

B.Com. (Hons.) Course

Semester – V

Paper: Security Analysis and Portfolio Management

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CHAPTER-5

PORTFOLIO CHOICE

Structure:-

- 5.0 Learning Objectives
- 5.1 Introduction
- 5.2 Meaning of Utility Theory
- 5.3 Indifference Curves
- 5.4 Creating an Equity Portfolio
- 5.5 Objectives of Portfolio Management
- 5.6 Self-Check Exercise
- 5.7 Summary
- 5.8 Glossary
- 5.9 Answers to Self-Check Exercise
- 5.10 Terminal Questions
- 5.11 Suggested Readings

5.0 LEARNING OBJECTIVES

After reading this chapter, you will be able to:

- Analyze how decision makers can structure their problems to the investors
- Understand how an investor allocates financial resources among different security alternatives.
- Identify an alternative way to the investor to make rational choice among the alternative portfolio.
- Know the different approaches in creating equity portfolio.

5.1 INTRODUCTION

As investor is faced with a choice of securities to be included in the portfolio among an enormous member of securities. Each and every investor wants to invest in more than one security so as to maximize his return and minimize risk. This process is known as diversification

of large number of securities with different risk and return characteristics available to investors. When one considers the number of possible securities and thus portfolios in which each can be held the decision process seemsoverwhelming. In this lesson we analyse how decision makers can structure their problems as to the investor.

5.2 MEANING OF UTILITY THEORY

Utility theory is the foundation stone for the theory of portfolio choice. It enables an investor or financial analyst how to use and allocates financial resources among different security alternatives. This theory hovers around the concept of 'utility', which is (in present context) cardinal measurement in money of the yield generated by the. commitment of funds in various security alternatives. The theory strives to explain how a rational investor chooses an optimum portfolio among .many feasible portfolio, given the investment outlay and the price of securities. Though the theory is based upon rigorous assumptions many of which may not hold good in real life situation, yet the understanding of the theory is essential for proper understanding of investment decision making process.

Utility as a concept in economic analysis is the quantum of satisfaction derived by a consumer from the consumption of a commodity which is assumed to be measured in cardinal terms. This, in present context, refers to yield generated by a chosen portfolio during a given period, which is measured in monetary terms.

Assumptions of Utility Theory. The Theory of Portfolio choice is based on following Assumptions:

- i. **Rationality:** the rationality assumption requires that an investor makes investment decisions with a sole objective to maximise wealth and has the perfect knowledge about the availability and the prices of securities in the market. Further, that he/she prefers more of wealth than less of it.
- ii. **Constant value of money:** the assumption that real value of money or the purchasing power remains constant, taken to avoid necessary complications in the analysis arising due to changing value of money.
- iii. **Money stock is constant:** that the stock of money to be invested in securities is given and the investor is to allocate that entire stock in making the portfolio. In other words, an investor has a given stock of money and further that different portfolios are constructed

by making investment of that money in the each portfolio.

- iv. **Prices held constant:** as in the case of rationally, it was assumed that the investor has the perfect information about the prices of securities in the market. Here this assumption is made more rigorous by assuming that these prices remain constant during the process of portfolio construction and analysis by the investor.
- v. **Lavestore's risk preferences:** there are three possibilities for investor's taste for risk. The investor is averse to risk i.e. neutral toward risk, and seeks risk. The investor is risk neutral when the expected value of portfolio is equal to cost involved in portfolio i.e. the expected value is just equal to cost. Risk aversion means that an investor will reject a fair game because the disutility of the loss is greater than the utility of an equivalent gain. Whereas, the risk neutrally implies that an investor is indifferent to whether or not a fair game is undertaken. Risk seeking means that an investor would select a fair game. Here in the present context it is assumed that risk preference of an investor is given.

Given these assumptions, investor's behaviour to maximise wealth can be illustrated with the help of marginal utility curve(s). The shape of marginal utility curves of wealth maximisation is dependent upon the risk preference of an investor/analyst. It may be either increasing or decreasing, and it may even be constant in the case of risk neutral investor. Whereas in the case of risk averse investor the slope is decreasing and for risk lover increasing as given in Fig.1:

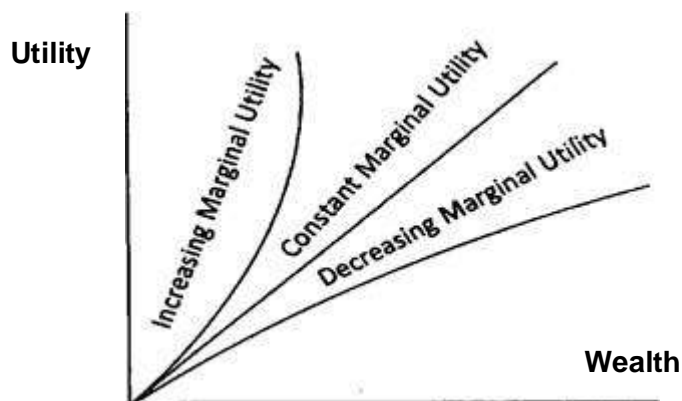
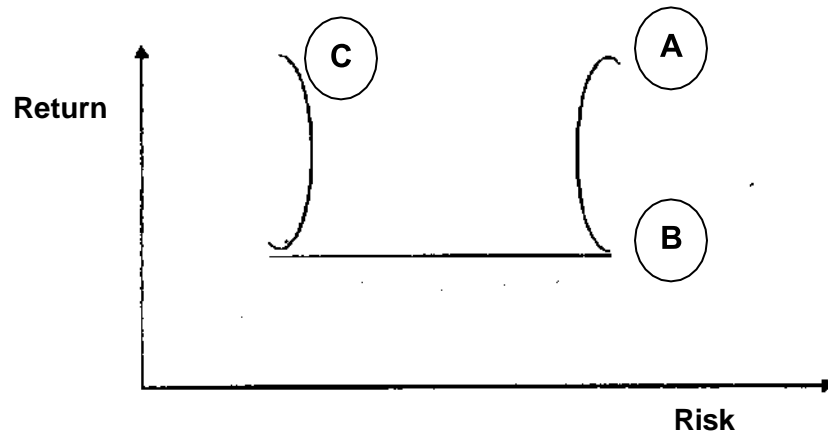


Fig.1 Wealth and Utility

On the country the utility function (or expected utility function, where the expected utility or just utility is the summation of outcomes times the associated probability) of an investor,

having different preferences for risk given the stock of wealth and the objective to maximise



wealth, is represented by the Fig.2:

Fig.2 Utility function with different risk aversion coefficients.

Where: A is utility function of a risk-seeking investor.

B is utility function of a risk-neutral investor,
and C is utility function of a risk-averse investor.

Alternatively, this behaviour of an investor can be presented through utility of wealth space instead of return and risk space (Fig. 2) as in fig.3

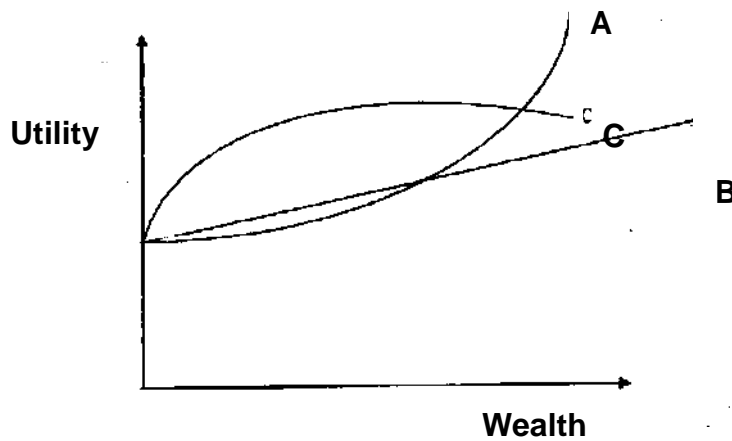


Fig.3 utility function with different risk aversion coefficients.

Where: A = utility function of a risk-seeking investor.

B = utility function of a risk-neutral investor, and C
= utility function of a risk-averse investor.

It emanates from the aforesaid analysis that risk averse investor would reject the fair gamble because his second derivate of utility function is negative or less than zero. Risk neutral investor is indifferent to fair gamble since in his case the second derivative of utility function is zero, whereas, risk- lover investor having second derivative of utility positive or greater than zero would select a fair gamble. This risk preference and the behaviour of an investor in the paradigm of utility analysis is being presented in tabular form hereunder.

TABLE 1

Risk Preference Behaviour of an Investor under Utility Analysis

Risk preference	Behaviour of an investor
1. Risk aversion	Reject fair gamble
2. Risk neutrality	Indifferent to fair gamble
3. Risk preference	Select a fair gamble

Now, if the wealth at the disposal of an investor for construction of portfolio increases, question arises how would he behave? Will he invest more or less in risky securities? Suppose, earlier portfolio size of an investor is Rs. 50,000, if this is increased to Rs. 75,000, the question is will the additional investment in rising securities will be equal to, less than or more than Rs.25,000. If the investor increases the amount invested in risky securities as size of portfolio or wealth increases, the investor is said to exhibit decreasing absolute risk aversion. If the investors, investment in rising assets in unchanged as wealth changes, then the investor is said to exhibit constant absolute risk aversion.

Most evidence would indicate that, as wealth increases, the rupee amount invested in risky assets should increase, or that investor's exhibit decreasing absolute. Regardless of which position of absolute risk aversion best describes investor's behaviour, if they can specify their feelings regarding absolute risk aversion, then the number of possible portfolio options they need consider can bereduced.

Furthermore, another pertinent question is how the percentage of wealth in risky assets changes as the size of portfolio changes. For example, if the investor puts 50 percent of her wealth in risky investments when her wealth is Rs. 100000, does she to Rs. 200000? If she does,

then the investor's behaviour is said to be characterised by constant relative risk aversion. If she invests as greater percentage of her wealth in risky assets as wealth changes, the percentage refers to the change in rupee amount invested in risky assets as wealth changes.

While there is general agreement that most investors exhibit decreasing absolute risk aversion, there is much less agreement concerning relative risk aversion. Often people assume constant relative aversion. The justification for this, however, is often convenience. In any case if investors can articulate their feelings about the percentage they would invest in risky assets as wealth changes, and then they can reduce the number of portfolio they must consider.

5.3 INDIFFERENCE CURVES

Indifferent curve analysis is an alternative way to enable the investor to make rational choice among the alternative portfolios. Needless to say the objective of these techniques is to explain the behaviour of the rational investor whose objective is to maximise profits/return. Rational investor is the person/return over less of it. Sometimes investors do not behave in a MIB way i.e. they prefer less profits/ return due to tax consideration or otherwise. The portfolio choice behaviour of such investors is, no doubt, out of scope of this technique.

Etimologically, the term 'indifferent' means state of 'non- preference'. That is a rational investor is undecided about the preference of one or the other portfolio on the risk return space. The curve obtained by joining the points of equal preference of portfolio on the risk return space is indifference curve. In other words, it is a curve derived by joining the risk return space is indifference curve. In other words, it is a curve derived by joining the risk-return combination of different portfolios which are equally preferred by all investors. A typical indifference curve is presented in Fig.4

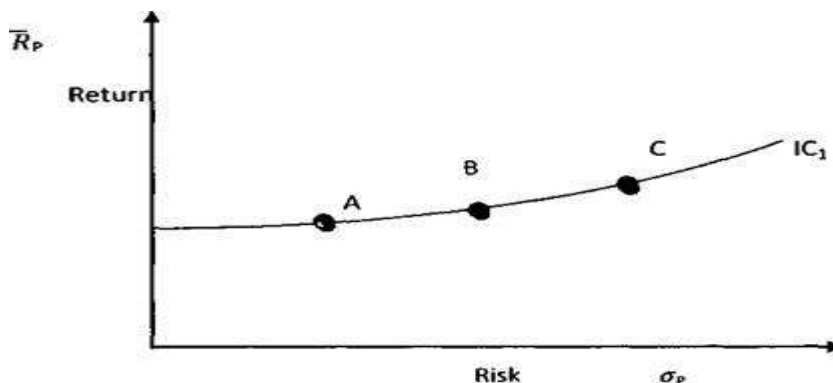
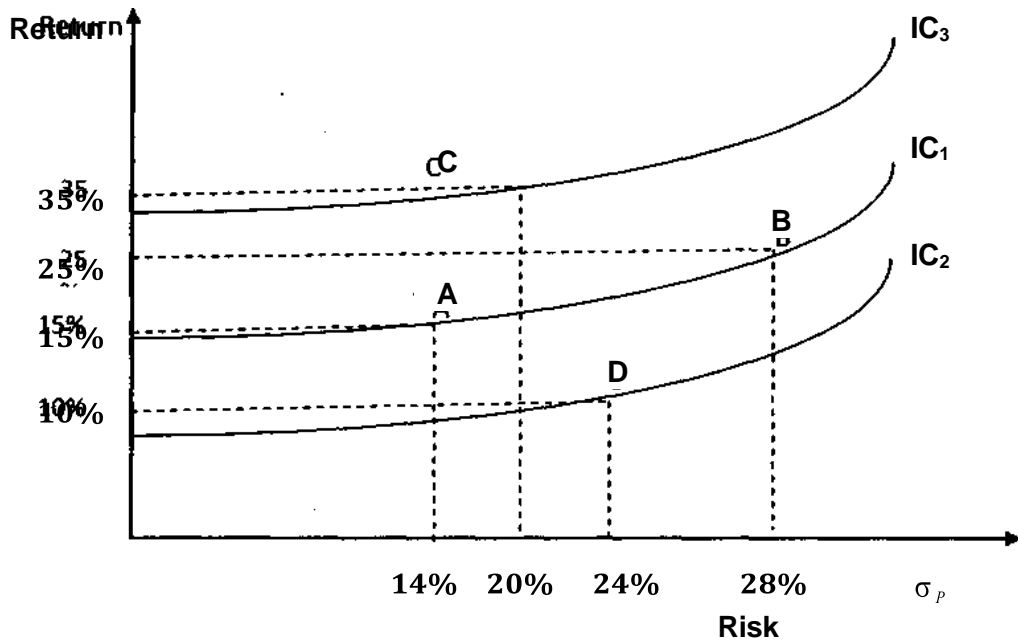


Fig. 4 Indifference Curve Map

IC1 is a typical indifference curve. Point A, B and C are return combinations of different portfolios equally preferred by the investor. Thus, this curve represents an investor's preference for risk and return, and is drawn on a two-dimensional figure where the horizontal axis indicates



portfolio risk as measured by standard deviation (denoted by σ_p) and the vertical axis indicates reward as measured by portfolio expected return (denoted by R_p), given the risk preference of an investor.

To extend the analysis further, figure illustrates an indifference curve map of a hypothetical investor. Each curved line indicates one indifference curve for the investor and represents all combinations of portfolios which provide the investor a given level of desirability on risk-return space. For example, the investor would find portfolios A and B equally desirable, even though they have different expected returns and standard deviations, because both lie on the same indifference curve IC₁. Portfolio B has a higher standard deviation (28%) than portfolio A (14%) and is therefore, less desirable on that count. However, exactly offsetting this loss in desirability is the gain in desirability provided by the higher expected returns of portfolio B (25%) relative to portfolio A (15%). Therefore, all portfolios lie on a given indifference curve are equally desired by the investor given his/her preference for risk.

However, the investor would find portfolio C, with an expected return of 35% and a standard deviation of 20% preferable to both portfolios A and B. This is because portfolio C

happens to be an indifference curve IC3 which is located to the 'northwest' of IC1' Hence portfolio C has a sufficiently larger expected return relative to portfolio A to more than offset its higher standard deviation and, on the balance, make it more desirable than portfolio A. Similarly, portfolio C has a sufficiently smaller standard deviation than portfolio B to more than offset its smaller expected return of an risk averse investor and on balance, make it more desirable than portfolio B. therefore, an investor will find any portfolio on an indifference curve which is further northwest to be more desirable than any portfolio lying on a indifference curve which is not as for northwest. In other words, any portfolio lying on higher indifference curve is always preferred, given the risk preference of an investor.

Another important fallout in this context is that two indifferent curves intersect. It holds so given transitivity rule. The transitivity hypothesis implies that given the risk preference behaviour of an investor, if an investor prefers portfolio X over portfolio Y, and that portfolio Y over portfolio Z, then, certainly by this hypothesis, portfolio X will be preferred over portfolio Z. figure 6 illustrates this point further. The point of intersection is represented by P. further that all the portfolios on IC1. Similarly, all the portfolios on IC1 is on both indifference curves, therefore, all the portfolios on IC1 must be as desirable as those on IC2. But this presents a contradiction, because IC1 and IC2 are two different curves that are supposed to represent different levels of desirability. Therefore, in order to there be no contradiction, these curves cannot intersect.

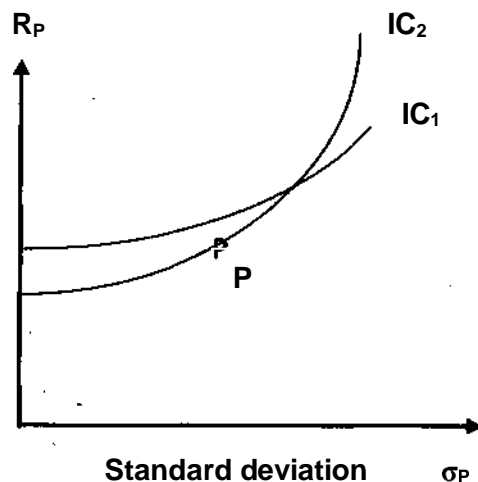


Fig. 6 Intersecting indifference curve

However, it should be noted that an investor has an infinite number of indifference curves. It implies the whenever there are two indifference curves that have been plotted on a graph, it is

possible to plot a third indifference curve that lies between them. As can be seen from figure 7, given indifference curves IC_1 and IC_2 . It is possible to graph a third curve, IC^* , lying between them. It also implies that another indifference curve can be plotted above IC_2 and yet another below IC_1 .

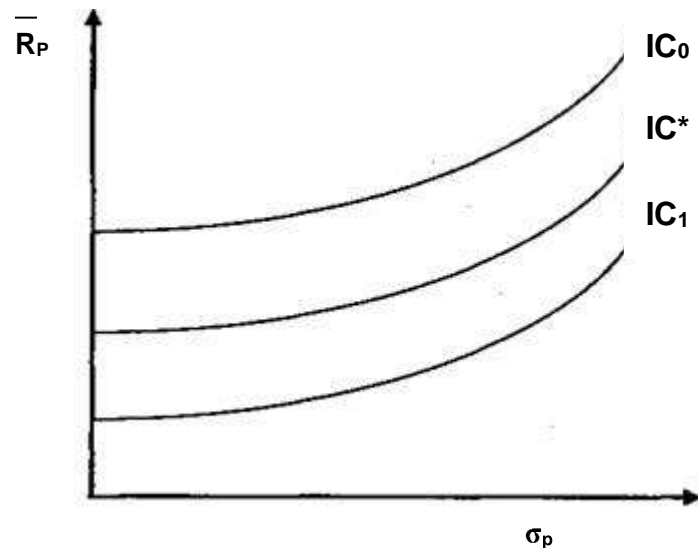


Fig. 7 plotting a third indifference curve between two others

An obvious at this stage is how does an investor determine what his or her indifference curves look like? Since each investor has a map of indifference curves that is nevertheless unique to that investor alone. Further, it involves presenting the investor with a set of hypothetical portfolios, along with their respective expected returns and standard deviations. The she or he should be asked to choose there from the most desirable one. Given the choice thus made, the shape and location of the investor's indifference curves can be estimated. This is because it is presumed that the investor would have acted as if he or she has indifference curves in making this choice, even though indifference curves would not have been explicitly used.

Thus, every investor has an indifference map representing his preferences for expected returns and standard deviations. It implies that investor should determine the expected return and standard deviation for each potential portfolio plot them on a graph and then select one portfolio that lies on the indifference curve that is further northeast.

The aforesaid discussion on portfolio choice with the help of indifference curves is based on two assumptions. First, it is assumed that investors, when given a choice between two

otherwise identical portfolios, will always choose one with the higher level of expected return. This assumption is known as no satiation and is fundamentally based upon Markowitz hypothesis that investors prefer higher levels of terminal wealth than to lower levels of terminal wealth, however, it is not quite so obvious what the investor will do when having to choose between two portfolios having the same level of expected return but different levels of standard deviations. This necessitates the second assumption. Secondly, it is assumed that investors are generally risk averse, which means that the investor will choose the portfolio with the smaller standard deviation. Needless to say that these two assumptions are reflected in the irrationality in the behaviour of the investors. That is why these two assumptions of no satiation and risk aversion cause indifference curves to be positively sloped and convex. However, the assumption of risk aversion does not imply that all investors have identical degrees of risk aversion. Some investors may be highly risk averse, whereas others may be only slightly so.

5.4 CREATING AN EQUITY PORTFOLIO

There are various aspects of investments in equity stocks their characteristics, fundamental analysis and various strategies. Finally, all such information has to be synthesized into developing a comprehensive and meaningful strategy for the management of an equity portfolio of stocks.

1. The Four Approaches

Different investors follow different approaches when they deal with investments. Four basic approaches are illustrated below, but there could be numerous variations.

- 1. The holy-cow approach.** This investor typically buys but never sells. He treats his scrips like holy cows, which are never to be said for slaughter. If you can consistently find and then confine yourself to buying only prized bulls, this holy cow approach may pay well in the long run.
- 2. The Pig-farmer approach.** The pig farmer on the other hand, knows that pigs are meant for slaughter. Similarly, an investor adopting this approach buys and sells shares as fast as pigs are grown and slaughtered. Pigs become pork and equity hard cash.
- 3. The Rice-miller approach.** The rice-miller buys paddy feverishly in the market during the season, then mills hoard and sells the rice slowly over an extended period depending on

price movements. His success lies in his skill in buying and selling, and his financial capacity to hold stocks. Similarly, an investor following this approach grasps the share at the right price, takes position, holds on to it, and liquidates slowly.

4. **The Woollen trader approach.** The woollen trader buys woollens over a period of time but sells them quickly during the season. His success also lies in his skill in buying and selling, and his ability to hold stocks. An investor following this strategy buys over a period of time but sells quickly, and quits.

Choose the approach which suits you best- you can make money in all these ways. It all depends upon the kind of stocks you buy and sell. Table I suggests a course of action in each case.

Table 1

Investment Approaches and Choice of Stocks		
Investment approach	Key strategy	Choice of stocks
The Holy cow	Buy and holds	Growth stocks and blue Chips with a successful Track record.
The pig farmer	Buy and sell promptly	Cyclical stocks, companies With special situations like take-over, change of management etc.
The Rice miller	Buys swiftly and sell slowly	Stock which are likely to benefit by imminent, favourable government policies, like liberalization, decontrol etc.
The Woolen trader	Buy slowly and sell swiftly	Stocks in special situations like aturnaround

To succeed in portfolio management you must consciously follow a path which suits you best; otherwise you may end up with below - average returns.

For an investor in growth stocks, the most suitable investment approach, obviously, is the holy cow approach. You identify good growth stocks, buy them, and hold them for a long-term. Do not get flustered and switch strategy mid-way.

5.5 OBJECTIVES OF PORTFOLIO MANAGEMENT

The objective of portfolio management is to invest in securities in such a way that one maximizes one's returns and minimizes risks in order to achieve one's investment objectives.

A good portfolio should have multiple objectives and achieve a sound among them. Any one objective should not be given under importance at the cost of others.

Presented below is some important objectives of portfolio management.

1. Safety of the investment. The first important objective of a portfolio, no matter who owns it, is to ensure that the investment is absolutely safe. Other considerations like income, growth, etc. only come into the picture after the safety of your investment is ensured.

Investment safety or minimization of risk is one of the important objectives of portfolio management. There are many types of risks which are associated with investment in equity stocks, including super stocks. Bear in mind that there is no such thing as a zero-risk investment. Moreover, relatively low risk investments give corresponding lower returns. You can try and minimize the overall risk or bring it to an acceptable level by developing a balance and efficient portfolio. A good portfolio of growth stocks satisfies all the objectives outlined above.

2. Stable current returns. Once investment safety is guaranteed, the portfolio should yield a steady current income. The current returns should at least match the opportunity cost of the funds of the investor. What we are referring to here is current income by way of interest of dividends, not capital gains.

3. Appreciation in the value of the capital. A good portfolio should appreciate in value in order to protect the investor from any erosion in purchasing power due to inflation. In other words, a balanced Portfolio must consist of certain investments which tend to appreciate in real value after adjustment for inflation.

4. Marketability. A good portfolio consists of investment which can be marketed without difficulty. If there are too many unlisted or inactive shares in your portfolio you will face problems in encasing them, and switching from one investment to another. It is desirable to invest in companies listed on major stock exchange, which are actively traded.

5. Liquidity. The portfolio should ensure that there are enough funds available at short notice to take care of the investor's liquidity requirements. It is desirable to keep a line of credit from a bank for use in case it becomes necessary to participate in right issue, or for any other personal needs.

6. Tax Planning. Since taxation is an important variable in total planning, a good portfolio should enable its owner to enjoy a favourable tax shelter. The portfolio should be developed considering not only income tax, but capital gains tax, and gift tax; as well. What a good portfolio aims at is tax planning, not tax evasion or tax avoidance.

5.6 SELF CHECK EXERCISE

1. Define Utility Theory.
2. How to create Equity Portfolio.

5.7 SUMMARY

Modern portfolio theory (MPT) is a theory on how risk-averse investors can construct portfolios to maximize expected return based on a given level of market risk. Utility theory is the foundation stone for the theory of portfolio choice. It enables an investor or financial analyst how to use and allocates financial resources among different security alternatives. The objective of portfolio management is to invest in securities in such a way that one maximizes one's returns and minimizes risks in order to achieve one's investment objectives.

5.8 GLOSSARY

Portfolio: Portfolio means a collection or combination of financial assets (or securities) such as shares, debentures and government securities.

Investment Risk Pyramid: A portfolio strategy that allocates assets according to the relative safety and soundness of investments. The bottom of the pyramid is comprised of low-risk investments, the mid-portion is composed of growth investments and the top is speculative investments. Random **Diversification:** Also known as naive diversification, it refers to the act of randomly diversifying without regard to relevant investment characteristics such as expected return and industry classification.

Value Investing: In the case of value investing, bargains are often measured in terms of market prices that are below the estimated current economic value of tangible and intangible assets.

5.9 ANSWERS TO SELF CHECK EXERCISE

1. For answer refer to section 5.2
2. For answer refer to section 5.4

5.10 TERMINAL QUESTIONS

1. What do you mean by utility theory of portfolio choice? What are its assumptions?
2. What are the objectives of portfolio management?

5.11 SUGGESTED READINGS

- Samuels J. M, F.M. Wilkesard R.E. Brayshaw, Management of Company Finance, Chapman and Hall, London
- Smith, Edger Lawrence, Common Stocks as Long-term Investment, New York, MacMillan.
- Sprinkel, Beryl, W., Money and Stock Prices, Homewood III, Richard S. Irwin, Inc.
- Sudhindhra Bhatt, Security Analysis and Portfolio Management, Excel Books.
- Fischer, D.E., Security Analysis and Portfolio Management, Prentice Hall, 1983.
- Reilly, F.K., Investment Analysis & Portfolio Management, Dryden Press, 1985.

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CHAPTER-6

PORTFOLIO PERFORMANCE EVALUATION

Structure:-

- 6.0 Learning Objectives
- 6.1 Introduction
- 6.2 Performance Evaluation
- 6.3 Methods of Portfolio Performance Evaluation
- 6.4 Self Check Exercise
- 6.5 Summary
- 6.6 Glossary
- 6.7 Answers to Self Check Exercise
- 6.8 Terminal Questions
- 6.9 Suggested Readings

6.0 LEARNING OBJECTIVES

After reading this chapter, you will be able to:-

- Understand the theoretical basis for portfolio planning
- Appreciate the need for planning portfolios to suit individual needs
- Apply the various techniques available for planning and allocation.

6.1 INTRODUCTION

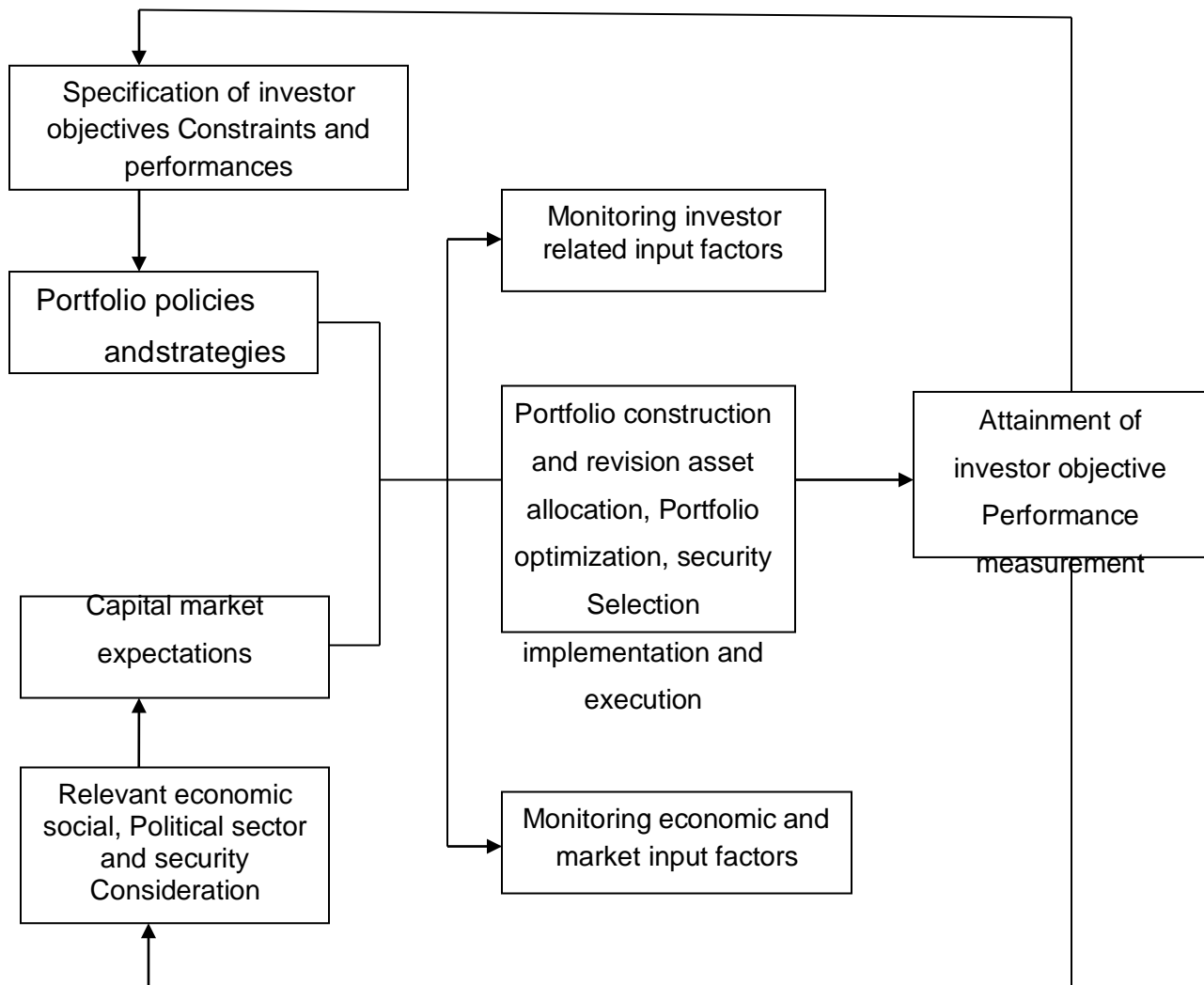
Portfolio construction refers to allocation of funds among variety of financial assets open for investment. Portfolio theory concern itself with principles governing such allocation. The objective of this theory is to elaborate such principles in which risk can be minimized and return can be maximized.

Portfolio management is a dynamic and flexible concept and involves continues

and systematic analysis, judgement and operation.

- 1) It involves construction of portfolio taking into account investors objectives constraint, preference for risk and return and tax liability.
- 2) It involves that portfolio is reviewed and adjusted from time to time in tune with the market conditions.
- 3) The evaluation of portfolio performance is to be done by the manager in terms of targets set for risk and return and changes in the portfolio are to be affected to meet the changing conditions.

STAGES IN PORTFOLIO MANAGEMENT



6.2 PERFORMANCE EVALUATION

Investors who have to pay to portfolio managers for actively management of their portfolio have right to know about the performance of portfolio. Also the manager by evaluating his own performance can identify sources of strength or weakness- Hence portfolio performance evaluation can be viewed as a feedback and control mechanism that can make the investment management process more effective. Portfolio performance is evaluated by measuring and comparing portfolio return and associated risk.

There are three major methods of assessing performance

1. Return per unit of risk
2. Differential return
3. Components of performance

The first of the risk adjusted performance measures in the type that assesses the performance of a fund in terms per unit of risk. The technique here is to relate the absolute level of return achieved to the level incurred. According to this method, funds that provide the highest return per unit of risk would

be judged as having provided the best performance, while those providing the lowest return per unit of risk would be judged as the poorest performers. There are two alternatives, yet similar methods of measuring return per unit of risk: (1) the reward to variability ratio developed by William Sharpe, and (2) the reward to volatility ratio developed by Jack Treynor. These two performances ratios differ only in that former considers total risks measured by standard deviation, while the latter considers only market risk as measured by β is Beta. ;

A second category of risk-adjusted performance evaluation is the type referred to as differential return measure and is developed by Michael Jensen. The underlying objective of this technique is to calculate the return that should be expected for the fund given the realized risk of the fund and compare that with the return actually realized over that period. In making this comparison, it is assumed that the investor has a passive alternative of merely buying the market portfolio and adjusting for the appropriate level of risk by borrowing or lending at the risk-free rate.

The performance measures stated above are primarily concerned to an analysis of overall

performance of a fund. However, it is useful to develop a more refined breakdown and assess the sources or components of performance. Eugene Fama has provided an analytical framework that elaborates on the three previously state risk-adjusted methods to allow a more detailed breakdown of the performance of a fund. This is done in three ways: (1) stock selection here examine the overall performance of the fund in terms of superior or inferior stock selection and the normal return associated with a given level or risk; therefore,

$$\text{Total excess return} = \text{Selectivity and risk}$$

In striving to achieve above average returns, fund managers will generally have to forsake some diversification that will have its cost in terms of additional portfolio risk. Hence some added return should be expected to compensate for this additional diversification risk. This is done by using the capital market line to determine the return commensurate with the incurred risk as measured by the standard deviation of the return (2) Market timing the first method focused on the capability of management in generating superior performance by means of stock-selection techniques. Under this second method, fund managers can also generate superior performance better than market average, by timing the market correctly, that is, by assessing correctly the direction of the market, either bull or bear, and positioning the portfolio accordingly. Managers with a forecast of declining market can position a portfolio properly by increasing the cash percentage of the portfolio or by decreasing the beta of the equity portion of the portfolio. Conversely, a forecast of a rising market would call for reduction in the cash position or an increase in the beta of the equity portion of the portfolio. (3) Cash management analysis-Farrell used the alternative but complementary method of directly analyzing the way mutual funds varied the cash percentage of the

fund to assess the competence of funds in market timing in different environments. To assess the degree to which variations in the cash percentage around the long term average have benefited or detracted from fund performance, two indices were constructed for each fund. The first index is based on the average cash to other asset allocation experienced by the fund over the period of analysis. The second index is based on a quarter to quarter changes experienced by the fund over the period.

6.3 METHODS OF PORTFOLIO PERFORMANCE EVALUATION

Portfolio evaluation has evolved dramatically over the last two decades. The acceptance

of modern portfolio theory has changed the evaluation process from crude return calculation to rather detailed explorations of risk and return and the sources of each. The evaluation of portfolio performance is essentially concerned with comparing the return earned on some portfolio with the return earned on one or more other portfolios. It is important that the portfolios chosen for comparison are truly comparable broadly speaking, there are three widely used and universally recognized methods of portfolio performance evaluation. These are:

1. Sharpe's Return to Variability

This model yields a single value that can be used for investment performance rankings. It assigns the highest value to portfolios that have the best risk-adjusted rate of return. The difference between an investment's expected rate of return and the risk-less rate, ($R_p - R_f$), is called the risk premium.

This risk premium is divided by the portfolio's standard deviation to compute the excess return per unit of risk the return to variability, as:

$$\text{Sharpe's Model} = \frac{\text{portfolio's average rate of return Minus Risk-less rate of Return}}{\text{portfolio's standard deviation of rates of return}}$$

$$= \frac{\text{risk premium}}{\text{standard deviation}}$$

Symbolically, $S = \frac{R_p - R_f}{\sigma_p}$

Where S = Sharpe's value

(R_p) = Expected average return from the portfolio,

R_f = Risk-less rate of return

σ_p = Variability in portfolio's return or standard deviation of portfolio or the risk of portfolio

P = portfolio

Graphically, the index, S measures the slope of the line emanating from the risk-less rate outward to the portfolio in question (Fig. 1). Thus, the Sharpe model summarizes the risk and return of a portfolio in a single measure that categorizes the performance of the fund on a risk adjusted basis. The larger the value of S, the better the portfolio has performed.

E(r_p)

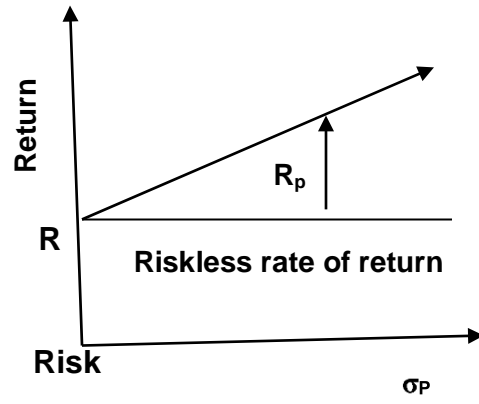


Fig. 1

Example 1.

Portfolio A = expected return

$R_p = 10\%$

$\sigma_p = 4\%$

Portfolio B

Expected return, $R_p = 18\%$

Riskless rate of return i.e. $R_f = 6\%$

$$S_A = \frac{R_p - R_f}{\sigma_p} = \frac{10\% - 6\%}{4} = 1$$

$$S_B = \frac{18\% - 6\%}{6} = 2$$

B is better portfolio because index is higher.

Example 2. Assume that portfolio A has an average return of 18 percent with a standard deviation of 3 percent, and portfolio B has an expected average return of 33 percent with a standard deviation of 6 percent. Further assume that risk free rate of return, $R = 9$ percent. Then the Sharpe index equals:

$$S_A = \frac{18\% - 9\%}{3} = \frac{9}{3} = 3$$

and for B: $S_B = \frac{33 - 9}{6} = \frac{24}{6} = 4$

Thus, 3 is ranked as the better portfolio because its index is higher ($4 > 3$).

2. Treynor's Return to Volatility

According to Jack L Treynor, the first step in obtaining a satisfactory performance measure is to relate the expected rate of return of a mutual fund to the rate of return of a suitable market average. The device for accomplishing this is characteristics line. The characteristic line contains information about both expected rate of return and risk. The slope of the line measures volatility, a steep slope means that the actual rate of return for the fund in question is relatively sensitive to fluctuations in the general stock market; a gentle slope indicates that the fund in question is relatively insensitive to market fluctuations. He also pointed out that investment risk in a diversified fund is the sum of responses to

(1) general market fluctuations and (b) and (2) fluctuations peculiar to the particular securities

held in the portfolio (a). If a fund is properly diversified, the latter risk (a) tends to average out, since the securities are casually unrelated in a properly diversified portfolio (a->, with proper diversified portfolio). The former risk (b), being common to all stocks in greater or lesser degree, does not tend to average out. Therefore, if management of a portfolio attempts to maintain a constant degree of volatility, then, the slope of the characteristic line will tend to measure that volatility.

Therefore, to find the b, the mutual funds characteristic regression line below must first be calculated, as:

Where

$$R_{p,t} = a_p + b_p r_{m,t} + e_{p,t}$$

$r_{p,t}$ = Rate of return on portfolio p in the period t

$r_{m,t}$ = Rate of return on market index in period t

$e_{p,t}$ = Unexplained residual return for portfolio p in period t

a_p = Regression line's intercept term for portfolio p

b_p = beta coefficient for portfolio p, a measure of the portfolio's undiversifiable systematic risk

For ranking of portfolios, Treynor's performance measure is defined as:

$$\text{Treynor's measure} = \frac{\text{portfolio's average rate of return} - \text{Risk-less rate of Return}}{\beta \text{ coefficient of portfolio, } P}$$

Therefore, Treynor's measure, in a sense, is the measure of portfolio's excess return per unit of portfolio's beta coefficients (b). Thus, symbolically,

$$T_p = \frac{R_p - R_s}{\beta}$$

Where T_p = Treynor's measure of portfolio performance

R_p = return of the portfolio p

R_s = riskless rate of return

β = beta coefficient or volatility of the portfolio's.

In this context, it becomes necessary to know volatility of portfolio. Volatility of the portfolio is the measure of sensitivity or responsiveness of portfolio return under consideration to a given change in the return of market portfolio. Suppose, in a given period market portfolio has

registered a increase of 40 percent and if the return of portfolio concerned register an increase of 80 percent during the same period, then the volatility of the concerned portfolio is, $80/40 = 2.0$ times the market portfolio. Hence portfolio is 2.0 times more sensitive to market movements. It is so because the volatility of market portfolio (b of market) is always taken as 1.00.

Graphically, the Treynor's measure can be depicted graphically as:

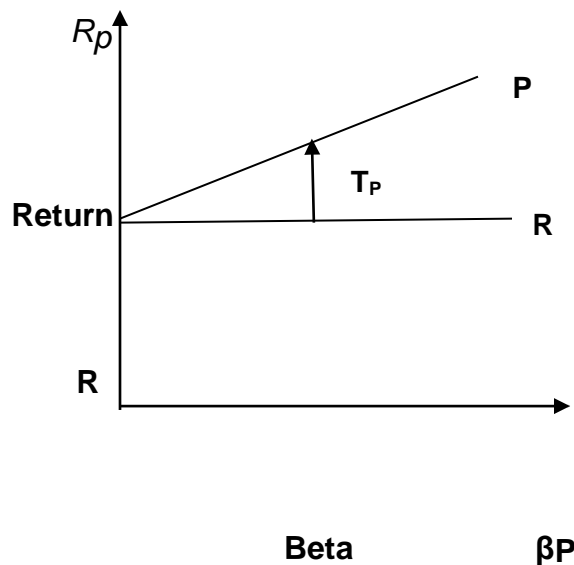


Fig. 2

Thus, the diagrammatic presentation of Treynor's, model seems to be identical with that of Sharpe's, yes, it is, except with a difference that in the latter variability (a) was taken on X-axis, whereas, in the former volatility (b) is taken. This is vital point of differentiation between the two since in Treynor's framework unsystematic risk will disappear due to proper diversification and consequently the residual systematic risk (a) becomes sole representative of risk of portfolio whereas Sharpe's model on the other hand, measures portfolio risk by variability (s) which includes both systematic and unsystematic risk ($s = a + b$).

Therefore,

Portfolio risk = systematic risk + unsystematic

riskOr $s = a + b'$

and, due to proper diversification $a = 0$,

Thus,

$$S = b+0$$

$$S = b$$

S = Sharpe's measurement of portfolio risk i.e.

variability B = Treynor's measurement of portfolio risk

i.e. volatility.

Example 3.

Portfolio	return	β	R1
A	20	0.5	10
B	24	1.0	10

$$T_A = \frac{R_p - R_f}{B} = \frac{20 - 10}{0.5} = 20$$

$$T_B = \frac{24 - 10}{1} = 4$$

Portfolio A performs better

Example 4. Assume that portfolio A has average return of 15 percent with volatility of 3 percent, and the portfolio B has an average return of 18 percent with volatility of 5 percent. Further, assume that riskless rate, $R = 9$ percent. Then the Treynor's value of for portfolio A equals:

$$T_A = \frac{15 - 9}{3} = 2.0$$

and for portfolio B:

$$T_B = \frac{18 - 9}{5} = 1.8$$

Therefore, Traynor's index has ranked portfolio A as the better portfolio because its value is higher (2.0>1.8) despite the fact that portfolio B had a higher return (18%>15%). It is due to difference in volatility (b) of two portfolios.

3. Jensen's Differential Return

The underlying objective of this model is to calculate the return that should be expected for the fund given the realized risk of the portfolio, and to compare that with the return actually realized over that period. In making this comparison it is assumed that the investor has a passive alternative of buying the market portfolio and adjusting that for the appropriate level of risk by borrowing or lending at the risk free rate. Given this assumption, the most commonly used method of determining the return that should have been earned by the fund at a given level of risk is as determined by Capital Asset Pricing Model (CAPM). Thus, Jensen attempts to construct a measure of absolute performance on a risk adjusted basis; that is, a definite standard against which performances of various funds can be measured. This standard is based on measuring the portfolio managers' predictive ability, that is, his higher than those which were expected, given the level of riskiness of this portfolio.

The simplified version of Jensen's Model as based on CAPM is given below as:

$$R_p - R_f = a + b(R_m - R_f)$$

Where:

R_p = Portfolio return

R_f = Riskless rate of return

a = Y intercept that measures the forecasting ability of portfolio manager

b = Beta coefficient, a measure of systematic risk

R_m = Return of market portfolio.

It should be noted that this model of portfolio performance evaluation neither is similar to that of those developed by Sharpe and Treynor nor except in respect of a , which is the measurement of forecasting ability of portfolio manager. In fact a positive a value represents that extra return accruing to that particular portfolio is because of superior management. The zero value of a ($a = 0$) indicates neutral performance by management i.e. management has done just as much as the market portfolio. While the negative value ($a < 0$) indicates inferior management performance

because management of portfolio failed to do as much as an unmanaged portfolio or market portfolio. This situation may arise in case portfolio returns were not sufficient to offset the expenses incurred in the portfolio selection, portfolio revision, and in the Treynor model is always at the origin, whereas in Jensen's model it may be in the origin ($\alpha = 0$), above the origin ($\alpha > 0$), and may even be below the origin when α involves a negative value ($\alpha < 0$).

Thus, performance measurement is an integral part of the investment management process. In evaluating the performance, there are two major tasks: to determine whether the performance is superior or inferior and to determine whether the performance is due to sheer luck or change or due to skill. The essential ideas behind performance evaluation are to compare an actively managed portfolio's returns against the returns of an alternative benchmark portfolio. An appropriate benchmark should be relevant and feasible, and it should exhibit risk similar to that of the actively managed portfolio. The risk-adjusted measures of performance have been criticized for using a market surrogate instead of the 'true' market portfolio, being unable to statistically distinguish luck or chance from skill except over a very long period of time, using an appropriate risk-free rate; and relying heavily on the validity of the CAPM.

If $\alpha = 0$ means neutral performance of manager i.e. same as that of market. If $\alpha > 0$, superior performance over the market

If $\alpha < 0$ inferior performance,

Example 5. Jensen Model

Portfolio	Return	Portfolio Beta
1	18%	1.2
2	15%	0.8
3	21%	1.5
Market	16%	1.0

Market beta = 1.0

Risk-free return = 10%

1. Portfolio 1

$$R_p = R_s + B(R_m - R_s)$$

$$R_p \Rightarrow 10\% + 1.2 (16 - 10) = 17.2\%$$

2. $R_p \Rightarrow 10\% + 0.8 (16 - 10) = 14.8\%$

3. $R_p \Rightarrow 10 + 1.5 (16 - 10) = 19.0$

Actual Vs. Estimated Value

1) $= 18 - 17.2 = 0.8\%$

2) $= 15 - 14.8 = 0.2\%$

3) $= 21 - 19.0 = 2.0\%$

It shows that best managed portfolio is (3) portfolio and gives a return 2% higher than expected.

Graphically

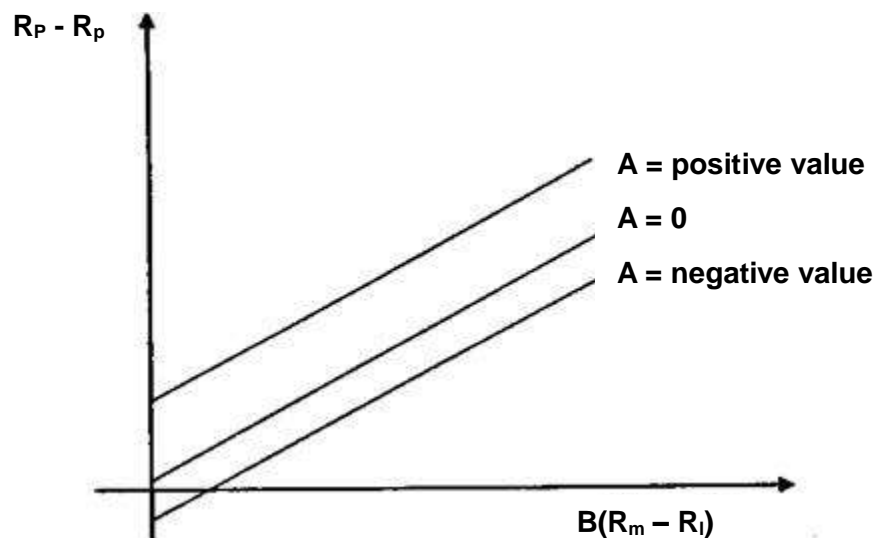


Fig. 3

6.4 SELF CHECK EXERCISE

1. What is portfolio management?
2. Discuss Sharpe's Return to Variability.
3. Discuss Jensen's Differential return.

6.5 SUMMARY

Whenever an investor employs resources, be it in the form of hiring employees for his company, establishing a charitable fund or investing money in an investment fund he will want to measure the performance of his investment. The investment manager will be bound to the investment policy and subject to a constant evaluation of his achievements. There are three major methods of assessing performance i.e., return per unit of risk, differential return and components of performance. There are three widely used and universally recognised methods of portfolio performance evaluation. These are Sharpe's return to variability, Treynor's return to volatility and Jensen's differential return.

6.6 GLOSSARY

Portfolio Construction: Portfolio construction is the process of blending together the broad asset classes to obtain an optimum return with minimum risk.

Benchmark Portfolio: A tool for the meaningful evaluation of the performance of a portfolio manager.

er.

Jensen's Measure: It is an absolute measure of performance, adjusted for risk.

The Sharpe Measure: It evaluates the portfolio manager on the basis of both rate of return and diversification.

Portfolio Risk: Portfolio risk is simply weighted average risk of all securities in the portfolio and is measured by the standard deviation together with the covariance between securities.

6.7 ANSWERS TO SELF CHECK EXERCISE

1. For answer refer to section 6.1
2. For answer refer to section 6.3
3. For answer refer to section 6.3

6.8 TERMINAL QUESTIONS

1. What do you mean by portfolio management? What are the stages in portfolio management?
2. What is performance evaluation? What are the major methods of assessing

performance?

6.9 SUGGESTED READINGS

- Samuels J. M, F.M. Wilkesard R.E. Brayshaw, Management of Company Finance, Chapman and Hall, London
- Smith, Edger Lawrence, Common Stocks as Long-term Investment, New York, MacMillan.
- Sprinkel, Beryl, W., Money and Stock Prices, Homewood III, Richard S. Irwin, Inc.
- Sudhindhra Bhatt, Security Analysis and Portfolio Management, Excel Books.
- Fischer, D.E., Security Analysis and Portfolio Management, Prentice Hall, 1983.
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CHAPTER-7

FUNDAMENTAL ANALYSIS AND VALUATION-I

Structure:-

- 8.1 Learning Objectives
- 8.2 Introduction
- 8.3 Meaning of Fundamental Analysis
- 8.4 Economy-Wide Factors
- 8.5 Industry Analysis
- 8.6 Self Check Exercise
- 8.7 Summary
- 8.8 Glossary
- 8.9 Answers to Self Check Exercise
- 8.10 Terminal Questions
- 8.11 Suggested Readings

7.0 LEARNING OBJECTIVES

After reading this chapter, you will be able to:-

- Describe the various factors that influence the economy
- Understand the relationship between stock prices and the economy
- Describe the various factors that influence industries
- Evaluate the future prospects of an industry

7.1 INTRODUCTION

In the fundamental approach, an attempt is made to analyze various fundamental or basic factors that affect the risk-return of the securities. The effort here is to identify those securities that one perceives as mispriced in the stock market. The assumption in this case is that the 'market price' of security and the price as justified by its fundamental factors called 'intrinsic value' are different and the marketplace provides an opportunity for a discerning investor to

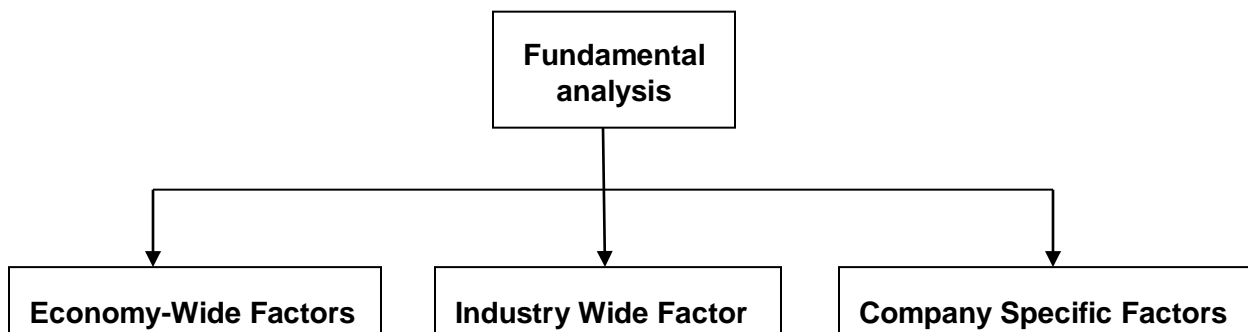
detect such discrepancy. The moment such a description is identified; a decision to invest or disinvest is made. The fundamental factors may relate to the economy or industry or company or all some of this. Thus, economy fundamentals, industry fundamentals and company fundamentals are considered while prizing the securities for taking investment decision.

7.2 MEANING OF FUNDAMENTAL ANALYSIS

The basic purpose of buying a security is to earn dividends and ultimately sell it at higher price. An investor, therefore, is interested in obtaining estimates of future dividends, and also the future price of the share. These in turn will depend upon the performance of the industry to which the company belongs, and the general economic situation of the country.

The multitude of factors affecting a company's profitability can be broadly classified as:

1. **Economy-wide factors.** These include the factors like growth rate of the economy, the rate of inflation, foreign exchange rates etc. which affect profitability of all companies, in general.



2. **Industry-wide factor.** These include factors, which are specific to industry to which the company belongs. For instance, the demand supply gap in the industry. The emergence of substitutes, and changes in government policies towards industry affect the company belonging to an industry.
3. **Company specific factors.** These factors are specific to a firm. The firm-specific factors like plant and machinery, the brand image of the product, and ability of the management to affect the profitability.

An investor with rational and scientific approach will therefore be interested in analyzing the influences of the expected performance of the company, industry and the economy as a whole on share prices, even before taking the investment decision. Such analysis is called fundamental analysis. This analysis is based on the premise that share prices are determined by a number of fundamental factors relating to the economy, industry and the company. Based on these fundamental factors, each share is assumed to have an economic value or intrinsic value. The purpose of fundamental analysis is to evaluate the present and future earning capacity of a share based on the economy, the industry and company fundamentals and decide the intrinsic value of a share.

The intrinsic value determined by fundamental analysis is compared with the prevailing market price to arrive at an investment decision. If market price is more than intrinsic value, the share is considered to be overpriced and a "Sell" decision is recommended. On the other hand if intrinsic value is less than market price the share is considered to be underpriced and "Buy Decision" is recommended. The fundamental analytical frame work is called Economy- industry Company Analysis frame work (EIC frame work).

In the present chapter we discuss the analysis of economy wide factors. Industry factors and company factors.

7.3 ECONOMY-WIDE FACTORS

The performance of the company depends on the performance of the economy. We shall illustrate how to prospects of a company are influenced by larger economy-wide factors. Suppose, for instance, we are examining the possibility of investing in share of Cement Company. It is true that if the economy is growing fast, the demand for cement in general is expected to grow fast. Besides the cement companies, the firms in other industry will also do well. On the other hand, if the economy is passing through recession, the performance of the cement company will be generally bad.

The investors are concerned with those variables in the economy which affect the performances of company in which they intend to invest. A study of these economy variables will give some idea as to the potential future performance of the company. We therefore shall look at some of the key economic variables that an investor would have to track down as a part of fundamental analysis.

Growth rate of National Income & Related Measures:

The rate of growth of national economy is an important variable to be considered by an investor. We often hear of Gross Domestic Product (GDP), Gross National Product (GNP) and Net National Product (NNP). These terms vary slightly between themselves. But, they all measure the total income or total economic output of the whole country. The precise conceptual differences between them are not important in the present context but, for most purposes, what is important is the role of growth of the economy. The growth rate in any of these measures is good enough to reflect the growth of the economy, because growth rates of all of them are close to each other. The estimates of the GNP, NNP and GDP and their growth rates are made available by the government from time to time. The estimates of growth rate of the economy would be a good pointer to the prospects of the individual sectors and hence to the returns that the investor can expect from investing in shares. The profitability of the companies are expected to be attractive when the economy grows faster, and the returns to investment in share in turn are expected to be good.

Growth Rate of Industrial Sector

The growth of industrial sector is an important contributor to the growth of national income. The performance and growth of the industry is measured through an index number called index of industrial Production. The Industrial growth rate is further disaggregated into growth rates of different sectors like electricity, basic goods, consumer goods and so on. The trends in such rates broadly point to the performances of the different industrial sectors to which a specific company of investor's interest belongs.

Inflation

Inflation prevailing in the economy has considerable impact on the performance of the companies. High rates of inflation upsets business plans; result in high input costs and hence reduction in profit margins. On the other hand, the inflation erodes purchasing power of buyers and results in reduction in demand for goods. The demand for consumer goods will particularly be affected adversely. The firms in these industries therefore make continuous assessment about inflation rates likely to prevail so that they could tune pricing, distribution and promotion policies to the anticipated impact of inflation on their product demand.

Inflation is measured by a suitable price index number. The wholesale price index (WPI),

number is generally used for this purpose. This index number is available on a weekly basis from Central Statistical Organization (CSO) and Reserve Bank of India (RBI). The fundamental analyst should evaluate the prevailing and likely future trends in inflation and their probable impact on the company's performance. However it should be noted that the economists argue that moderate rate of inflation is good and is necessary for industrial growth, as it is a good motivator for higher production, without introducing any serious imbalance between demand and supply in the economy. High inflation rate, say 2-digit rate is however associated with dangerous consequences.

Interest Rates

Interest rates reflect the cost and availability of credit to the companies operating in the economy. The interest rate, and the volume as well as direction of the credit supply, in the economy is influenced by monetary policy of the Reserve Bank of India. If the cheap money policy is pursued, the interest rates are likely to be lower and larger volume of money supply is expected to be there in the economy.

A lower rate of interest implies lower costs of financing the company's operations and assures higher profitability. Higher, the rate of interest, higher will be the costs of manufacturing and sale, which is expected to lead lower profitability to the company. The fundamental analyst therefore, has to examine the trends in money supply, interest rates and monetary policy and their impact on an individual company's performance.

Foreign. Exchange Rate

If a company is major exporter or importer its performance and profitability are likely to be affected considerably by the exchange rate of rupee against other currencies. A depreciation of rupee vis-à-vis U.S. dollar, a major internationally accepted currency, will make Indian products more competitive, pricewise in the foreign markets, thereby stimulating exports from India. However it will make imports more expensive and a company which depends heavily on imports might find that devaluation of rupee has affected its profitability adversely.

The exchange rate of rupee is adversely affected by deficit balance of trade, balance of payment deficit and foreign exchange reserves position. The excess of imports over exports is called deficit balance of trade. To this we add balances on "invisibles" like net tourism receipts and interest payments etc. and get the balance on current account. We then add the balance of

payment deficit. Each of these reflects the strength of rupee on external account. If these deficits increase there is high chance that the rupee will depreciate against foreign currencies. Another important indicator is foreign exchange reserves. The balance of payment deficit leads to a decline in these reserves. The size of the foreign exchange reserves is a measure of strength of rupee on external account. A large foreign exchange reserve is a measure of strength of rupee on external account. Large foreign exchange reserves help to increase the value of rupee against other currencies.

Government Budget

The government budget provides detailed information on each of government spending and revenues. The deficit is essentially the excess of government spending on revenues. Budget deficit though often incurred for creating infrastructural facilities in the economy tends to create inflationary pressure. Due to this there is a strong public opinion against the government's creation of deficit without expanding the revenue.

The government spending generates substantial demand for goods and services produced by such industries. For example, if the government makes a large allocation in its budget for malaria eradication and control program, then prospects of industry engaged, in manufacture of malathion—a chemical used for mosquitoes' control—would improve. The prospect of cement industry is influenced by the government expenditure, on construction of bridges, dams and similar infrastructure projects. The government expenditure is also great stimulant of the economy by creating employment and generating effective demand. In view of the significance of government expenditure and deficit on the economy, an investor has to evaluate these carefully to assure their impact on his investment.

Savings and Investment

The capital market is a channel through which the savings of households are made available to corporate for investment. Therefore the trends in saving and investment are significant in studying their impact on capital market. A rising trend in investment points to the fact, that economy is on upswings with additional employment and income generation. Under such simulation, the share prices are likely to go up, particularly due to demand for this type of financial assets. Further, a part of the rising savings of the people will find their way to the stocks investment, creating demand for stock, which will in turn push up share prices. Moreover, the

pattern of distribution of savings over the various assets like bank deposits, bullion, stocks etc. will give an idea of relative preference of the investor to various types of assets.

Infrastructure

The availability of infrastructure facilities like power, transportation and communication system, affect the performance of the companies. Inadequate and inefficient infrastructure leads to lower productivity, wastage, delays and higher cost of production. An investor should, therefore, assess the status of infrastructure facilities available in the economy and their impact on a company. Further, the likely trends in infrastructure development having bearing on a specific company or industry must be identified and its impact evaluated.

Economic and Political Stability

A stable political environment is necessary for steady and balanced growth. The stable but long term economic policies are needed for industrial growth. Such stable policies can be maintained only when stable political system exists and economic and political factors are well linked. A stable government will have a clear-cut long term economic policies, which will be conducive to good performance of the economy and industry. An investment analyst cannot afford to lose sight of this crucial factor and its impact on investment decision.

Monsoon

Indian economy is essentially an Agrarian economy. The agriculture accounts for 65% of occupations and 32% of GDP of the country. Agriculture has strong forward and backward linkages to industries like fertilizer, cotton textiles, sugar, and vanaspati and pesticides. Their performance depends heavily on agricultural performance which in turn depends, among other things on monsoons. Moreover, the improved performance of agriculture results in appreciable demand for goods and services by it. The research studies have pointed out that about 55% to 60% of demand for most consume? goods comes from rural sector. Thus the assessment of prospects of monsoon is attached with "significant" tag by an investor in stocks.

Meteorological forecasts of whether the monsoon will be good or bad are available in May. The monsoon lash in Kerala coast first, in early June and advances gradually to northwards. Such advances are reported in T.V and newspapers. Tentative assessments of adequacy of monsoons are available in July and August and a final picture emerges by end of September. Adequacy of monsoon involves a number of parameters like distribution of rainfalls

over space and time. The rains should occur uniformly in all districts where agriculture belts are situated and should occur at certain crucial points of agriculture cycle.

ECONOMIC FORECASTING

Economic analysis is the first step in fundamental analysis and it starts with an analysis of historical performance of the economy. But investment is future oriented activity. The investor is more interested in expected future performance of the economy and its various segments. For this purpose, forecasting the future direction of the economy and major macro-economic variables becomes necessary. Hence economic forecasting becomes a key activity in economic analysis. The main theme in economic forecasting is to forecast the national income. The GNP is one of measures of National Income. An investor would be particularly interested in forecasting the GNP and its various components that he is analyzing.

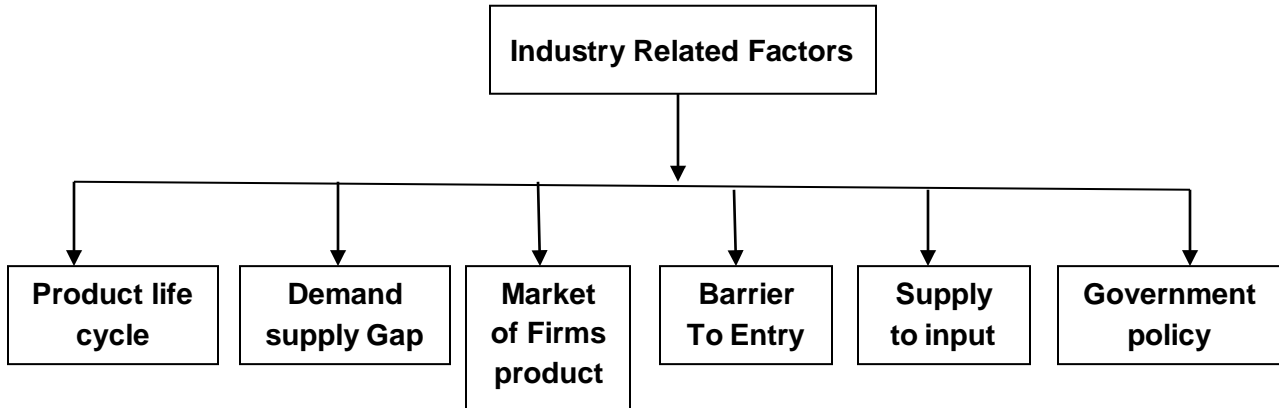
Economic forecasting is generally carried out for short period (up to 1 year) or medium period (1 to 3 periods) or for long period (3 to 5 years). But an investor is more concerned about short-term economic forecasts for period ranging from a quarter to one year. Some of the techniques of such economic forecasting are Anticipatory Survey, Barometric or leading indicator approach, econometric model building or sectoral analysis.

7.4 INDUSTRY ANALYSIS

A company belongs to an industry. An industry is generally described as a group of companies manufacturing and supplying similar products, which serve the need of common set of buyers. The industry classification is nothing but the product wise classification of the firms. Thus all companies who manufacture cement belong to cement industry. It is not unusual to find a company which belongs to more than one industry, because it manufactures more than one product. Yet, practically every company can be characterized as belonging to an industry.

The performance of a company would be influenced by the fortunes of industry to which it belongs. Not all industries may perform consistently with performance of the economy as a whole the economy is growing. Similarly recession does not mean that all industries will show a recession of same order. There is a need therefore for examining specific factors, on which performance of the industry depends.

Such industry related factors are:



- i. Product life cycle
- ii. Demand-supply gap
- iii. Market for firm's product
- iv. Barrier to entry
- v. Supply of input
- vi. Government policy towards the industry

PRODUCT LIFE CYCLE

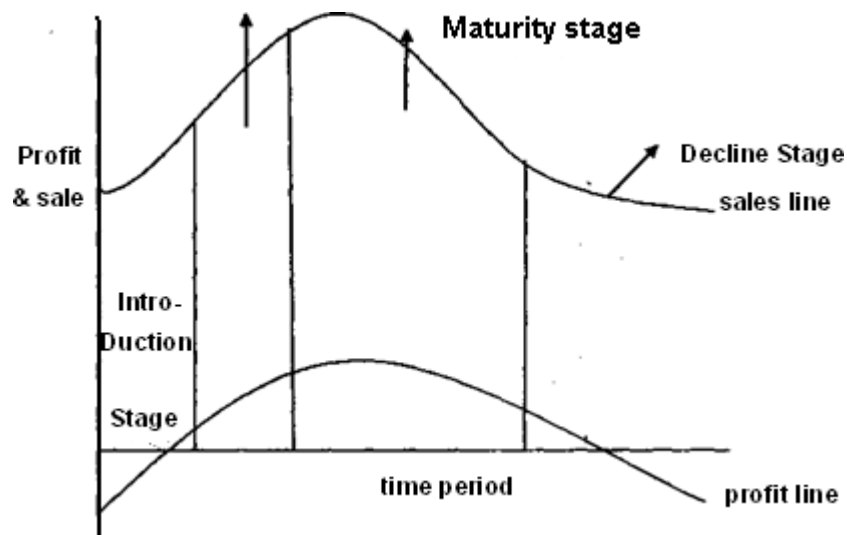
The marketing experts believe that each product has a life cycle. They have identified 4 phases of the product life cycle- introduction stage, growth stage, maturity stage and stagnation and decline stage.

1. **Introduction Stage.** This is first stage of the cycle of any product. The product and its technology are possibly new, whenever a new product is introduced. During this stage the product has to penetrate into market. For this purpose sizeable amount of promotion efforts and expenditure have to be incurred. The response of sales of product may not be large, but may be that clues of promising future are seen. In this stage profits may be low or at times negative. Thus for the investors who want to have quick returns the shares of such companies may not be attractive. But the genius investors who wish to get long-run returns will find such companies and industries attractive.
2. **Growth Stage.** Once the industry has established itself it passes through the stage of

growth. The companies in this stage of industry become stronger. The product demand goes onexpending. Each company, finds a market for itself and price charged and profits become attractive for investment purposes. The investors can get high return with law risk in this stage. The demand for goods of the industry exceeds the supply. The companies earn increasing profits and pay attractive dividends to the holders of the share.

3. **Maturity.** During this phase, the growth of the industry slackens. In other words, further rate of growth of sales of industry's product appears to be decelerating. The slowdown of sales growth is because the product has achieved acceptance by most potential buyers. Profits stabilize or decline because of increased competition. The transition of the industry from expansion to maturity stages is often slow. An investor should as far as possible dispose of his holdings in an industry which begins to pass from growth stage to maturity stage, because this stage will soon be followed by decline stage. However a company which faces this stage of maturity may make some technological break-through and introduce new product. Hence, an investor in a company has to monitor the industry's development continuously and diligently. Such technological changes may make a specific company's future performance even more attractive.
4. **Decline Stage.** After crossing the maturity phase the industry may stagnate for a very short period and decline will begin. This occurs when product of the industry is no longer in demand. New technology and new products have come to the market. The customers have changed their preference and habits. The company which still lives under this stage will be boasting of yester years and will soon be forced to down the shutters. An investor is unlikely to get any return in this stage. Hence, he should get out of such industries before the onset of the decline stage.

Growth stage



An analysis of the product life cycle has important implications for an investor. It gives him an insight into the apparent merits of investment in a given industry at any time. As industry is usually associated with low profitability in introduction stage, medium but steady profitability in maturity stage and negative profitability in decline stage.

DEMAND SUPPLY GAP

The demand for goods generally changes steadily whereas the change in capacity for the production of goods tends to be lumpy (i.e. change by substantial quantity at irregular interval). As a result of this industry passes through alternative period of under supply and over supply of capacities at different times. Excess capacity tends to reduce profitability of an industry through the decline in the unit price realization. On the contrary inadequate supply (Excess Demand over supply) tends to improve the profitability through higher price realization. The gap between demand-supply of a product is a fair indicator of short term and long term profitability of the firm in the industry. Thus, as part of the industry analysis, an investor has to analysis demand-supply gap.

COMPETITIVE CONDITIONS IN THE INDUSTRY

The competitive conditions prevailing in the industry is a significant factor to be considered in determining the current and future profitability of the firm in the industry.

The competitive factors operating in an industry are higher to entry,

- i. Bargaining power of buyers,

- ii. Bargaining power of suppliers,
- iii. Threat of substitutes and
- iv. The rivalry among competitions.

An industry with high profitability attracts new firms. As new entrants come to industry, the industry's capacity grows, hence leading to price depression for products and associated reduction in profit margins. On the other hand, if there are barriers to entry, the new firms will not easily enter the industry. Such barriers to entry may be due to product differentiation, absolute cost advantage, large scale operation resulting in saving in costs, high level of investment required to set up new capacity and intense advertisement made by one firm and creation of a brand image and loyalty. An industry which is well protected from the inroads of new firms would be ideal for investment.

The bargaining power of the buyer is an important factor affecting the competition in the industry. The consumer goods market is widely spread. There are numerous customers and segments. Hence, there is very little scope for consumers to together wield any power to influence prices and profitability, through concerted efforts. On the other hand, the auto ancillary industry supplying most of its output to a few automobile manufactures (buyers) is entirely at the mercy of large buyers. The number of segments in market is another significant factor. If number of segment of market to which the firm caters is large, survival may not be difficult, because when demand may be bad in some segments, it may be good in other segments.

The threat of new substitute the competition in the industry. New investments keep taking place and new better products get introduced. The new substitutes will compete with existing products and finally may replace the existing ones. The prospects of such an industry facing threat of substitutes cannot be considered to be goods.

The competition may be dependent also on the supplier's bargaining power. If one or a new strong suppliers increase the prices of raw material, the cost of production will go up and profitability of the buyer firms will shrink and its competitive advantage will be eroded.

Further, when supply is in excess of demand and there are many firms in industry, the competition among the firms in the industry will be high. This will lead to price cuts and increase in advertisement and promotional costs of all firms to maintain their relative market share. In such situation, the profitability gets eroded.

INPUT SUPPLY

The continuous availability of inputs at reasonable price is an important factor in determining its healthy performance. Some industries may not have difficulty in getting major raw material as they may be indigenously available. For example, bottling gas industry and salt industry have plenty of inputs. But in case of some other industries, there may be inadequate availability and erratic supply besides high price fluctuations. In case of India's synthetic yarn industry, which depends on a couple of domestic manufacture and imports, find themselves often in fix due to high prices and erratic supply. Industry analysis must take into account the availability of raw material and its impact on industry prospects.

GOVERNMENT POLICY

The attitude of the government towards and industry is an important determinant of its prospects. The government may assist and encourage some industries through favorable policies and legislations. Some other industries may not find favour with the government. The government may impose different kinds of legal hurdles and controls such as price and distribution controls, on such industries. A prospective investor should therefore consider the attitude of the government towards the industry being analyzed.

The analyst must evaluate all the above factors before making an investment decision. If the analysis of above factors indicates that the industry has favorable future prospects, the funds may be committed to shares of such companies in industry.