlying the single index model is that all stocks are affected by movement in stock market. It is because the casual observation of stock prices over a period of time reveals that most of the stock prices move with the market index.
- **When market moves up i.e. when the market index increases prices of most of the shares tend to increase & vice-versa.**
- In other words correlation between the returns of securities can be obtained by relating the return on a stock to the return on the stock market index. This model has gained its popularity to a great extent in the arena of investment finance as compared to Markowitz model.
- Sharpe tried to simplify the data inputs and data tabulation required for the Markowitz model of portfolio analysis, suggested that a satisfactory simplification would be achieved by abandoning the covariance of each security with each other security and substituting in its place the relationship of each security with a market index as measured by the single index model.

Assumption:

Stock's price vary because of the common movement in the stock market and there is no effects beyond the market that account the stock movements

- All investors have homogeneous expectations
- A uniform holding period is used in estimating risk and return for each security

- The price movements of a security in relation to another do not depend primarily upon the nature of those two securities alone. They could reflect a greater influence that might have cropped up as a result of general business and economic conditions
- The relation between securities occurs only through their individual influence along with some indices of business and economic activities.
- The indices, to which the returns of each security are correlated, are likely to be some securities market proxy.

Formula: calculate return

$$R_s = \alpha + R_m \beta_s + e$$

- $R_s$  = expected return on security
- $\alpha$  = Alpha co-efficient or non market component of the return of security
- $R_m$  = Rate of return on the market index.
- $\beta_s$  Beta coefficient of security
- $e$  = Error term or random residual error.

The equation breaks the return on a stock into 2 components, one part due to market and other part independent of the market. The beta parameter in the equation measures sensitivity of stock return on the market index. It indicates how extensively the return of a security will vary with the changes in the market return. Example if beta is 2 of a security, then the return of the security is expected to increase by 20 % when market return increases by 10%.

The alpha parameter indicates what the return of the security would be when the market return is zero. Example a security with alpha 3 % would earn 3% return even when market return is zero.

The final  $e$  is the unexpected return resulting from influences not identified by the model. It is referred to as the random or residual return. It may take on any value, but over a larger number of observations it will average out to zero.

Calculate risk:

- Total risk = market related risk+ specific risk

Refer class Notes for practical calculation.

## Unit-4

### Portfolio Revision

Portfolio revision involves changing the existing mix of securities, with an objective to earn maximum and minimize risk. it means making changes in the current investment to increase earning.

Need for Portfolio revision:

- Availability of additional funds for investment

- Change in risk tolerance
- Change in investment goals
- Need to liquidate a part of the portfolio

Constraints in revision:

- Transaction cost
- Taxes
- Statutory stipulation
- Intrinsic Difficulty

Portfolio Revision /management strategies:

- Active portfolio revision strategy
  1. Interest rate anticipation
  2. Valuation analysis
  3. Credit analysis
  4. Yield spread analysis
- Passive Portfolio revision strategy
  1. Buy and hold strategy
  2. Laddering strategy ( in case of bond)

What is Portfolio Evaluation?

Portfolio evaluating refers to the evaluation of the performance of the investment portfolio. It is essentially the process of comparing the return earned on a portfolio with the return earned on one or more other portfolio or on a benchmark portfolio. Portfolio performance evaluation essentially comprises of two functions, performance measurement and performance evaluation. Performance measurement is an accounting function which measures the return earned on a portfolio during the holding period or investment period. Performance evaluation, on the other hand, address such issues as whether the performance was superior or inferior, whether the performance was due to skill or luck etc.

Need for evaluation:

Investment may be carried out by individuals on their own. The funds available with individual investors may not be large enough to create a well diversified portfolio of securities. Institutional investors such as mutual funds and investment companies are better equipped to create and manage well diversified portfolio in a professional manner. Evaluation is an appraisal of performance. Whether the investment activities are carried out by individual or institutional investor in different situations have performed well or not.

Evaluation perspective: A portfolio comprises several individual securities. In the building up of the portfolio several transactions of purchase and sale of securities take place. Thus, several transactions

in several securities are needed to create and revise a portfolio of securities. Hence evaluation may be carried out from different perspectives or viewpoints which are as follow:

1. Transactions View
2. Security View
3. Portfolio View.

**Meaning of Portfolio Evaluation:** Portfolio evaluation refers to the evaluation of the performance of the portfolio. It is essentially the process of comparing the return earned on a portfolio with the return earned on one or more other portfolios on a benchmark portfolio. Portfolio evaluation comprises of 2 functions performance measurement and evaluation.

While evaluating the performance of a portfolio, the return earned on the portfolios has to be evaluated in the context of the risk associated with that.

1. One approach would be to group portfolios into equivalent risk classes and then compare returns of portfolio within each risk category.
2. Second approach would be to specifically adjust the return for the riskiness of the portfolio by developing risk adjusted return measures and use these for evaluating portfolios across differing risk level.

**Sharpe Ratio:**

The Sharpe Ratio is a measure for calculating risk-adjusted return, and this ratio has become the industry standard for such calculations. It was developed by Nobel laureate William F. Sharpe. The Sharpe ratio is the average return earned in excess of the risk-free rate per unit of volatility or total risk. Subtracting the risk-free rate from the mean return, the performance associated with risk-taking activities can be isolated. One intuition of this calculation is that a portfolio engaging in “zero risk” investment, such as the purchase of U.S. Treasury bills (for which the expected return is the risk-free rate), has a Sharpe ratio of exactly zero. Generally, the greater the value of the Sharpe ratio, the more attractive the risk-adjusted return.

The performance measure developed by William shape is referred to as the Sharpe ratio or the Reward to Variability ratio. It is the ratio of the reward or risk premium to the variability of return or risk as measured by the standard deviation of return. Modern Portfolio Theory states that adding assets to a diversified portfolio that have correlations of less than one with each other can decrease portfolio risk without sacrificing return. Such diversification will serve to increase the Sharpe ratio of a portfolio. The formula for calculating Sharpe ratio may be stated as:

Sharpe ratio = (Mean portfolio return – Risk-free rate)/Standard deviation of portfolio return

$$= \frac{\bar{r}_p - r_f}{\sigma_p}$$

Where:

$\bar{r}_p$  = Expected portfolio return

$r_f$  = Risk free rate

$\sigma_p$  = Portfolio standard deviation

### Components of the Ratio

Much of the ratio's fame is attributable to its simplicity, as it comprises only three components. The formula is as follows:

When analyzing the Sharpe ratio, the higher the value, the more excess return investors can expect to receive for the extra volatility they are exposed to by holding a riskier asset. Similarly, a risk-free asset or a portfolio with no excess return would have a Sharpe ratio of zero.

### Average Return

The Sharpe ratio was originally developed as a forecasting tool, but it can also be used to calculate a historical risk-adjusted return. Expected average returns are used to calculate the forward-looking ratio, whereas actual returns are used in the historical ratio.

The expected return is also known as the required rate of return because it represents the minimum return investors require to compensate them for the added risk, which includes both the riskiness of the investment and the time value of money.

### Risk-Free Rate

The risk-free rate is the return investors require to compensate for the time value of money alone. Typically, investors use the return on Treasury bills for the risk-free rate because it is reasonable to assume the government will not default on its debt obligations, and thus investors need only be compensated for the time their capital is tied up in the security.

The Sharpe ratio requires that  $R_f$  represents the average return of the risk-free rate over the time period under evaluation. When analyzing a three-year period, investors must average the rate of return on T-bills over the same three-year period.

Traditionally, the shortest-dated bill is used since it is the least volatile. However, some argue the risk-free security should match the duration of the investment. Since equities theoretically have an infinite duration, one could argue that the longest-dated bill should be used.

### Standard Deviation

The standard deviation of a security measures how far returns deviate on average from its mean (or average) return. Standard deviation is a common indicator used to measure the volatility, and thus the riskiness, of an investment. For instance, an investment that deviates only 3% from its mean on average is judged as less risky than an investment with a 20% average deviation.

## Applications of the Sharpe Ratio

The Sharpe ratio is often used to compare the change in a portfolio's overall risk-return characteristics when a new asset or asset class is added to it. For example, a portfolio manager is considering adding a hedge fund allocation to his existing 50/50 investment portfolio of stocks which has a Sharpe ratio of 0.67. If the new portfolio's allocation is 40/40/20 stocks, bonds and a diversified hedge fund allocation (perhaps a fund of funds), the Sharpe ratio increases to 0.87. This indicates that although the hedge fund investment is risky as a standalone exposure, it actually improves the risk-return characteristic of the combined portfolio, and thus adds a diversification benefit. If the addition of the new investment lowered the Sharpe ratio, it should not be added to the portfolio.

The Sharpe ratio can also help explain whether a portfolio's excess returns are due to smart investment decisions or a result of too much risk. Although one portfolio or fund can enjoy higher returns than its peers, it is only a good investment if those higher returns do not come with an excess of additional risk. The greater a portfolio's Sharpe ratio, the better its risk-adjusted performance has been. A negative Sharpe ratio indicates that a risk-less asset would perform better than the security being analyzed.

### Treynor Ratio:

A ratio developed by Jack Treynor that measures returns earned in excess of that which could have been earned on a riskless investment per each unit of market risk. Treynor is a measurement of the returns earned in excess of that which could have been earned on an investment that has no diversifiable risk (e.g., Treasury bills or a completely diversified portfolio), per each unit of market risk assumed. The Treynor ratio relates excess return over the risk-free rate to the additional risk taken; however, systematic risk is used instead of total risk. The higher the Treynor ratio, the better the performance of the portfolio under analysis. Formula where: Treynor ratio, portfolio *i*'s return, risk free rate, portfolio *i*'s beta.

The Treynor ratio is calculated as:

(Average Return of the Portfolio - Average Return of the Risk-Free Rate) / Beta of the Portfolio

$$T = \frac{r_i - r_f}{\beta_i}$$

where:

$T$   $\equiv$  Treynor ratio,

$r_i$   $\equiv$  portfolio *i*'s return,

$r_f$   $\equiv$  risk free rate

$\beta_i$   $\equiv$  portfolio *i*'s beta

### Components of the Ratio

As we know, the relationship between risk and return is essential in the investment process. Stocks that exhibit additional volatility, or risk, should compensate investors with additional long-term

returns. Jack Treynor had this relationship in mind when he established the formula that became known as the Treynor ratio.

### Average Return

There are two average return figures that can be used in this formula: historical or expected. Using an investment's historical average return allows you to calculate the historical Treynor ratio over a time frame that you choose. Alternatively, you may use the expected average return to calculate the expected Treynor ratio. Of course, using expected average returns may not be accurate since predictions are used. However, historical averages are also potentially problematic, as there is no guarantee that past performance will carry forward.

### Risk-Free Rate

The risk-free rate is the rate of return that investors require for investments with no risk. In essence, this return compensates investors for the time value of money. Inflation dictates that money in the future will not purchase as much as it does now, and the risk-free rate compensates investors for the time that their capital is tied up.

Typically, Treasury rates are used as measures of risk-free rates. It is generally good practice to match the duration of the Treasury holding to the length of time of the average return. Alternatively, there are arguments made that since equities are indefinite investment vehicles, the longest-term Treasury should be used.

Whatever you choose to use as the risk-free rate is not as important as staying consistent throughout your calculations. However, it is important that you choose a reasonable risk-free rate.

### Beta

Simply put, in finance, beta measures the correlated price volatility of an investment compared to a benchmark. The concept of beta can be more easily described through examples. For instance, if a stock has a beta of 2.00, it is twice as volatile as the benchmark to which it is compared. If the benchmark appreciates by 10%, the stock should rise by 20%. Needless to say, the opposite is also true. Furthermore, a beta of 1.00 indicates that the stock should be expected to move in the same direction and at the same magnitude as the benchmark.

Interestingly, betas have no upper or lower limit. The figure can be very high for highly volatile stocks. It can even be negative. A negative beta means that the investment should move in the opposite direction of the underlying benchmark. For instance, an inverse ETF (exchange-traded fund), or a short position, would have a negative beta.

The biggest drawback of beta is that it's only useful when calculated against a relevant benchmark. While the large-cap S&P 500 index is a commonly used index, it is composed of the 500 largest U.S. stocks. Therefore, it may not be appropriate when calculating the beta of a small-cap stock.

### Calculating the Treynor Ratio

Table 1 collects the components of the Treynor ratio for two sample companies: Pfizer (PFE) and Wynn Resorts Ltd. (WYNN).

Return information for the two companies is readily available at websites online. The average return shown in Table 1 is a historical average based on the returns from 2008 through year-to-date 2012, a period of almost five years.

For the risk-free rate, the previous Fundamental Focus column used the average monthly return of Treasury bills over a period of time. Here, we use the yield of a five-year Treasury note, which is provided at the U.S. Treasury Dept. website ([www.treasury.gov](http://www.treasury.gov)). The five-year yield is an annualized figure, which makes it comparable to the average annual return performance figures used for our example companies.

Table 1. Treynor Ratio Examples

	2012	2011	2010	2009	2008	Rp	Rf	Beta	TR ratio
Pfizer (PFE)	18.0	28.2	0.2	7.2	-16.5	7.4	0.7	0.71	0.095239
Wynn Resorts (WYNN)		10.9	12.7	92.9	47.3	-62.3	20.3	0.7	2.36
	0.083178								

Stock Investor Pro, AAI's fundamental stock screening and research database, was used to find the beta for the two companies. Stock Investor Pro calculates the beta using the S&P 500 index as the underlying benchmark.

The last column in Table 1 shows the calculated Treynor ratios for Pfizer and Wynn Resorts. Because the Treynor ratio simply measures return per unit of risk as measured by beta, it is appropriate to use the Treynor ratio to compare companies from two different industries.

### Interpreting the Ratio

As you can see, Wynn Resorts has a much higher average return over the past five years than Pfizer. Looking solely at return figures makes the choice very clear: One should invest in Wynn Resorts. However, the Treynor ratio paints a different story.

The Treynor ratio states that Pfizer provided a 9.5% return per unit of risk as measure by beta, while Wynn Resorts "only" provided an 8.3% return per unit of risk. Pfizer's beta of 0.71 means that it is about 71% as volatile as the S&P 500, while Wynn Resorts' beta of 2.36 indicates that the WYNN stock is more than twice as volatile as the S&P 500. This can easily be seen by the massive return volatility Wynn Resorts exhibits—down over 62% in 2008 but up over 90% in 2010. By comparison, Pfizer has been relatively stable, losing "only" 16.5% in 2008 when everything was down, yet up much less than Wynn Resorts in bull markets.

The Treynor ratio actually points to Pfizer generating a better risk-adjusted return. However, the Treynor ratios are close enough that investors choosing between these companies should base their decisions on their personal risk tolerance.

### Conclusion:

Like the Sharpe Ratio, the Treynor ratio is a relative measure of risk, so the number means nothing on its own. It is only useful when comparing two or more investments. In addition, beta has its own

weaknesses as a measure of volatility. Since beta is a measure of correlated volatility to the market, an investment may have a very low beta, even as low as zero, but still be highly volatile in price. If this is the case, the investment simply does not correlate with the underlying benchmark.

Although the Treynor ratio is a great tool to use for comparison purposes, it should be used in conjunction with other research methodologies. Be sure to exercise proper due diligence with any potential investment.

#### DEFINITION OF 'JENSEN'S MEASURE'

A risk-adjusted performance measure that represents the average return on a portfolio over and above that predicted by the capital asset pricing model (CAPM), given the portfolio's beta and the average market return. This is the portfolio's alpha. In fact, the concept is sometimes referred to as "Jensen's alpha." The basic idea is that to analyze the performance of an investment manager you must look not only at the overall return of a portfolio, but also at the risk of that portfolio. For example, if there are two mutual funds that both have a 12% return, a rational investor will want the fund that is less risky. Jensen's measure is one of the ways to help determine if a portfolio is earning the proper return for its level of risk. If the value is positive, then the portfolio is earning excess returns. In other words, a positive value for Jensen's alpha means a fund manager has "beat the market" with his or her stock picking skills. (Elaborate CAPM formula's component in detail as Jensen ratio components)

Jensen's Measure is calculated as:

$$\alpha_p = \bar{r}_p - [r_f + \beta_p(\bar{r}_m - r_f)]$$

Where:

$\bar{r}_p$  = Expected total portfolio return

$r_f$  = Risk free rate

$\beta_p$  = Beta of the portfolio

$\bar{r}_m$  = Expected market return

Jensen's alpha is a statistic that is commonly used in empirical finance to assess the marginal return associated with unit exposure to a given strategy. Generalizing the above definition to the multifactor setting, Jensen's alpha is a measure of the marginal return associated with an additional strategy that is not explained by existing factors.

We obtain the CAPM alpha if we consider excess market returns as the only factor. If we add in the Fama-French factors, we obtain the 3-factor alpha, and so on. If Jensen's alpha is significant and positive, then the strategy being considered has a history of generating returns on top of what would be expected based on other factors alone.

#### Sample Questions

1. What is portfolio Evaluation (2 marks)  
8 marks
1. Explain Sharpe performance model
2. Explain Treynor's measure in detail.  
15 Marks
1. Explain the portfolio evaluation models.
2. Explain Jensen's measure in detail.



## UNIT- 5

### **Mutual Funds:**

A mutual fund is a pool of money from numerous investors who wish to save or make money just like you. Investing in a mutual fund can be a lot easier than buying and selling individual stocks and bonds on your own. Investors can sell their shares when they want.

### **Features of mutual funds:**

**Mobilization of savings:** Mutual funds mobilizes funds by selling its shares popularly known as units this in turn encourages the household savings and investment.

**Reduces risk:** Mutual funds reduces risk associated with investment by going for better liquidity of units, professional management and diversification.

**Professional Management:** Each fund's investments are chosen and monitored by qualified professionals who use this money to create a portfolio. That portfolio could consist of stocks, bonds, money market instruments or a combination of those.

**Fund Ownership:** As an investor, you own shares of the mutual fund, not the individual securities. Mutual funds permit you to invest small amounts of money, however much you would like, but even so, you can benefit from being involved in a large pool of cash invested by other people. All shareholders share in the fund's gains and losses on an equal basis, proportionately to the amount they've invested.

**Diversification in Investment:** By investing in mutual funds, you could diversify your portfolio across a large number of securities so as to minimise risk. By spreading your money over numerous securities, which is what a mutual fund does, you need not worry about the fluctuation of the individual securities in the fund's portfolio.

**Provide Tax Benefits:** Investing in Mutual funds provides tax benefits under section 80c of Income Tax Act.

### **Types of mutual funds:**

Classification on the basis of operations/structure:

1. Open ended scheme
2. Close ended Scheme
3. Interval scheme

Classification on the basis of investment objectives:

1. Income Scheme
2. Growth Scheme
3. Balanced scheme

Classification on the basis Nature of investment:

1. Equity Fund
2. Debt Fund
  - Gilt fund
  - Income fund
  - STP (Short Term Plans)
  - Liquid Funds
  - Balance funds

Classification by Geography

1. Domestic Mutual Funds
2. Off Shore Schemes

Other Classification

1. Tax saving scheme
2. Sector Funds
3. Index funds
4. Money market Funds
5. Exchange Traded Funds (ETF)
6. Fund Of Fund
7. Gold ETF

## **Investor Life Cycle:**

The investor life cycle refers to the different stages of investment ownership, from the initial purchase, to the sale of the investment. Individual life cycle indicates the investment behaviour of investor over different ages of their life. Investment decision is based on the age, financial condition, future plans and risk characteristics of an individual. The assets allocation decisions are usually different at the various stages of the investor life cycle. Individual at different stages of investor life cycle can be the same age, but would still need to have different asset allocation strategies.

An investor passes through four different phases of life. These are:

- 1) Accumulation Phase: This phase is the earliest stage in an investor's life cycle where the investor is accumulating assets. There is long time horizon and often more risk can be accepted because there is more time to achieve objectives in this phase there can be short term need considered and the appropriate amount of investment and risk taken such as when a purchase is looming like cars, homes, furniture etc.
- 2) Consolidation Phase: This phase is a balance between growing and protecting one's investments. It usually begins during the middle of an investor's life, when children are nearing college age and the distance between the beginning of one's career and retirement are roughly equal. Under this phase outstanding debt would have been paid off or the very least funds to pay off these loans can be identified.

- 3) Spending Phase: This phase starts when an individual retire from job. Longer life expectancies can lead to long time horizons in this phase. According to some of the author this phase is one where individual enjoy the utility of the wealth they have created. Their overall portfolio is less risky or risk free. Risk tolerance tends to be significantly lower as asset fluctuations are less desirable.
- 4) Giving Phase: The gifting phase runs concurrent with the spending stage. This is where excess assets if any will be used to provide financial assistance to relatives and friends or even to charities. If individuals believe that they have enough extra funds to meet their current and future expenses, then they go for gifting money to their family members, friends and charitable trusts.

## **Personal Investment:**

Personal investing means putting your money to work for you. A person must learn how to invest money and make it work together for him. Intelligent investing is critical to long term financial well-being and pays higher dividends than simply saving money alone. Personal investing truly is personal. It's all about what makes an investor comfortable. All investor have different risk bearing capacity, according to their comfort level they would prefer different investment opportunities.

It includes:

- Maximizing the return on investment
- Controlling or minimizing the investment risk
- Saving the future or a major purchase
- Taking advantage of investment related tax benefits
- A customized plan to accumulate personal wealth
- Investing in long term care or life insurance
- Evaluating current investment to make sure they still fit one's needs.
- Estate planning.

## **Personal Finance:**

Personal finance defines all financial decisions and activities of an individual or household, including budgeting, insurance, mortgage planning savings and retirement planning. Personal finance is an individual activity that depends largely on one's earnings, living requirements and individual goals and desires.

Personal financial planning generally involves analysing the current financial position, predicting short-term and long term need and executing a plan to fulfil those needs with in individual financial constraints.

Personal financial planning process:

- 1) Determine current financial situation
- 2) Develop financial goals
- 3) Identify alternative course of action

- 4) Evaluate alternatives
- 5) Create and implement a financial plan
- 6) Re-evaluate and revise the financial plan.

## **International Investing:**

The basic objective of a portfolio manager, domestic or international, is to maximize a portfolio's rate of return for a given level of risk or to minimize risk for a given rate of return. Allocating funds at global level is called international investing.

The major benefits/ Advantages of global investing are as follows:

- 1) Diversification
- 2) Currency valuation benefits
- 3) Tax benefits
- 4) Higher returns
- 5) A powerful engine for economic growth
- 6) Decreased risk

International portfolio investment:

1. International equity investment
2. International bond investing
3. Global mutual funds
4. ADRs & GDRs
5. Foreign Bonds
6. Euro Bonds
7. Foreign currency convertible bonds

Challenges to International Investing:

- I. Exchange rate fluctuation
- II. Liquidity challenge
- III. Dramatic changes in market value
- IV. Information scarcity
- V. Legal remedial action limited
- VI. Managing diverse market operations

Emerging Opportunities for international investment:

Emergence of new fund classes: The new asset classes are being evolved in the international markets. The new products involve greater client engagement which will match the client investment needs with the value creation requirements. The new innovations includes private investment assets and small and less scalable opportunities with value orientation.

Opportunities in emerging and growth markets:

Emerging economies are expected to continue to be the main driver of the global economic growth. The emerging economies are providing for new investment opportunities and assets classes for international investors. Emerging markets equities and fixed income products rank among the most rewarding financial innovations.

New techniques of funds allocation:

New techniques enable greater access to a wider variety of investment products to larger investment client. This technique involves greater variety of publicly available products with new innovation risk-return profiles and participation schemes for private investments across multiple industries. Example mutual funds using hedge funds to enhance returns, capital protection funds, enhanced/ variable annuities.

Sustainable funds management:

Trends in financial innovation now enable greater emphasis on funds allocation based on sustainability and environmental principles. Financial innovation in sustainable investments allows fund manager to prosper by identifying and responding to opportunities created by competitive advantages in sustainability.