**INVESTMENT ANALYSIS AND PORTFOLIO MANAGEMENT**

**CHAPTER-I**

**INTRODUCTION TO INVESTMENT**

***Investment:***

 In the broad sense, an investment is sacrifice of current money or other resources for future benefits. Investment may be defined as commitment of funds by expecting positive rate of return in future.

 The two key aspects of any investment are time and risk. In government bonds, the time element is dominant attribute. In stock options, the risk element is the dominant attribute. In equity shares both time and risk are dominant and important.

The term **investing** could be associated with the different activities, but the common target in these

activities are to employ the money during the time period seeking to enhance the investor’s wealth.

Investment | 1.Real investment: involve some kind of tangible asset, such as land, machinery etc.

Assets | 2.Financial investment: involves contracts in paper or electronic form such as share, bond

 **Investment analysis**: Investment analysis is the process of evaluating an investment for profitability and risk, ultimately has the purpose of measuring how the given investment is a good fit for a portfolio.

**Security:** A legal contract representing the right to receive future benefits under a stated set of conditions. A piece of paper defining the properly rights held by the owner is the security.

**Portfolio**: Portfolio is a group of financial assets such as shares, bonds, debt instruments etc.,

A Portfolio is planned to stabilize the risk of non-performance of various pools of investment.

A group of investments, ideally, the investments should have different patterns of returns overtime.

**Portfolio management** guides the investor in a method of selecting the best available securities that

Will provide the expected rate of return for any given degree of risk and also to reduce the risk, it is a

strategic decision which is addressed by the top-level managers.

Portfolio management is a dynamic function, which evaluating and revising the portfolio in the stated objectives of the investors.

**Objectives of investment**:

1. Return requirements- Maximize the expected rate of return subject to the risk exposure being held within a certain limit.
2. Income (b) Growth and (c)Stability
3. Risk tolerance- Minimize the risk, without sacrificing a certain expected rate of return

**Constraints and preferences of investment**

(a)Liquidity (b) Investment horizon (c) Taxes (d) Regulations and (e) unique circumstances

**Objectives of portfolio management**

(1)Security of principal investment (2) Consistency of return (3) Capital growth (4) Liquidity

(5) Marketability (6) Diversification and (7) Favorable tax status

**Functions of portfolio management**

1. Setting investment policy (b) Performing security analysis (c) Constructing a portfolio
2. Revising the portfolio and (e) Evaluating the portfolio

**Investment Avenues or Alternatives**

A bewildering range of investment alternatives are available, they fall into two broad categories, viz, financial assets and real assets. Financial assets are paper (or electronic) claim on some issues such as the government or a corporate body. Real assets are represented by tangible assets.

 **Deposits Government saving schemes**

 - Bank deposits - national saving certificate

 - Post office deposits -public provident fund

 - Company fixed deposits

 **Money market instruments Bonds or debentures**

-Treasury bills -PSU bonds

-Certificate of deposits -Govt., bonds

-Commercial papers - Debentures of companies

 **Equity Shares Mutual Funds**

 -Blue chip companies equity shares -Equity schemes

 - Growth equity shares -Debt schemes

 -Cyclical equity shares -Balance schemes

 **Insurance products Retirement products**

 -Endowment policy -EPF

 - Term assurance -Pension scheme

 **Real estate Precious objects**

 -Agricultural land -Gold

 -Commercial complex -Silver

 -Apartments - Precious stones

 - Resorts - Art objects

 **Financial Derivatives**

 - Forward contracts

 -Futures contracts

 -Options

**Criteria for evaluation of Investment Avenue**, the following are relevant:

1. Rate of return (2) Risk (3) Marketability (4) Tax shelter and (5) Convenience

1. **Rate of Return**: Annual Income + [Ending Price – Beginning Price]/Beginning Price

 It is helpful the rate of return into two components, viz., current yield and capital gain/loss as follows:

 Rate of Return= Annual Income/ + [Ending Price – Beginning Price]/

 Beginning Price Beginning Price

 (OR)

 = Current Yield + Capital Gain (+)/Loss (-)

2. **Risk**: it refers to the possibility that the actual outcome of an investment will differ from its expected outcome. The risk of an investment refers to the variability of its rate of return. The measures commonly used in finance for risk are;

(i)Variance: this is the mean of the squared deviation of individual returns around their average value.

(ii)Standard deviation: this is the square root of variance.

(iii)Beta: this reflects how volatile the return from an investment relative to the market swings.

3. **Marketability**: an investment is highly marketable (or) liquid if; it can be transacted quickly, the transaction cost is low, and the price change between two successive transactions is negligible.

4. **Tax shelter**: some investments provide tax benefits; tax benefits are (i) initial tax benefit (ii) continuing tax benefit (iii) terminal tax benefit.

5. **Convenience**: the ease with which the investment can be made and looked after. Deposit in a savings bank account can be made readily and that doesn’t require any maintenance; purchase of property that involves a lot of procedures.

**Portfolio Management Process**

Investment management also referred to as portfolio management is a complex process or activity, which may be broken down into the following steps. Interrelationship among various phases (steps) of portfolio management

1. **Specification of investment objectives and constraints:** The typical objectives sought by investors are current income, capital appreciation and safety of principal. The constraints arising from liquidity, time horizon, tax, and special circumstances must be identified.

2. **Quantification of capital market expectation**: to address the asset- mix question you need relatively L/T estimates of returns and risk of various asset classes. Put differently you have to quantify capital market expectations.

3. **Choice of the asset mix (or) asset allocation**: the most important decision in portfolio management is the asset mix decision. Very broadly, this is concerned with the proportions of stocks and bonds in the portfolio. The appropriate stock-bond mix depends on mainly on the risk tolerance and investment horizon of the investor.

4. **Formulation of portfolio strategy**: once a certain asset mix is chosen, an appropriate portfolio strategy has to be hammered out. Two broad choices are available :(A) An active portfolio strategy(B) A passive portfolio strategy. **An active portfolio strategy**: strives to earn superior risk adjusted returns by resorting to market timing, or sector rotation or security selection, or some coordination of there. **A passive portfolio strategy:** involves holding a broadly diversified portfolio and maintaining a predetermined level of risk exposure.

5. **Selection of securities**: generally investors pursue an active stance with respect to security selection. For stock selection, investors commonly go by fundamental analysis and /or technical analysis. The factors that are considered in selecting bonds or fixed income instruments are yield to maturity, credit rating, and term to maturity, tax shelter and liquidity.

6. **Portfolio execution**: this is the phase of portfolio management which is concerned with implementing the portfolio plan by buying and/or selling specified securities in given amounts.

7. **Portfolio revision:** the value of portfolio as well as its composition; the relative proportions of stock and bond components may change as stocks and bonds fluctuate. In response to such changes, periodic re-balancing of the portfolio is required.

8. **Portfolio evaluation:** the performance of portfolio should be evaluated periodically. The key dimensions of performance evaluation are risk and return and the key issue is whether the portfolio return is commensurate with its risk exposure. Such a review may provide useful feedback to improve the quality of the portfolio management process on continuing basis.

The first four phases may be collectively referred to as **investment policy and strategy**.

The last four phases may be collectively referred to as **implementation and review.**

**Qualities for successful investment**

The game of investment, as any other game requires certain qualities and virtues on the part of the investors, to be successful in the long run.

The qualities for successful investing are:

(a) **Contrary thinking**: investors tend to have a herd mentality and follow the crowd. two factors explain this behavior;

(i) There is a natural desire on the part of human beings to be part of the group.

(ii) In a complex field like investment, most people do not have enough confidence in their own judgment.

This impels them to substitute others opinions for their own. The suggestions not to cultivate contrary thinking–be literally interpreted to mean that you should always go against the prevailing market sentiment, if you do so, you will miss many opportunities presented by the market swings.

Avoid stocks which have a high price earnings ratio. Recognizing that in the world of investment, many people have the temptation to play the wrong game. Sell to the optimists and buy from the pessimists.

(b) **Patience**: as a virtue, patience is strongly distributed among investors. Some investors, especially some young investors with all time in the world to reap the benefits of patient and diligent investing, seem to be the most impatient. They look for instantaneous results and often check prices on a daily basis. Old investors display a high degree of patience even though they have little chance of enjoying the fruits of patience.

(c) **Composure**: the ability to maintain composure is also a virtue required to be a successful investor. Conscious of this as an investor you should try to

(i) Understand your own impulses and instincts towards greed and fear.

(ii) Surmount the emotions that can wrap your judgment and

(iii) Capitalize on the greed and fear of other investors.

Maintain a certain distance from the market place rely more on hard numbers and less on judgment.

(d) **Flexibility and openness**: Macro-economic conditions change, technologies and industries emerge, consumer taste and preferences shifts, investment habits alter and soon all these developments have a bearing on industry and company prospects on the hand and investor expectations on the other.

The facts of the existing situation enter in a sense disproportionately into the formation of our long term expectations, our usual practices being to take the existing situation and project if into the future modified only to the extent that we have more or less definite reasons for expecting a change.

Flexibility of thinking and willingness to change is required for the successful investor.

An open-mind, not blocked by prejudice and biases is crucial for success in investing conscious and deliberate efforts should be made to re-examine old promises, assimilate new information, and cultivate mental flexibility.

**(**e**) Decisiveness**: decisiveness doesn’t mean rashness, rather it refers to an ability to quickly weigh and balance a variety of factors form a basic judgment and act promptly. It reflects the ability to take decisions, after doing the necessary homework of course, without being overwhelmed by uncertainties characterizing the investment situation.

**Investment Company:**

 An investment company is a company whose main business is holding and managing

securities for investment purpose. Investment companies invest money on behalf of their clients who, in return, share in profits and losses.

 An investment company invests the money it receives from investors on a collective basis, and each investor share in the profits and losses in proportion to the investor’s interest in the investment company.

 A corporation or trust engaged in the business of investing the pooled capital of investors in financial securities. These are also known as fund companies or fund sponsors.

 Investment companies are business entities, both privately and publicly owned, that manage, sell and market fund to the public. They typically offer investors a variety of funds and investment services which include portfolio management, recordkeeping, custodial, legal, accounting and tax management services.

 The performance of the investment company will be based on the performance of the securities and other assets that the investment company owns.

Investment companies

* + Financial intermediaries that collect funds from individual investors and invest those funds in a potentially wide range of securities or other asstes

 - Pooling of assets is the key idea behind investment comapnies

 - Collecting funds from individuals

 - Investing in a big portfolio

-How it works

 Investment Company forms portfolio

 Sells investors shares in the portfolio

 Investors have claim to the portfolio, proportional to their number of shares

These companies perform several important functions for investors:

* + Administration & record keeping: capital gains, dividends and so on
	+ Diversification & divisibility: i.e. by pooling of assets
	+ Professional management: security analysts etc.
	+ Reduced transaction costs

**Investment companies are three types:**

1. Mutual Funds (legally known as open-end companies)
2. Closed end funds (legally known as closed-end companies)
3. UTIs (legally known as unit investment trust)

**Securities Market:**

A securities market is a market where securities are traded either on physical or electronic exchanges.

 Securities market is a component of the wider financial market where securities can be bought and sold between subjects of the economy, on the basis of demand and supply.

 Securities markets encompasses equity markets, bond markets and derivatives markets where prices can be determined and participants both professional and non-professionals can meet.

 Securities markets are generally divided between stock markets and bond markets.

A Securities market is a system of interconnection between all participants (professional and non-professional) that provide effective conditions:

\*to attract new capital by means of issuance new securities

\*to transfer real asset into financial asset

\*to invest money for short-term or long-term with the aim of deriving profitability

**Functions of securities market:**

1. Commercial function to derive profit from operations on this market

2. Price determination- demand and supply balancing, the continuous process of price movements, guarantees to state correct price for each security so that market corrects mispriced securities

3. Information function- provides all participants with market information about participants and trade instruments

4. Regulation function-creates the rule of trade, priorities determination

Securities markets are divided into two categories: primary and secondary.

 **The primary market** is used for new securities. Companies use this market when they have securities they want to sell for the first time. The securities are created in the primary market. Investors purchase the securities directly from the issuing companies. The selling of stock for the first time to the public is called the initial public offering (IPO).

 **Secondary markets** are used to trade securities that already exist. A secondary market is sometimes called the aftermarket. Securities are usually traded in secondary markets once they've been issued in the primary market. Secondary markets are the ones most investors buy and sell in.

**Organized stock exchange:**

An organized stock exchange is considered an auction market. Buyers and sellers compete for the best prices. Stocks are sold to the highest bidder.

Only members of an organized exchange may trade on it. You must use a broker if you want to use an organized exchange. The trade is executed if the brokerage firm is a member. If not, the order has to be sent to another firm that is a member.

**Over-the-counter (OTC) market:**

An over-the-counter (OTC) market allows investors to trade securities without using organized stock exchanges. The trades are made by telephone or over an electronic network. There's no physical location.

An OTC market is considered a dealer negotiated market. Brokers and dealers negotiate among themselves on prices for securities.

**Third & Fourth Markets:**

Most investors don't need to concern themselves with third and fourth markets. A third market is the over-the-counter trading of securities listed on an organized exchange by investors who aren't listed with a stock exchange. The trading usually occurs between brokers and large institutional investors.

The fourth market is the over-the-counter trading of securities listed on an organized exchange between institutions. Brokers aren't needed for this market. Institutions can trade large blocks of securities while avoiding brokerage fees.

**Futures & Option Markets:**

A futures and option market is a market that allows investors to buy and sell futures contracts. A futures contract is an agreement to purchase or sell a specific commodity for a specific price in the future. Investors will use futures contracts to help manage their risk.

**INVESTMENT ANALYSIS AND PORTFOLIO MANAGEMENT**

**CHAPTER-II**

**Risk and Return**

**Meaning of Return**

A major purpose of investment is to set a return or income on the funds invested. On a bond an investor expects to receive interest. On a stock, dividends may be anticipated. The investor may expect capital gains from some investments and rental income from house property. Return may take several forms.

In finance, return is a profit on an investment. It comprises any change in value and interest or dividends or other such cash flows which the investor receives from the investment. It may be measured either in absolute terms (e.g., dollars) or as a percentage of the amount invested. The latter is also called the holding period return. A loss instead of a profit is described as a negative return.

Return is the primary motivating force that drives investment. It represents the reward for undertaking investment.

The return of an investment consists of two components:

Current return: The first component that often comes to mind when one is thinking about return is the periodic cash flow (income), such as dividend or interest, generated by the investment. Current return is measured as the periodic income in relation to the beginning price of the investment.

Capital return: The second component of return is reflected in the price change called the capital return, it is simply the price appreciation or depreciation divided by the beginning price of the asset.

The total return for any security is defined as:

 **Total return=Current return + Capital return.**

 **Rate of return** is a profit on an investment over a period of time, expressed as a proportion of the original investment.The time period is typically a year, in which case the rate of return is referred to as *annual return*.

The rate of return on an investment for a period, usually a period of one year is defined as follows;

**Rate of return= Annual income + [Ending price- Beginning price] ÷ Beginning price**

It is helpful to split the rate of return into two components;

(Annual income ÷ Beginning price) **+** [ (Ending price – Beginning price) ÷ Beginning price ]

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 Current yield + Capital gain/Loss (yield)

**Meaning of Risk**

Risk and uncertainty are an integral part of an investment decision. Technically risk can be defined as a situation where the possible consequences of the decision that is to be taken are known. Uncertainty is generally defined to apply to situations where the probabilities cannot be estimated. However, risk and uncertainty are used interchangeably.r ¯ g e o m e t r i c = ( ∏ i = 1 n ( 1 + r i ) ) 1 n − 1 = ∏ i = 1 n ( 1 + r i ) n − 1 {\displaystyle {\bar {r}}\_{\mathrm {geometric} }=(\prod \_{i=1}^{n}(1+r\_{i}))^{\frac {1}{n}}-1={\sqrt[{n}]{\prod \_{i=1}^{n}(1+r\_{i})}}-1}

The risk of an investment refers to the variability of its rate of return. Risk refers to the possibility that the actual outcomes of an investment will differ from its expected outcome.

The measures used for risk commonly in Finance are as follows:

**Variance**=**s2 =** This is the mean of the squares of deviations of individual returns around their average value.

**Standard deviation=s**=This is square root of variance

**Beta=β=** This reflects how volatile is the return from an investment relative to market swings.

 Variance may be calculated by using the following formula:

 Variance=s2**= ∑(R-ER)2 /N-1**

Note; n-1 not n. This is done technically to correct for the loss of one degree of freedom.

**TYPES OF RISKS**

Risk can be defined as the probability that the expected return from the security will not materialize. Every investment involves uncertainties that make future investment returns risk-prone. Uncertainties could be due to the political, economic and industry factors.

 Risk could be systematic in future depending upon its source. Systematic risk is for the market as a whole, while unsystematic risk is specific to an industry or the company individually.

 The first three risk factors discussed below are systematic in nature and the rest are unsystematic. Political risk could be categorized depending on whether it affects the market as whole, or just a particular industry.

**Types of Investment Risk**: Modern investment analysis categorizes the traditional sources of risk causing variability in returns into two general types: those that are pervasive in nature, such as market risk or interest rate risk, and those that are specific to a particular security issue, such as business or financial risk. Therefore, we must consider these two categories of total risk. The following discussion introduces these terms. Dividing total risk into its two components, a general (market) component and a specific (issuer) component, we have systematic risk and non-systematic risk, which are additive:

Total risk = General risk + Specific risk

 = Market risk + Issuer risk

 = Systematic risk + Non-systematic risk

**CLASSIFICATION OF RISKS**

**Systematic risk Unsystematic risk**

**Uncontrollable risk**   **Controllable risk**

**Non-diversifiable risk Diversifiable risk**

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**Economic Industry risk**

**Sociological**

**Political Unique risks**

**Legal Labor strikes**

 **Weak marginal policies**

 **Consumer preferences**

**Risk of securities market**

**External environmental risk Internal risks**

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**Market risk \* Business risk**

**Interest rate risk \* Financial risk**

**Purchasing power risk**

**Systematic Risk**: An investor can construct a diversified portfolio and eliminate part of the total risk, the diversifiable or non-market part. What is left is the non- diversifiable portion or the market risk. Variability in a security's total returns that is directly associated with overall movements in the general market or economy is called systematic (market) risk. Virtually all securities have some systematic risk, whether bonds or stocks, because systematic risk directly encompasses interest rate, market, and inflation risks. The investor cannot escape this part of the risk because no matter how well he or she diversifies, the risk of the overall market cannot be avoided. If the stock market declines sharply, most stocks will be adversely affected; if it rises strongly, as in the last few months of 1982, most stocks will appreciate in value. These movements occur regardless of what any single investor does. Clearly, market risk is critical to all investors.

**Non-systematic Risk**: The variability in a security's total returns not related to overall market variability is called the non- systematic (non-market) risk. This risk is unique to a particular security and is associated with such factors as business and financial risk as well as liquidity risk. Although all securities tend to have some non-systematic risk, it is generally connected with common stocks.

 Remember the difference: Systematic (market) risk is attributable to broad macro factors affecting all securities. Non-systematic (non-market) risk is attributable to factors unique to a security. Different type’s systematic and unsystematic risk is explained as under:

 **Market Risk**: The variability in a security's returns resulting from fluctuations in the aggregate market is known as market risk. All securities are exposed to market risk including recessions, wars, structural changes in the economy, tax law changes and even changes in consumer preferences. Market risk is sometimes used synonymously with systematic risk.

 **Interest Rate Risk**: The variability in a security's return resulting from changes in the level of interest rates is referred to as interest rate risk. Such changes generally affect securities inversely; that is, other things being equal, security prices move inversely to interest rates. The reason for this movement is tied up with the valuation of securities. Interest rate risk affects bonds more directly than common stocks and is a major risk that all bondholders face. As interest rates change, bond prices change in the opposite direction.

 **Purchasing Power Risk**: A factor affecting all securities is purchasing power risk, also known as inflation risk. This is the possibility that the purchasing power of invested dollars will decline. With uncertain inflation, the real (inflation-adjusted) return involves risk even if the nominal return is safe (e.g., a Treasury bond). This risk is related to interest rate risk, since interest rates generally rise as inflation increases, because lenders demand additional inflation premiums to compensate for the loss of purchasing power.

 **Regulation Risk**: Some investments can be relatively attractive to other investments because of certain regulations or tax laws that give them an advantage of some kind. Municipal bonds, for example, pay interest that is exempt from local, state and federal taxation. As a result of that special tax exemption, municipals can price bonds to yield a lower interest rate since the net after-tax yield may still make them attractive to investors. The risk of a regulatory change that could adversely affect the stature of an investment is a real danger. In 1987, tax law changes dramatically lessened the attractiveness of many existing limited partnerships that relied upon special tax considerations as part of their total return. Prices for many limited partnerships tumbled when investors were left with different securities, in effect, than what they originally bargained for. To make matters worse, there was no extensive secondary market for these illiquid securities and many investors found themselves unable to sell those securities at anything but 'fire sale' prices if at all.

 **Business Risk**: The risk of doing business in a particular industry or environment is called business risk. For example, as one of the largest steel producers, U.S. Steel faces unique problems. Similarly, General Motors faces unique problems as a result of such developments as the global oil situation and Japanese imports.

 **Reinvestment Risk**: The YTM calculation assumes that the investor reinvests all coupons received from a bond at a rate equal to the computed YTM on that bond, thereby earning interest on interest over the life of the bond at the computed YTM rate. In effect, this calculation assumes that the reinvestment rate is the yield to maturity. If the investor spends the coupons, or reinvests them at a rate different from the assumed reinvestment rate of 10%, the realized yield that will actually be earned at the termination of the investment in the bond will differ from the promised YTM. And, in fact, coupons almost always will be reinvested at rates higher or lower than the computed YTM, resulting in a realized yield that differs from the promised yield. This gives rise to reinvestment rate risk. This interest-on-interest concept significantly affects the potential total dollar return. Its exact impact is a function of coupon and time to maturity, with reinvestment becoming more important as either coupon or time to maturity, or both, rise. Specifically: (a) Holding everything else constant, the longer the maturity of a bond, the greater the reinvestment risks. (b) Holding everything else constant, the higher the coupon rate, the greater the dependence of the total dollar returns from the bond on the reinvestment of the coupon payments. Let’s look at realized yields under different assumed reinvestment rates for a 10% non-callable 20-year bond purchased at face value. If the reinvestment rate exactly equals the YTM of 10%, the investor would realize a 10% compound return when the bond is held to maturity, with $4,040 of the total dollar return from the bond attributable to interest on interest. At a 12% reinvestment rate, the investor would realize an 11.14% compound return, with almost 75% of the total return coming from interest-on-interest ($5,738/$7,738). With no reinvestment of coupons (spending them as received), the investor would achieve only a 5.57% return. In all cases, the bond is held to maturity. Clearly, the reinvestment portion of the YTM concept is critical. In fact, for long-term bonds the interest-on-interest component of the total realized yield may account for more than three-fourths of the bond's total dollar return.

 **Bull-Bear Market Risk**: This risk arises from the variability in the market returns resulting from alternating bull and bear market forces. When security index rises fairly consistently from a low point, called a trough, over a period of time, this upward trend is called a bull market. The bull market ends when the market index reaches a peak and starts a downward trend. The period during which the market declines to the next trough is called a bear market.

 **Management Risk**: Management, all said and done, is made up of people who are mortal, fallible and capable of making a mistake or a poor decision. Errors made by the management can harm those who invested in their firms. Forecasting errors is difficult work and may not be worth the effort and, as a result, imparts a needlessly skeptical outlook. An agent-principal relationship exists when the shareholder owners delegate the day-to-day decision-making authority to managers who are hired employees rather than substantial owners. This theory suggests that owners will work harder to maximize the value of the company than employees will. Various researches in the field indicate that investors can reduce their losses to difficult-to-analyze management errors by buying shares in those corporations in which the executives have significant equity investments.

 **Default Risk**: It is that portion of an investment's total risk that results from changes in the financial integrity of the investment. For example, when a company issues securities moves either further away from bankruptcy or closer to it, these changes in the firm's financial integrity will be reflected in the market price of its securities. The variability of return that investors experience, as a result of changes in the credit worthiness of a firm in which they invested, is their default risk. Almost all the losses suffered by investors as a result of default risk are not the result of actual defaults and/or bankruptcies. Investor losses from default risk usually result from security prices falling as the financial integrity of a corporation's weakness - market prices of the troubled firm's securities will already have declined to near zero. However, this is not always the case - 'creative' accounting practices in firms like Enron, WorldCom, Arthur Anderson and Computer Associates may maintain quoted prices of stock even as the company's net worth gets completely eroded. Thus, the bankruptcy losses would be only a small part of the total losses resulting from the process of financial deterioration.

 **International Risk**: International risk can include both country risk and exchange rate risk.

**Exchange Rate Risk**: All investors who invest internationally in today's increasingly global investment arena face the prospect of uncertainty in the returns after they convert the foreign gains back to their own currency. Unlike the past, when most US investors ignored international investing alternatives, investors today must recognize and understand exchange rate risk, which can be defined as the variability in returns on securities caused by currency fluctuations. Exchange rate risk is sometimes called currency risk. For example, a US investor who buys a German stock denominated in marks (German currency), must ultimately convert the returns from this stock back to dollars. If the exchange rate has moved against the investor, losses from these exchange rate movements can partially or totally negate the original return earned. Obviously, US investors who invest only in US stocks on US markets do not face this risk, but in today's global environment where investors increasingly consider alternatives from other countries, this factor has become important. Currency risk affects international mutual funds, global mutual funds, closed-end single country funds, American Depository Receipts, foreign stocks, and foreign bonds.

**Country Risk**: Country risk, also referred to as political risk, is an important risk for investors today. With more investors investing internationally, both directly and indirectly, the political and therefore economic stability and viability of a country's economy need to be considered. The United States has the lowest country risk, and other countries can be judged on a relative basis using the United States as a benchmark. Examples of countries that needed careful monitoring in the 1990s because of country risk included the former Soviet Union and Yugoslavia, China, Hong Kong, and South Africa.

 **Liquidity Risk**: Liquidity risk is the risk associated with the particular secondary market in which a security trades. An investment that can be bought or sold quickly and without significant price concession is considered liquid. The more uncertainty about the time element and the price concession, the greater the liquidity risk. A Treasury bill has little or no liquidity risk, whereas a small OTC stock may have substantial liquidity risk. Liquid Assets Risk: It is that portion of an asset's total variability of return which results from price discounts given or sales concessions paid in order to sell the asset without delay. Perfectly liquid assets are highly marketable and suffer no liquidation costs. Illiquid assets are not readily marketable and suffer no liquidation costs. Either price discounts must be given or sales commissions must be paid, or the seller must incur both the costs, in order to find a new investor for an illiquid asset. The more illiquid the asset is, the larger the price discounts or the commissions that must be paid to dispose of the assets.

 **Political Risk**: It arises from the exploitation of a politically weak group for the benefit of a politically strong group, with the efforts of various groups to improve their relative positions increasing the variability of return from the affected assets. Regardless of whether the changes that cause political risk are sought by political or by economic interests, the resulting variability of return is called political risk, if it is accomplished through legislative, judicial or administrative branches of the government. Domestic political risk arises from changes in environmental regulations, zoning requirements, fees, licenses, and most frequently, taxes. Taxes could be both direct and indirect. Some types of securities and certain categories of investors enjoy a privileged tax status. International political risk takes the form of expropriation of non-residents' assets, foreign exchange controls that won't let foreign investors withdraw their funds, disadvantageous tax and tariff treatments, requirements that non-residents investors give partial ownership to local residents, and un-reimbursed destruction of foreign owned assets by hostile residents of the foreign country.

**Industry Risk**: An industry may be viewed as group of companies that compete with each other to market a homogeneous product. Industry risk is that portion of an investment's total variability of return caused by events that affect the products and firms that make up an industry. For example, commodity prices going up or down will affect all the commodity producers, though not equally. The stage of the industry's life cycle, international tariffs and/or quotas on the products produced by an industry, product/industry related taxes (e.g. cigarettes), industry-wide labor union problems, environmental restrictions, raw material 6 0 Security Analysis and Portfolio Management availability, and similar factors interact with and affect all the firms in an industry simultaneously. As a result of these common features, the prices of the securities issued by the competing firms tend to rise and fall together. These risk factors do not make up an exhaustive list, but are merely representative of the major classifications involved. All the uncertainties taken together make up the total risk, or the total variability of return.

**Chapter-3**

**Fixed income securities**

A debenture is a legal document containing an acknowledgement of indebtedness by a company. It contains a promise to pay a stated rate of interest for a defined period and then to repay the principal at a given date of maturity.

 In short, a debenture is a formal legal evidence of debt and is termed as the senior securities of a company.

 Unlike equity holders, the bond investor does not share in the growth of a company to any appreciable extent. Thus, although serious losses can accrue to bond holders if a company suffers financial reverses, they cannot profit to any significant degree by a spectacular improvement in the company's position. It is a case of heads they lose and tails they cannot win. Therefore, their primary role in an investment portfolio is to provide continuity of income under all reasonably conceivable economic conditions.

**Bond Features:**

 **Indenture**: The indenture is a long, complicated legal instrument containing the restrictions,pledges and promises of the contract. Bond indenture involves three parties. The firstparty is the debtor corporation that borrows the money, promises to pay interest, andpromises to repay the principal borrowed.

 **Maturities**: Maturities vary widely. Bonds are usually grouped by their maturity classes.

**Interest Payments**: Bond interest is usually paid semi-annually, though annual paymentsare also popular. The method of payment depends upon whether the bond is a coupon(bearer) or registered bond.

**Call Feature**: Most modern corporate bonds are callable at the discretion of the issuer. This gives the issuing company the right to recall a bond before it reaches maturity.

**Reasons for Issuing Bonds**

To Reduce the Cost of Capital: Bonds are the cheapest source of financing.

To Widen the Sources of Funds: By issuing bonds, the corporation can attract funds from individual investors and especially from those investing institutions that are reluctant or not permitted to purchase equity shares.

To Preserve Control: An increase in debt does not diminish the voting power of present owners, since bonds ordinarily carry no voting right.

To Gain the Benefit of Leverage: The presence of debt and/or preference shares in the company's financial structure means that it is using financial leverage. When financial leverage is used, changes in Earnings before Interest and Tax (EBIT) translate into the larger changes in earnings per share.

To Effect Tax Saving: Unlike dividends on equity, the interest on bonds is deductible in figuring up corporate income for tax purposes. Hence, the EPS increases if the financing is through bonds rather than with preference or equity shares.

**Types of Bonds**

**Convertible and Non-Convertible Bonds**: Convertible bonds can be one of the finest holdings for the investor looking for both appreciation of investment and income of bond. A convertible bond is a cross between a bond and a stock. The holder can at his option, convert the bond into a predetermined number of shares of common stock at a predetermined price.

**Collateral Trust Bonds**: Instead of being secured by a pledge of tangible property, as are mortgage bonds, collateral trust issues are secured by a pledge of intangibles, usually in the form of stocks and bonds of corporation. Collateral trust issues are, thus, secured by (1) shares, representing ownership in corporation, (2) bonds, representing the indirect pledge of assets, or a combination of both. Usually, the pledged securities are those of other corporations.

**Income Bonds**: Income bonds are bonds on which the payment of interest is mandatory only to the extent of current earnings. If earnings are sufficient to pay only a portion of the interest, that portion usually is required to be paid, but if the corporation is able to pay the unearned balance out of its cash resources, it is of course free to do so.

**Redeemable and Irredeemable Bonds**: A redeemable debenture is a bond, which has been issued for a certain period on the expiry of which its holder will be repaid the amount thereof, with or without premium. A bond without the aforesaid redemption period is termed as an irredeemable debenture. These may be repaid either in the event of the winding-up of company or the happening of certain specified uncertain or contingent events.

**Participating Bonds**: Companies with poor credit positions issue participating bonds. They have a guaranteed rate of interest, but may also participate in earnings up to an additional specified percentage.

**Sinking Fund Bonds**: Sinking fund bonds arise when the company decides to retire its bond issue systematically by setting aside a certain amount each year for the purpose. The payment, usually fixed annual rupees amount or percentage installment, is made to the sinking fund agent who is usually the trustee.

**Serial Bonds**: Like sinking fund bonds, serial bonds are not special types of bonds but just names given to describe the method of repayment. Thus, any bond can be a serial bond by merely specifying it in the indenture.

**Mortgage or Secured Bonds**: The term mortgage generally refers to a lien on real property or buildings. Mortgage bonds may be open-end, close-end, and limited open-end. An open-end mortgage means that a corporation under the mortgage may issue additional bonds. But the open-end mortgage indenture usually provides that the corporation can issue more bonds only if the earnings or additional security obtained by selling the new securities meet certain tests of earnings and asset coverage.

BOND VALUATION

Debt securities issued by governments, government and quasi-government organizations, and private business firms are fixed income securities. Bonds and debentures are the most common examples.

The intrinsic value of bond or debenture is equal to the present value of its expected cash flows. The coupon interest payments, and the principal repayment are known and the present value is determined by discounting these future payments from the issuer at an appropriate discount rate or market yield. The usual present value calculations are made with the help of the following equation.

Where PV = the present value of the security today (i.e., time period zero)

C = coupons or interest payments per time period ’t’

TV = the terminal value repayable at maturity; this could be at par, premium, or even at discount (in extraordinary cases)

 r = the appropriate discount rate or market yield

 n = the number of years to maturity

Illustration 1:

Consider a Rs. 1,000 bond issued with a maturity of five years at par to yield 10%. Interest is paid annually and the bond is newly issued.

Solution:

The value of the bond would be as follows:

PVA =

You should recognize that the present value of the bond viz., Rs. 1,000 estimated above is equal to the issue price because the bond was just been sold at par of Rs. 100. Now, consider another of Rs. 1,000 Bond B is issued ten years ago at a coupon at 6%.

The bond had a maturity period of ten years and as of today, therefore, five more years are left for final repayment at par. The current discount rate is 10 % as before. All other characteristics of Bond B are identical with Bond A.

It is obvious that the present value of Bond B will not be Rs. 1,000 because investors will not pay this price and agree to receive Rs. 60 per year as interest for the next five years when Bond A with similar characteristics provides annual interest payments of Rs. 100 for the five years. The present value of Bond B will be determined as:

PVA =

You will observe that the numerator of the PV equation will be given at the time of issuance of the bond or the nature. The maturity period, timing of interest is payments, and maturity value will also be specified. What should be determined is the denominator of the equation viz., the discount rate. You may notice that this comes with the same features. In other words, it is an opportunity cost. Thus, the discount rate incorporates the change of interest rates and reflects the current market yield for the issue. Should interest payments be semi-annual, the PV equation will have to be modified as follows: divide 'Ct' both end and by multiply 'n' by 2. The resultant equation will be:

**Chapter-4**

**Stock and equity valuation**

Equity shares are the main source of finance of a firm. It is issued to the general public. Equity share holders do not enjoy any preferential rights with regard to repayment of capital and dividend.

Equity share holders are entitled to residual income of the company but they enjoy the right to control the affairs of the business and all the shareholders collectively are the owners of the company.

**Meaning of equity share**: An equity share, commonly referred to as ordinary share also represents the form of fractional or part ownership in which a shareholder as a fractional owner under takes the maximum entrepreneurial risk associate with a business venture. The holders of such shares are members of the company and have voting rights.

Common stock is an equity investment that represents ownership of a firm, with full participation in its success or failure.

**Common Stock characteristics:**

1. They are permanent in nature.

2. Equity share holders are the actual owners of the company and they bear the highest risk.

3. Equity shares are transferable, i.e., ownership of equity shares can be transferred with or without consideration to other person.

4. Dividends payable to equity shares are an appropriate of profits.

5. Equity share holders do not get fixed rate of dividends.

6. Equity share holders have the right to control the affairs of the company.

7. The liability of equity share holders is limited to the extent of their investment.

**Advantages of investing in equity shares:**

 Capital appreciation- The stock price reflects the underlying fundamentals. Capital gains offer certain tax advantages.

Dividend payout- Companies can pay higher dividends and provide current cash flows to the investor.

Bonus shares- Enhance liquidity and ensure capital gains.

Right shares- Share holders may get additional shares for less than market price.If the equity share holder does not want to invest in that company he can sell his rights in the market.

Security for pledging-Capital appreciation of equity shares makes them good securities for borrowing from the financial institutions and banks.

**Advantages of equity shares**:

1. Equity shares are very liquid and can be easily sold in the capital market.

2. Equity shares have no fixed maturity date –it is permanent capital that does not have to be paid back.

3. In case of high profits, equity shareholders get dividend at higher rate.

4. Equity share can be sold more easily than debt. They appeal to certain investor groups because, (a) they typically carry a higher expected returns than do preferred stock or debt

 (b) provide investors with a better hedge against inflation than bonds

 (c) returns from capital gains on equity shares are not income so not taxed, at times

 at a lower rate.

5. Equity shares do not entail fixed charges like bonds and debentures.

**Disadvantages of equity shares:**

The sale of equity shares extends voting rights, or even control to the additional new shareholders who are brought in to the company

The use of debt enables the firm to acquire funds at a fixed cost, whereas the use of equity share means more share in the firms’ net profits.

The cost of underwriting and selling equity shares are usually higher than the cost of underwriting and selling preference shares or debt.

The sale of the new equity shares may be perceived by investors as a negative signal and hence may cause the share price to fall.

**Equity valuation**: is a complex procedure since there is no consistent definition regarding what constitutes the intrinsic value of a share. Different valuation approaches and models with different assumptions and implications are available to investors to assess the true worth of a share. The book value of equity per share is one factor that investors can use to determine whether a stock price is undervalued. Book value of equity per share is a ratio that divides common equity value by number of common stock outstanding.

**Common stock valuation** is different because earnings and dividend streams are uncertain as to the timing of receipt and the amount of the dividend. The value of a common stock at any moment in time can be thought of as the discounted values of a series of uncertain future dividends that may grow or decline at varying rates over time.

**Equity valuation could be classified in to the following categories:**

1. **Earnings valuation:** The most common way to value a company is to use its earnings. An earning is the money left after a company meets all its expenditure. To allow for comparisons across companies and time, the measure of earnings is stated as earning per share(EPS).This is arrived at by dividing the earnings by the total number of shares outstanding.

EPS= Earnings ÷ Number of shares outstanding

Earning per share alone would not be able to measure if a company’s share in the market is undervalued. Another measure used to arrive at investment valuation is the Price/Earning (P/E) ratio that relates the market price of a share with its earnings per share.

P/E Ratio=Market price of share ÷ Earnings per share

P/E Ratio is the ratio of share price to earnings using historical, current or estimated data. This ratio is also referred to as **Multiplier.**

The P/E Ratio or Multiplier has been used most often to make an investment decision.

A high P/E ratio implies that the market has overvalued the security

A low P/E ratio gives the impression that the market has undervalued the security.

2. **Revenue valuation**: Revenues are income generated by a company for under taking business activities. A company might not have generated profits in specific time duration, but the company would have generated positive revenues at any time, unless otherwise the company has not yet established its business fully.

Revenue based valuations are achieved using the price/sales ratio (PSR). The price/sales ratio is calculate the current market capitalization of a company and divide it by the historical revenues of the previous twelve months. Market capitalization is the current market value of a company- arrived at by multiplying he current share price by the shares outstanding.

Price to sales ratio= Market capitalization ÷ Total revenue for a year

Market capitalization= (Current market price per share X No. of shares outstanding)-

 current long term debts.

PSR is also used when there is a proposal of merger acquisition in the management decision. PSR is also termed as Multiple of sales. The PSR is a valuable tool to use when a company has not made profit in the preceding years but is expected to overcome the problems in the near future.

3. **Cash flows valuation**: Cash flows can also be used in the valuation of shares. Cash flows indicate the net of inflows less outflows from operations. There are also valuation methods that use free cash flows. Free cash flows is the money earned from operations that a business can use without any constraints. Free cash flows are computed as cash from operations less capital expenditure, which are invested in property, P&M and so on.

**4. Asset valuation**: Expectations of earnings, Sales or cash flows alone may not be able to identify the correct value of a company. This is because the intangibles such as brand names give credentials for a business. In view of this, investors have begun to consider the valuation of equity through the company’s assets.

Asset valuation is an accounting convention that includes a company’s liquid assets such as cash, immovable assets such as real estate, as well as intangible assets. This is an overall measure of how much liquidation value a company has if all of its assets were sold off. Asset valuation gives the exact book value of the company. Book value is the value of a company that can be found on the Balance sheet. A company’s total asset value is divided by the current number of shares outstanding to calculate the book value per share. This can also be found through following alternatively:

**Book value per share** = (Total Assets-Long term debts) **÷** Number of shares outstanding.

**5. Yield valuation:** A dividend yield is the percentage of a company’s share price that it pays out as dividends over the course of a year.

(a) **Dividend discount models:** The basic idea behind the dividend discount models is that the value of any asset is simply the discounted value of all the future cash flows associated with the asset.

 **In general,**

 **V= D, ÷ K**

**Were,**

 V = the current value of a security

 D, = the estimated dividend to be paid for the share one year ahead

 K = the discount rate

(b) **The zero-growth model**: Dividends are assumed to remains the same forever, the cash flows paid for the share are assumed to be the same over an in definite period of time.

 V = (D,+P,) ÷ (1+K)

Were,

 V= the current value of share

 D,= the estimated dividend to be paid for the share for year

 K= discount rate

 P,= the market price

(c)**The constant growth model:** This model assumes that dividends grow forever at a fixed growing rate ‘’g”, the growth in dividends simply that payment to shareholders from the company keeps increasing at the rate of ‘’g”.

Value of a share= **V= D, ÷ (K-g)**

**(d) Abnormal growth model:** Abnormal growth rates occur when a company faces super than normal growth pattern or negative growth patterns. The company may not experience such abnormal growth rates for an indefinite duration. Such abnormal growth rates compel valuation of companies in stages.

**(e) The Multiple-growth model:** This model assumes that in specific time periods, dividends could vary at different growth rates. In this, impracticality is reduced to stage wise growth rates.

**A simple two stage growth model is given by the following formula**

 V = **∑------------------ + -------------------- x -----------------**

6. **Member valuation**: Sometimes a company can be valued based n its subscribers or its customer accounts. Subscribers based valuations are most common in media and communication companies that generate regular income. In this model, analyst calculates the average revenue per subscriber over their lifetime and then computes the value for the entire company. Member based valuations are done by investment consultants or merchant bankers.

**Chapter-6**

**Portfolio Theory**

**Diversification:**

In an efficient capital market, the important principle to consider is that investors should not hold all their eggs in one basket: investors should hold a well-diversified portfolio.

Diversificationis a technique of reducing the risk involved in investment and in portfolio management. This is a process of conscious selection of assets, instruments, scrips of companies/ Government securities-in the manner that total risks are brought down. Diversification process helps in the reduction of risk and promotes the optimization of returns for a given level of risks in the portfolio management.

**Meaning of diversification**: Investing in a basket of securities with different risk-reward profile and correlation so as to minimize unsystematic risk.

In finance, diversification is the process of allocating capital in a way that reduces the exposure to any one particular asset or risk. A common path towards diversification is to reduce by investing in a variety of assets.

This diversification may take any of the following **forms**:

\*Into different types of assets, like gold, precious objects, real estate, etc.,

\*Into different types of securities like bonds, stocks, Govt.securities, corporate securities etc.,

\*Into different industry lines namely plastic, chemicals, cement, steel, fertilizers etc.,

\*Into different scrips of companies viz., new companies, growing companies, new product companies etc.,

There are three main practices that can help and to ensure the best diversification:

1. Spread your portfolio among multiple investment vehicle such as stocks, bonds, mutual funds and perhaps even some real estate

2. Vary the risk in your securities; you are not restricted to choosing only blue-chip stocks. In fact, it would be wise to pick investments with varied risk levels; this will ensure that large losses are offset by other areas.

3. Vary your securities by industry. This will minimize the impact of industry specific risk.

Principles involved in diversification;

\*A simple company/industry is more risky than two companies/industries

\*Two companies in different industries are less risky than two companies in one industry.

There are some accepted methods of effecting diversification:

1. Randomness in selection of companies and industries

2. Optimization of selection process

3. Adequate diversification

4**. Markowitz diversification**: He emphasized the need for a right number of securities-not too many; or too less; and securities which are negatively correlated or not correlated at all. The purpose of diversification is to reduce the unsystematic risk arising out of firms’ policies and performance.

**Portfolio return**: Each security in a portfolio contributes returns in the proportion of its investment in security. Thus, the portfolio expected return is the weighted average of the expected returns, from each of the securities, with weights representing the proportionate share of the security in the total investment.

The expected return from a portfolio of two securities is equal to the weighted average of the expected returns from the individual securities.

Expected return from portfolio = E(R) = (W X R ) + (W X R )

Where,

 W and W = Proportions of funds invested in security 1 and 2.

 R and R = Expected return on security 1 and 2.

 W + W = ONE (1)

**Portfolio risk:** Any investment decision involves selection of a combination or group of securities for investment. This group of securities is referred to as a portfolio. The portfolio can be a combination of securities irrespective of their nature, maturity, profitability or risk characteristics.

Portfolio risk considers the standard deviation together with the covariance between securities. Covariance measures the movements of assets together.

Portfolio risk is the summation of the individual security variance and the co-movement with other securities in the portfolio. Risk on a portfolio is different from the risk on individual securities. This risk is reflected in the variability of the returns from zero to infinity. The expected return depends on the probability of the returns and their weighted contribution to the risk of the portfolio.

Portfolio’s risk in terms of = =√w +w + 2w w Cov

Standard deviation

Where, w and w = proportions of funds invested in securities1 and 2

 and = standard deviation of returns of securities 1 and 2

 Cov = Covariance between security 1 and 2

**Capital Allocation between a Risk-Free Asset and a Risky Asset**

Investors want to earn the highest return possible for a level of risk that they are willing to take. So how does an investor allocate her capital to maximize her investment utility — the risk-return profile that yields the greatest satisfaction?

The simplest way to examine this is to consider a portfolio consisting of 2 assets: a risk-free asset that has a low rate of return but no risk, and a risky asset that has a higher expected return for a higher risk.

 Investment risk is measured by the standard deviation of investment returns—the greater the standard deviation, the greater the risk. By varying the relative proportions of the 2 assets, an investor can earn a risk-free return by investing all of her money in the risk-free asset, or she can potentially earn the maximum return by investing entirely in the risky asset, or she can select a risk-return trade-off that is anywhere between these 2 extremes by selecting varying proportions of the 2 assets.

**Asset allocation** is the apportionment of funds among different types of assets with different ranges of expected returns and risk. **Capital allocation,** on the other hand, is the apportionment of funds between risk-free investments, such as T-bills, and risky assets, such as stocks.

The simplest case of capital allocation is the allocation of funds between a risky asset and a risk-free asset.

The risk-return profile of this 2-asset portfolio is determined by the proportion of the risky asset to the risk-free asset. If this portfolio consists of a risky asset with a proportion of w, then the proportion of the risk-free asset must be 1 – w.

 **Portfolio Return = w × Risky Asset Return + (1 – w) × Risk-free Return.**

One way to adjust the riskiness of a portfolio is by varying the proportion of the risk-free asset and the risky asset.

 The investment opportunity set is the set of all combinations of the risky and risk-free assets, which graphs as a line when plotted as return against risk, as measured by the standard deviation.

The line begins at the intercept with the minimum return and no risk of the risk-free asset, when the entire portfolio is invested in the risk-free asset, to the maximum return and risk when the entire portfolio is invested in the risky asset. Hence, this capital allocation line (CAL) is the graph of all possible combinations of the risk-free asset and the risky asset.

The slope of the capital allocation line is equal to the incremental return of the portfolio to the incremental increase in risk. Hence, the slope of the capital allocation line is called the reward-to-variability ratio because the expected return increases continually with the increase in risk as measured by the standard deviation.

**Slope of CAL** = Reward-to-Variability Ratio = Portfolio Return – Risk-Free Return divided by Standard Deviation of the portfolio

The risk-free return is subtracted from the portfolio return to yield the proportion of the return due to the risky asset. The increased return for the increased risk is the reward for accepting the increased risk—the risk premium.

**Capital Market Line (CML)**

The capital market line (CML) is the capital allocation line formed when the risky asset is a market return rather than a single-asset return.

No investment is totally risk-free, but United States Treasuries come close. Although T-bills are often cited as being closest to the ideal risk-free asset for their short terms and low interest rate risk, they do have reinvestment risk. Another security that is close to the ideal are Treasury-Inflation Protected Securities (TIPS), which pay a fixed interest rate on a principal that is adjusted for inflation. For their term length, which can be 5, 10, or 20 years, there is no reinvestment risk, and the interest rate risk is mitigated by the increasing principal, since some of the change in prevailing interest rates results from changes in inflation.

For the risky asset, many investors choose a mutual fund or an exchange-traded fund based on a market index, which provides some diversification in the risky asset without the need for security analysis. This passive strategy of selecting a market index security or investment for the risky asset is sometimes called the mutual fund theorem.

**The beta of an asset**, such as a stock, measures the market risk of that particular asset as compared to the rest of the market — hence, it also measures volatility of the asset compared to the general market.

Beta is a measure of the volatility or systematic risk of a security or a portfolio in comparison to the market as a whole. Beta is used in the CAPM, a model that calculates the expected returns of an asset based on its beta and expected market returns. Beta is also known as beta coefficient.

 The beta is calculated by comparing the historical return of an asset compared to the market return using statistical techniques to calculate their covariance:

Formula for the Beta Coefficient of a Stock;

Beta = β= Cov ÷ = =

Where,

**The capital asset pricing model (CAPM),** developed by William F. Sharpe and John Linter, is an exercise in positive economics.

**The CAPM is a model that describes the relationship between systematic risk and expected return for assets, particularly stocks.**

**Assumptions underlying the CAPM:**

1. There are many investors,

2. All investors are looking ahead over the same planning horizon

3. All investors have equal access to all securities

4. No taxes

5. No commission

6. Individuals have the same expectations

7. Investors can borrow and lend at the one risk free rate

8. Investors can short any asset and hold any fraction of asset

**Limitations of CAPM;**

**Risk free rate:** The company accepted rate used as the risk free rate in the yield on short term govt., securities. The issue with using this input is that the yield changes daily, creating volatility.

**Return on the market**: The return on the market can be described as the sum of the capital gain and dividends for the market. A problem arises when at any given time; the return on market can be negative. As a result a long term market return is utilized to smooth the return. Another issue is that these returns are backward looking and may not be representative of future market return**.**

Investor can borrow and lend at a risk free rate, is unattainable in reality.

**Advantages of CAPM:**

\***Ease-of-use**: CAPM is a simplistic calculation that can be easily free-tested to derive a range of possible outcomes to provide confidence around the required rate of return.

\***Diversified portfolio**: The assumption that investors hold a diversified portfolio, similar to the market portfolio eliminates unsystematic risk.

\***Systematic risk**: CAPM takes in to account systematic risk, which is left out of other return model, such as the dividend discount model.

\***Business and financial risk variability**: When business investigate opportunities, if the business mix and financing differ from the current business, then other required return calculations like weighted average cost of capital cannot be used.

**CAPM** uses the beta of a particular security, the risk-free rate of return, and the market return to calculate the required return of an investment to its expected risk.

Required Return = Risk-Free Rate + Risk Premium

 =Risk-Free Rate + [Beta × (Market Return–Risk-Free Rate)]

The term, Market Return – Risk-Free Rate is simply the required return on stocks in general because stocks have a certain amount of risk. Hence, this term is the risk premium of stocks—what stocks have to return to compensate investors for the additional risk of holding stocks over holding risk-free Treasuries. Since different stocks have differing amounts of volatility, or risk, the required risk premium should also differ. The particular risk premium of a stock compared to the risk premium of the market is calculated by modifying the risk premium of the market with the stock's beta. If the beta is greater than 1, then the risk premium must be greater to compensate the investor for the additional risk; if it is less, then the risk premium will be less. Note that when beta = 1, then the risk premium of the stock is equal to the risk premium of the market.

**Security Market Line (SML)**

When the relative risk premium, represented by beta, is plotted in a graph against the required return, it yields a straight line known as the security market line (SML). This line begins at the risk-free rate and riskier with beta.

**OPTIMAL PORTFOLIO:**

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

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

**Optimum portfolio** is the portfolio on the efficient frontier that has the highest utility for a given investor. It lies at the point of tangency between the efficient frontier and the curve with the investor’s highest possible utility.

**Efficient frontier** is the set of portfolios that has the maximum rate of return for every given level of risks or the minimum risk for every potential rate of return.

**Selection and Problems**

Suppose you find a great investment opportunity, but you lack the cash to take advantage of it. This is the classic problem of financing. The short answer is that you borrow either privately from a bank, or publicly by issuing securities. Securities are nothing more than promises of future payment. They are initially issued through financial intermediaries such as investment banks, which underwrite the offering and work to sell the securities to the public. Once they are sold, securities can often be re-sold. There is a secondary market for many corporate securities. If they meet certain regulatory requirements, they may be traded through brokers on the stock exchanges, such as the NYSE, the AMEX and NASDAQ, or on options exchanges and bond trading desks.

 **Finance from the Investor’s Perspective**

Most financial decisions you have addressed up to this point in the term have been from the perspective of the firm. Should the company undertake the construction of a new processing plant? Is it more profitable to replace an old boiler now, or wait? In this module, we will examine financial decisions from the perspective of the purchaser of corporate securities: shareholders and bondholders who are free to buy or sell financial assets. Investors, whether they are individuals or institutions such as pension funds, mutual funds, or college endowments, hold portfolios, that is, they hold a collection of different securities.

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

**Figure: Optimal Portfolio**

Portfolio in which the risk – reward combination is such that it yields the maximum returns possible under the current and anticipated circumstances.

 **Chapter-7**

**Portfolio Management**

**The portfolio performance evaluation**

The portfolio performance evaluation primarily refers to the determination of how a particular investment portfolio has performed relative to some comparison benchmark. The evaluation can indicate the extent to which the portfolio has outperformed or under-performed, or whether it has performed at par with the benchmark.

The evaluation of portfolio performance is important for several reasons. First, the investor, whose funds have been invested in the portfolio, needs to know the relative performance of the portfolio. The performance review must generate and provide information that will help the investor to assess any need for rebalancing of his investments. Second, the management of the portfolio needs this information to evaluate the performance of the manager of the portfolio and to determine the manager’s compensation, if that is tied to the portfolio performance.

 The performance evaluation methods generally fall into two categories, namely conventional and risk-adjusted methods.

**Conventional Methods**

Benchmark Comparison

The most straightforward conventional method involves **comparison** of the performance of an investment portfolio against a broader market index. The most widely used market index in the United States is the S&P 500 index, which measures the price movements of 500 U.S. stocks compiled by the Standard & Poor’s Corporation. If the return on the portfolio exceeds that of the benchmark index, measured during identical time periods, then the portfolio is said to have beaten the benchmark index. While this type of comparison with a passive index is very common in the investment world, it creates a particular problem. The level of risk of the investment portfolio may not be the same as that of the benchmark index portfolio. Higher risk should lead to commensurately higher returns in the long term. This means if the investment portfolio has performed better than the benchmark portfolio, it may be due to the investment portfolio being more risky than the benchmark portfolio. Therefore, a simple comparison of the return on an investment portfolio with that of a benchmark portfolio may not produce valid results.

Style Comparison

A second conventional method of performance evaluation called “style-comparison” involves comparison of return of a portfolio with that having a similar investment style. While there are many investment styles, one commonly used approach classifies investment styles as value versus growth. The ”value style” portfolios invest in companies that are considered undervalued on the basis of yardsticks such as price-to-earnings and price-to-topic value multiples. The ”growth style” portfolios invest in companies whose revenue and earnings are expected to grow faster than those of the average company.

In order to evaluate the performance of a value-oriented portfolio, one would compare the return on such a portfolio with that of a benchmark portfolio that has value-style. Similarly, a growth-style portfolio is compared with a growth-style benchmark index. This method also suffers from the fact that while the style of the two portfolios that are compared may look similar, the risks of the two portfolios may be different. Also, the benchmarks chosen may not be truly comparable in terms of the style since there can be many important ways in which two similar style-oriented funds vary.

**Risk-adjusted Methods**

The risk-adjusted methods make adjustments to returns in order to take account of the differences in risk levels between the managed portfolio and the benchmark portfolio. While there are many such methods, the most notables are the Sharpe ratio (S), Treynor ratio (T), Jensen’s alpha (a), Modigliani and Modigliani (M2), and Treynor Squared (T2). These measures, along with their applications, are discussed below.

**Sharpe Ratio**

The Sharpe ratio (Sharpe, 1966) computes the risk premium of the investment portfolio per unit of total risk of the portfolio. The risk premium, also known as excess return, is the return of the portfolio less the risk-free rate of interest as measured by the yield of a Treasury security. The total risk is the standard deviation of returns of the portfolio. The numerator captures the reward for investing in a risky portfolio of assets in excess of the risk-free rate of interest while the denominator is the variability of returns of the portfolio. In this sense, the Sharpe measure is also called the “reward-to-variability” ratio. The following Equation gives the Sharpe ratio:

**Sp = Rp – Rf ÷ σp**

Where, Sp is the Sharpe ratio, Rp the return of the portfolio, Rf the risk-free rate, and σp the standard deviation of returns of the portfolio.

The Sharpe ratio for an investment portfolio can be compared with the same for a benchmark portfolio such as the overall market portfolio.

**Treynor Ratio**

The Treynor ratio (Treynor, 1965) computes the risk premium per unit of systematic risk. The risk premium is defined as in the Sharpe measure. The difference in this method is in that it uses the systematic risk of the portfolio as the risk parameter. The systematic risk is that part of the total risk of an asset which cannot be eliminated through diversification. It is measured by the parameter known as ‘beta’ that represents the slope of the regression of the returns of the managed portfolio on the returns to the market portfolio. The Treynor ratio is given by the following equation:

**Tp= Rp – Rf ÷βp**

Where, Tp is the Treynor ratio, Rp the return of the portfolio, Rf the risk-free rate, and βp the beta of the portfolio.

Note the following:

1. Both the measures, the Sharpe as well as Treynor postulate a linear relationship between return and risk, though they employ different measures of risk.

2. For a perfectly diversified portfolio both the measures give identical rankings because in such cases the total risk and systematic risk are the same.

3. When the portfolio is poorly diversified, it may rank high on the Treynor measure but low on the Sharpe measure.

**Jensen’s Alpha**

Jensen’s alpha (Jensen, 1968) is based on the Capital Asset Pricing Model (CAPM) of Sharpe (1964), Lintner (1965), and Mossin (1966). The alpha represents the amount by which the average return of the portfolio deviates from the expected return given by the CAPM. The CAPM specifies the expected return in terms of the risk-free rate, systematic risk, and the market risk premium. The alpha can be greater than, less than, or equal to zero. An alpha is greater than zero suggests that the portfolio earned a rate of return in excess of the expected return of the portfolio.

Jensen’s alpha is given by.

Average return - Risk free + { Beta of the (Average return on – Risk free return)]

 on portfolio return portfolio market portfolio

 **Rp - Rf + [ βp (Rm - Rf) ]**

When the portfolio is well diversified all three methods - Sharpe, Treynor, and Jensen – will give the same ranking of performance.

When the portfolio is not well diversified or when it represents the total wealth of the investor, the appropriate measure of risk is the standard deviation of returns of the portfolio, and hence the Sharpe ratio is the most suitable.

When the portfolio is well diversified, however, a part of the total risk has been diversified away and the systematic risk is the most appropriate risk metric. Both Treynor ratio and Jensen’s alpha can be used to assess the performance of well-diversified portfolios of securities. These two ratios are also appropriate when the portfolio represents a sub-portfolio or only a part of the client’s portfolio.

 **Process of portfolio management**

**The portfolio management process is the process an investor takes to aid him in meeting his investment goals.**
The procedure is as follows:

***Create a Policy Statement*** *-*A policy statement is the statement that contains the investor's goals and constraints as it relates to his investments.

***Develop an Investment Strategy* -** This entails creating a strategy that combines the investor's goals and objectives with current financial market and economic conditions.

***Implement the Plan Created*** *-*This entails putting the investment strategy to work, investing in a portfolio thatmeets the client's goals and constraint requirements.

***Monitor and Update the Plan*** *-*Both markets and investors' needs change as time changes. As such, it is important to monitor for these changes as they occur and to update the plan toadjust for the changes that have occurred.

**Policy Statement**A policy statement is the statement that contains the investor's goals and constraints as it relates to his investments. This could be considered to be the most important of all the steps in the portfolio management process. The statement requires the investor to consider his true financial needs, both in the short run and the long run. It helps to guide the investment portfolio manager in meeting the investor's needs. When there is market uncertainty or the investor's needs change, the policy statement will help to guide the investor in making the necessary adjustments the portfolio in a disciplined manner.

**Expressing Investment Objectives in Terms of Risk and Return**Return objectives are important to determine. They help to focus an investor on meeting his financial goals and objectives. However, risk must be considered as well. An investor may require a high rate of return. A high rate of return is typically accompanied by a higher risk. Despite the need for a high return, an investor may be uncomfortable with the risk that is attached to that higher return portfolio. As such, it is important to consider not only return, but the risk of the investor in a policy statement.

**Factors Affecting Risk Tolerance**An investor's risk tolerance can be affected by many factors:

***Age***- an investor may have lower risk tolerance as they get older and financial constraints are more prevalent.

***Family situation*** - an investor may have higher income needs if they are supporting a child in college or an elderly relative.

***Wealth and income*** - an investor may have a greater ability to invest in a portfolio if he or she has existing wealth or high income.

***Psychological*** - an investor may simply have a lower tolerance for risk based on his personality.

**Risk management and hedging**

Risk management is the process of identification, analysis and acceptance or mitigation of uncertainty in investment decisions.

Essentially, risk management occurs any time an investor or fund manager analyses and attempts to quantity the potential for losses in an investment and then takes the appropriate action given his investment objectives and risk tolerance.

A risk management strategy is used in limiting or offsetting probability of loss from fluctuations in the pricesof commodities, currencies, or securities. In effect, hedging is a transfer of risk without buying insurance policies.

A hedge is an investment position intended to offset potential losses or gains that may be incurred by a companion investment. In simple language, a hedge is used to reduce any substantial losses or gains suffered by an individual or an organization.

A hedge is an investment to reduce the risk of adverse price movements in an asset. Normally a hedge consists of taking an offsetting position in a related security such a futures contract.

Hedging employs various techniques but, basically, involves taking equal and opposite positions in two different markets (such as cash and futures markets). Hedging is used also in protecting one's capital against effects of inflation through investing in high-yield financial instruments (bonds, notes, and shares), real estate, or precious metals.

**Active portfolio management**

Active portfolio management strategy refers to a portfolio management strategy involves making precise investment for outperforming an investment benchmark index.

**Active management** (also called *active investing*) refers to a portfolio management strategy where the manager makes specific investments with the goal of outperforming an investment benchmark index.

The portfolio manager that follows the active management strategy exploits the market inefficiencies by buying undervalued securities, or by short selling overvalued securities, any of these procedures can be used alone or in combination.

Active portfolio managers may create less volatility than the benchmark index depending on the targets of the specific hedge fund or mutual fund or investment portfolio.

**Concept**

Ideally, the active manager exploits market inefficiencies by purchasing (securities (stocks etc.) that are undervalued or by short selling securities that are overvalued. Either of these methods may be used alone or in combination. Depending on the goals of the specific investment portfolio, hedge fund or mutual fund, active management may also serve to create less volatility (or risk) than the benchmark index. The reduction of risk may be instead of, or in addition to, the goal of creating an investment return greater than the benchmark.

Active portfolio managers may use a variety of factors and strategies to construct their portfolio(s). These include quantitative measures such as price–earnings ratios and PEG ratios, sector investments that attempt to anticipate long-term macroeconomic trends (such as a focus on energy or housing stocks), and purchasing stocks of companies that are temporarily out-of-favor or selling at a discount to their intrinsic value. Some actively managed funds also pursue strategies such as risk arbitrage, (short positions, (option writing, and asset allocation.

**Asset allocation**

Using the concept of asset allocation, researchers divide active management into two parts; one part is selecting securities within an asset class, while the other part is selecting between asset classes. For example, a large-cap U.S. stock fund might decide which large-cap U.S. stocks to include in the fund. Then those stocks will do better or worse than the class in general. Another fund may choose to move money between bonds and stocks, or some country versus a different one, et cetera. Then one class will do worse or better than the other class.

The case where a fund changes its class of assets is called (style drift. An example would be where a fund that normally invests in government bonds switches into stocks of small companies in emerging markets. Although this gives the most discretion to the manager, it also makes it difficult for the investor (portfolio manager) if he also has a target of asset allocation.

**Performance**

The effectiveness of an actively managed investment portfolio obviously depends on the skill of the manager and research staff but also on how the term active is defined. Many mutual funds purported to be actively managed stay fully invested regardless of market conditions, with only minor allocation adjustments over time. Other managers will retreat fully to cash, or use hedging strategies during prolonged market declines. These two groups of active managers will often have very different performance characteristics.

**Advantages of active management**

The primary attraction of active management is that it allows selection of a variety of investments instead of investing in the market as a whole. Investors may have a variety of motivations for following such a strategy:

An investor may believe that actively managed funds do better in general than passively managed funds.

Investors believe that they have some skill for picking which active managers will do better after they have invested.

They may be skeptical of the efficient-market hypothesis, or believe that some market segments are less efficient in creating profits than others.

They may want to manage volatility by investing in less-risky, high-quality companies rather than in the market as a whole, even at the cost of slightly lower returns.

Conversely, some investors may want to take on additional risk in exchange for the opportunity of obtaining higher-than-market returns.

Investments that are not highly correlated to the market are useful as a portfolio diversifier and may reduce overall portfolio volatility.

Some investors may wish to follow a strategy that avoids or underweights certain industries compared to the market as a whole, and may find an actively managed fund more in line with their particular investment goals. (For instance, an employee of a high-technology growth company who receives company stock or stock options as a benefit might prefer not to have additional funds invested in the same industry.)

Investors may gain some (psychic benefit from firing a manager that has underperformed, and replacing them with a different manager.

**Disadvantages of active management**

The most obvious disadvantage of active management is that the fund manager may make bad investment choices or follow an unsound theory in managing the portfolio. The fees associated with active management are also higher than those associated with passive management, even if frequent trading is not present. Those who are considering investing in an actively managed mutual fund should evaluate the fund's (prospectus carefully. Data from recent decades demonstrates that the majority of actively managed large and mid-cap stock funds in United States fail to outperform their passive stock index counterparts.

Active fund management strategies that involve frequent trading generate higher transaction costs which diminish the fund's return. In addition, the short-term capital gains resulting from frequent trades often have an unfavorable income tax impact when such funds are held in a taxable account.

When the asset base of an actively managed fund becomes too large, it begins to take on index-like characteristics because it must invest in an increasingly diverse set of investments instead of those limited to the fund manager's best ideas. Many mutual fund companies close their funds before they reach this point, but there is potential for a conflict of interest between mutual fund management and shareholders because closing the fund will result in a loss of income (management fees) for the mutual fund company.

**Real active management**

Most mutual funds do not have board members and directors with an equity stake in the mutual fund that their manager(s) are administrating. In other words, the directors and board members don't directly impact the future performance of the fund. Real active management, then, is when every manager and director has a vested interest in the success of the fund. Private equity is often real active management since a privately owned company usually has just one owner that make strategy decisions at the board level.

**International Portfolio Management**

International portfolio management is also known as global portfolio management or foreign portfolio management. It refers to grouping of investment assets from international or foreign markets rather than from the domestic ones.

The assets grouping in international portfolio management mainly focuses on securities. The most common examples of international portfolio management are:

\* Shares purchasing of a foreign company

\* Buying bonds that are issued by a foreign government

\* Acquiring assets in a foreign firm

Major financial trend in 1990s - Increases in intl. portfolio investments by individual and institutional investors,

Reasons: a) deregulation of capital markets, fewer capital controls, increase in intl. capital flows/increase in capital mobility (in and out of countries), and b) advances in telecommunications, info technology, allow for more efficient intl. trading and more efficient flow of information within and across markets.

Securities returns are less correlated across countries than within countries. Why because Political, institutional, factors vary across countries - e.g., currency markets, regulation/deregulation, general economic conditions, business cycle differences, political issues, central bank issues, fiscal policy, industry structure, etc.

Investors benefit from diversification, both domestically and internationally.

Factors affecting international portfolio management:

Tax rates

2.Interesr rates and

 3.Exchange rates

Modes of international portfolio management;

1. Portfolio equity

2. Portfolio bonds

3. Global mutual funds and

4. Closed end country funds

Draw backs of international portfolio management;

1. Unfavorable exchange rate movements

2. Frictions in international financial markets

3. Manipulation of security prices and

4. Unequal access to information