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PGDFM-03

Security Analysis and Portfolio Management

Block

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BLOCK 1 AN OVERVIEW

This block comprises three units and aims to provide a general backdrop to security Analysis and portfolio management.

Unit 1 : Nature and Scope of Investment Decisions, defines the term 'investment' and discusses the investment process and investment alternatives available in securities markets.

Unit 2 : Components of Investment Risk, stresses 'risk' as a crucial factor in all Investment decisions. It attempts to decompose the 'overall investment risk' into recognised elements and then regroups them into broad terrains of 'systematic' and unsystematic or 'diversifiable' risk categories.

Unit 3 : Valuation of Securities, highlights the primary variables that enter the market valuation process for securities and their clusters recognised as 'portfolio'. It has been demonstrated that an optimising investor and investors on the margin are constantly engaged in a 'trade-off' between the two mutually conflicting but dominant considerations in the pricing of securities. These considerations are 'risk' and 'return'.

UNIT 1 NATURE AND SCOPE OF INVESTMENT DECISIONS

Objectives

The objectives of this unit are to :

- explain the concept of investment in general
- distinguish investment and speculation
- discuss the process involved in investment decisions
- explain investment environment, alternatives and markets.

Structure

1.1 Investment Defined
1.2 Nature of Investment Decisions
1.3 The Investment Decision Process
1.4 The Investment Environment
  1.4.1 Financial Instruments
  1.4.2 Financial Intermediaries
  1.4.3 Financial Markets
1.5 Summary
1.6 Key Words
1.7 Self-Assessment Questions/Exercises
1.8 Further Readings

1.1 INVESTMENT DEFINED

You should have come across the term 'investment' in a wide variety of contexts. For example, 'Tisco plans to **invest** in the modernisation of its plant', or 'I must now **invest** in a house', or '**invest** your savings in mutual funds' or '**investment** in shares and debentures promises very good returns' are some of the situations when businesses/ individuals visualise a pay-off by putting their money in productive avenues.

Such examples as above underline the following characteristics of an investment decision. **One**, it involves the commitment of funds (in a plant, house, or shares and debentures) for future periods (generally exceeding one year) in expectation of a rate of return which is adequate to induce you to part with your funds. **Two**, the broad investment choices could be either physical assets (like plant or a house) or financial assets (like shares and debentures).

The investment decisions being studied in this unit as well as the course MS-44, relate to financial assets bulk of which comprise pieces of paper evidencing a claim of the holder (i.e., investor) over the issuer (i.e., user of funds). For example, when you buy shares of, say, Century Textiles, the share certificate that is handed over to you is a piece of paper which testifies your ownership of the number of shares stated in the certificate. It represents your financial claim (as a holder of the said shares) over Century Textiles Ltd., (as an issuer of the shares). The same can be said of units of UTI or any other mutual fund like the Mastershare or Canshare or any security like a debenture, a warrant, a convertible, etc., of a company. It must be noted that several buyers of securities hold them for limited periods and then sell them at the earliest possible opportunity that promises them their expected returns. Such persons are on the look out for investments which can be sold off in organised markets with ease and at best obtainable prices. Likewise, when they buy such investments they do expect 'easy' purchases at cheap prices. Financial assets which are tradeable with ease and at best prices in organised markets are known as 'marketable securities'

It may be appropriate at this juncture to define the term 'investment' in a general sense. You may look at the term investment as 'postponed consumption'. For example, an employee who contributes a part or his salary to provident fund is:

postponing his present consumption for future consumption which would be made possible by a draft on his provident fund accumulating after his retirement. Similarly when you buy shares or securities out of money saved from your current income, your current consumption is curtailed and the return on shares/securities realised in future time periods would, *inter alia*, be available for future consumption.

It is interesting to observe that all investment decisions arise from a 'trade-off' between current and future consumption. An example would make this idea clear. We can assume an individual who has Rs. 50,000 which he can either spend on current consumption or invest for, say, one year at 11 per cent interest. This person's current consumption (C_0) can range from zero (when he invests the whole of Rs. 50,000) to Rs. 50,000 (when he does not invest even a single rupee). Similarly, his future consumption (C_1) can be as high as Rs. 55,500 (when he invests the whole of Rs. 50,000 at 11 per cent per annum and ends up with a total wealth of Rs. 50,000 + Rs. 5,500 = Rs. 55,500 at the end of the year, Rs. 5,500 being interest earnings on Rs. 50,000 at 11 per cent) to as low as zero (when he consumes the whole of Rs. 50,000 right now). In most such cases, individuals would consume a part and invest the rest. Such a situation is called a 'trade-off' between current and future consumption. This is presented in Figure 1.1 which plots one of the several possibilities for our hypothetical individual on the trade-off function MN. Our investor is on point 'X' which suggests that he spends Rs. 30,000 today and invests the balance Rs. 20,000 to get a total sum of Rs. 22,000 including interest at 11 per cent after one year.

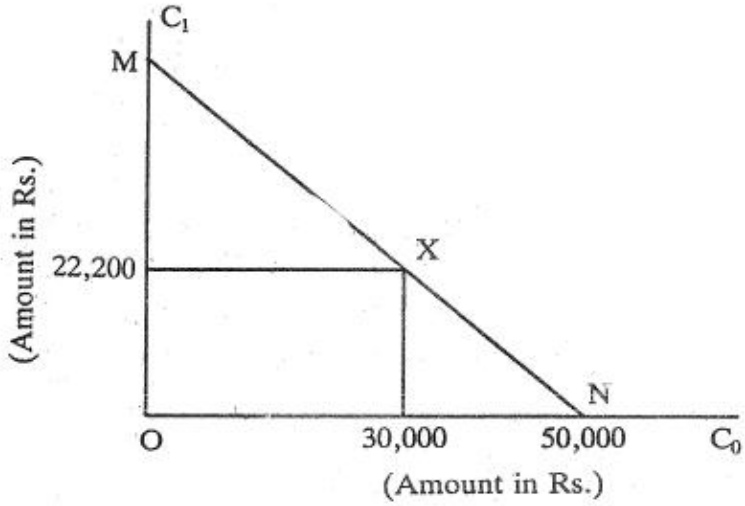


Figure 1.1 : Trade-off between present and future consumption

Having defined 'investment' in terms of 'postponed consumption' we must get ready to answer an inescapable question viz., why should a person postpone his/her present consumption? This question acquires added significance because we know that individuals generally prefer current consumption to future consumption. And if they are required to invest or postpone current consumption there must be commensurate inducement. This underlines the need for a positive rate of return on all potential investment without which a person would prefer to consume all his income today rather than tomorrow. The 'tomorrow' must promise a larger wealth only if current consumption is to be avoided today. Such an investment/consumption behaviour is founded on an important concept known as 'time preference for money'. This concept signifies 'a rupee today is worth more than tomorrow'

You will readily notice that a monetary rate of return may well be fully swallowed away by the spectre of inflation. For example, if you earn an interest rate (nominal) of 11 per cent for one year on your investment and face the threat of an 11 per cent price rise too during that year, where do you stand in terms of purchasing power of your money? What happens in a situation like this is that the 11 per cent monetary return is neutralised by an 11 per cent inflation and you remain after one year where you were a year ago. It is, therefore, natural that an investor would be induced to

postpone consumption today only if his command over goods and services does not get diluted over time. Thus, if he gets 11 per cent nominal interest and 11 per cent is the rate of inflation, his real rate of return would be zero. *In the event of inflation, what induces investors to postpone current consumption is the real rate of return and not just the monetary rate of return.* There is yet another dimension to the rate of return as an incentive to invest. For example, if a person buys, say, government securities he/she is completely assured of all payments viz., interest and principal. In such cases, a relatively lower rate of return is adequate as an incentive. But if the avenue of investment is a company debenture, the probability of default does exist even if the rate of interest and the repayment schedules are known in advance. The investor here perceives some risk and would insist upon an additional compensation. This extra reward would have to be substantially greater in the case of shares of companies where the dividend rates are not ascertainable in advance and where payment of such dividends and invested sums are not at all assured. What we are trying to underline through these examples is the 'risk' factor which effects the expected rates of return by investors. In all such cases, investors demand a risk premium. It would thus be seen that the investor's required rate of return would be an aggregate of the risk-free real rate, expected rate of inflation, and risk premium.

You might have recognised the existence of 'speculators' in the securities business. It is only apt that a distinction between an 'investor' and a 'speculator' is sought to be clarified. An example would make the point clear. The share of Housing Development Finance Corporation (HDFC) was selling around Rs. 400 a couple of days before the presentation of the Union budget on 24th July, 1991. The quotation on Bombay Stock Exchange (BSE) leaped to Rs. 510 on 26th July, 1991. Now, a person who bought the share, say, at Rs. 400 per share a week back finds the price at Rs. 510 quite attractive. He sells and books a profit of Rs. 110 per share within a week's time. He is not much bothered by the company declaring a dividend of 25 per cent or 35 per cent in the coming year. He can't wait and must repeat his profit-making transactions as frequently as possible. In contrast, another person does not sell even at Rs. 510 for fear of not getting the share again at a reasonable price and counts all his gains by dividends and the earnings record of the company. The former is a speculator while the latter is an investor. We can distinguish the two operators as follows:

i) The time-horizon of a speculator is short while that of the investor long.

ii) The investor expects a 'good' return and a consistent performance over time but the speculator expects abnormal returns earned quickly over short periods.

iii) The investor generally sticks to his investment, but the speculator makes rapid shifts to greener pastures.

iv) The investor is risk-averse but the speculator can take greater risks.

Activity 1

A young couple buys a flat for Rs. 3 lakhs with a 25 per cent down payment and the balance in 100 equal monthly instalments. Would you consider the investment a case of 'postponed consumption'? Why?

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Activity 2

Please visit the nearest stock exchange and interview ten brokers. Apply above stated tests to find the number of brokers who are investors and those who are speculators. Do you end up with 'no distinction'?

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1.2 NATURE OF INVESTMENT DECISIONS

You have seen in Section 1.1 that an individual invests or 'postpones current consumption' only in response to a rate of return which must be suitably adjusted for inflation and risk. This basic postulate, in fact, unfolds the nature of investment decisions. Let us explain as follows:

Cash has an opportunity cost and when you decide to invest it you are deprived of this opportunity to earn a return on that cash. Also, when the general price level rises the purchasing power of cash declines—larger the increase in inflation, the greater the depletion in the buying power of cash. This explains the reason why individuals require a 'real rate of return' on their investments. Now, within the large body of investors, some buy government securities or deposit their money in bank accounts that are adequately secured. In contrast, some others prefer to buy, hold, and sell equity shares even when they know that they get exposed to the risk of losing their money much more than those investing in government securities. You will find that this latter group of investors is working toward the goal of getting larger returns than the first group and, in the process, does not mind assuming greater risk. Investors, in general, want to earn as large returns as possible subject, of course, to the level of risk they can possibly bear.

The risk factor gets fully manifested in the purchase and sale of financial assets, especially equity shares. It is common knowledge that some investors lose even when the securities markets boom. So there lies the risk.

You may understand risk as the probability that the actual return on an investment will be different from its expected return. Using this definition of risk, you may classify various investments into risk categories.

Thus, government securities would be seen as risk-free investments because the probability of actual return diverging from expected return is zero. In the case of debentures, say of a company like TELCO or GRASIM, again the probability of the actual return being different from the expected return would be very little because the chance of the company defaulting on stipulated interest and principal repayments in quite low. You would obviously put equity shares in the category of 'high risk' investment for the simple reason that the actual return has a great chance of differing from the expected return over the holding period of the investor which may range from one day to a year or more.

Investment decisions are premised on an important assumption that investors are rational and hence prefer certainty to uncertainty. They are risk-averse which implies that they would be unwilling to take risk just for the sake of risk. They would assume risk only if an adequate compensation is forthcoming. And the dictum of 'rationality' combined with the attitude of 'risk aversion' imparts to investments their basic nature. The question to be answered is : how best to enlarge returns with a given level of risk? Or, how best to reduce risk for a given level of return? Obviously, there would be several different levels of risk and different associated expectations of return. The basic investment decision would be a **trade-off** between risk and return.

Figure 1.2 depicts the risk-return trade-off available to rational investors. The line R_FM shows the risk-return function i.e., a trade-off between expected return and risk that exists for all investors interested in financial assets. You may notice that the R_FM line always slopes upward because it is plotted against expected return which has to increase as risk rises. No rational investor would assume additional risk unless there is extra compensation for it. This is how his espectations are built. This is, however, not the same thing as the actual return always rising in response to increasing risk. The risk-return trade-off is figured on 'expected or anticipated (i.e., ex-ante) return' and not on 'actual or realised (ex-post) return'.

You may now look at Figure 1.2 to understand the relative positioning of different financial assets on the risk-return map. The point R_FM is the expected return on government securities where risk is zero and is recognised as the risk-free rate. As you move on the R_FM line you find successive points which show the increase in expected return as risk increases. Thus, equity shares which carry lot more of risk than government securities and company debentures are plotted higher on the line. Company debentures are less risky than equity shares because of the mortgages and

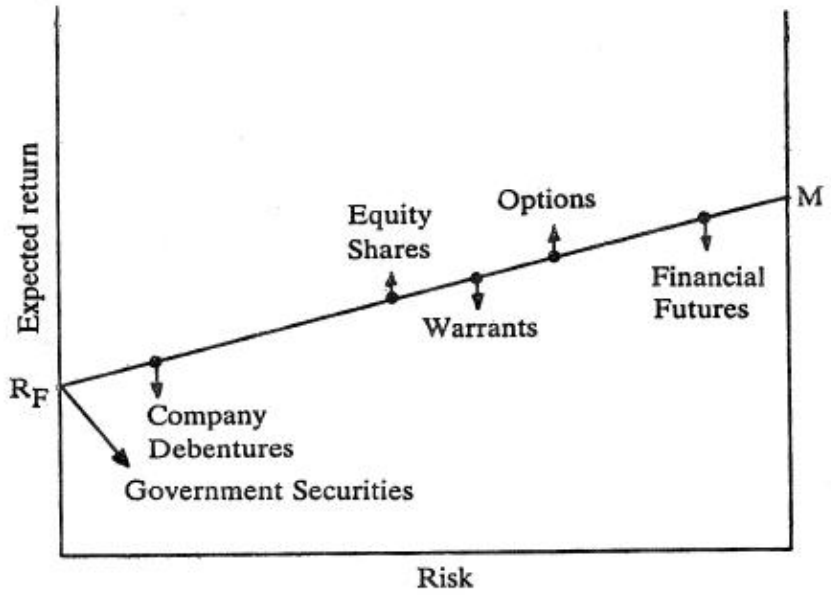


Figure 1.2 : The expected return-risk trade-off function

assurances made available to the investor but more risky than government securities where the default risk is zero because government generally do not fail. They are placed between the two securities viz., government securities and equity shares. Warrants, options and financial futures are other specialised financial assets ranked in order of rising risk. We shall know more about these in a latter unit.

An important point deserves attention while interpreting the risk-return trade-off of the type presented in Figure 1.2. You should underline the fact that the function is graphed in a rational situation, i.e., it is valid only if investors are rational. Thus, if an investor is not willing to assume any risk he/she will have to be satisfied with the risk-free rate i.e., R_F. However, since rational investors like returns but dislike risk, any increase in risk required to be borne by them must invariably be accompanied by an adequate rise in the anticipated return. And you will find many different kinds of rational investors in the market—some will assume less risk and some more. There will be a large number of risk-return combinations since investors will determine for themselves the level of risk they can bear at any given point of time. What is fundamental to the risk-return trade-off is the objective of all rational investors who attempt to maximise their utility or welfare which, in turn, is assumed to be a function of present and future wealth. It must be noted that wealth is a function of current and future income which is discounted for the amount of risk involved. In effect, therefore, investors maximise their welfare by working out optimum combinations of risk and expected return on the risk-return trade-off function.

1.3 THE INVESTMENT PROCESS

After understanding the concept of investment and the nature of the investment decision, you might now like to know as to how does an investor go about the task or business of investing? How much to invest at any moment? and when to make or unmake the investment? These questions essentially relate to the investment process which is briefly outlined in this section. A typical investment decision undergoes a five-step procedure which, in turn, forms the basis of the investment process. These steps are:

1) Determine the investment objectives and policy
2) Undertake security analysis
3) Construct a portfolio
4) Review the portfolio
5) Evaluate the performance of the portfolio.

You may note at the very outset that this five-step procedure is relevant not only for an individual who is on the threshold of taking his own investment decisions but also for individuals and institutions who have to aid and work out investment decisions for others i.e., for their clients. The investment process is a key-process entailing the whole body of security analysis and portfolio management.

We may now briefly explain each of the five element in the investment process.

Investment Objectives and Policy

The investor will have to work out his investment objectives first and then evolve a policy with the amount of investible wealth at his command. An investor might say that his objective is to have 'large money'. You will agree that this would be a wrong way of stating the objective. You would recall that the pursuit of 'large money' is not possible without the risk of 'large losses'. Hence, the objectives of an investor must be defined in terms of risk and return.

The next step in formulating the investment policy of an investor would be the identification of categories of financial assets he/she would be interested in. It is obvious that they in turn, would depend on the objectives, amount of wealth, and the tax status of the investor. For example, a tax-exempt investor with large investible wealth like a pension/provident fund would invest in anything but tax-exempt securities unless compelled by law to do so. Similarly, individual investors would, in general, have low inclination to invest in preference shares.

Security Analysis

This step would consist of examining the risk-return characteristics of individual securities or groups of securities identified under step one. The aim here is to know if it is worthwhile to acquire these securities for the portfolio. Now, this would depend upon the extent to which a security is 'mispriced'. And there are two broad approaches to finding out the 'mispriced status' of individual securities. One approach is known as **'technical analysis'**. The analyst here studies past movements in prices of securities he is interested in to determine the trends and patterns that repeat. Then he studies more recent price movements to know about some emerging trend. The two are then integrated to predict if a given trend will repeat in future. The current market price is compared with the predicted price and the extent of 'mispricing' determined. You should note that there would be absence of 'mispricing' only if the current price is equal to the predicted price. The second approach is known as **'fundamental analysis'**. The analyst here works out a true or intrinsic value of a security and compares it with the current market price. The intrinsic value is the present value of all cash flows that the owner of the security expects to receive during and at the end of his holding period.

This, in effect, involves a two-step exercise : first, forecast the cash-flow i.e., expected stream of dividends (in the case of equity shares) for which a forecast of earnings of the company and its payout ratios would have to be obtained. Also would be needed a forecast of the resale price of the security at the end of the holding period. This would, then, be followed by a discounting of these forecast cashflows at some rate of discount which may correspond to the investor's required rate of return. The fundamental analyst now compares the intrinsic value with the current market price as already observed. If the current market price is more than the true value, the share is overvalued and vice versa. Fundamental analysts believe that notable cases of mispricing will be corrected by the market in future which implies that prices of undervalued shares will increase and those of overvalued shares will decline.

Portfolio Construction

This consists of identifying the specific securities in which to invest and determining the proportion of the investor's wealth to be invested in each. For example, a conservative individual may decide to invest, say, 70 per cent of his cash in debentures and the remaining 30 per cent in equity shares. On the other hand, an individual who is prepared to assume greater risk may like to put, say, 70 per cent of his cash in equity shares with the expectation of getting, say, 30 per cent dividends on an average (note that this expectation may or may not materialise) and the balance 30 per cent

in debentures with a relatively assured return of, say, 14 per cent. And within these broad groups of equity shares and debentures, he may specifically select specific firms, say, debentures of L&T or equity shares of Reliance and so on. This problem of specific identification is known as the problem of **selectivity**. It is obvious that the issue of selectivity will have to be based on micro-level forecasts of expected cash flows from specific shares/debentures of different companies. The investor will use security analysis approaches for this. Then, he must determine the **timing** of his investment and for this he will have to observe the forecasted price movements of shares relative to debentures at the macro level. Finally, he will make all possible efforts to minimise his risk for a given expected level of average return of his potential portfolio. This he would be able to achieve when the returns of shares and debentures which would comprise his portfolio are not positively correlated to each other. The resultant portfolio would be known as a 'diversified' portfolio. Thus, portfolio construction would address itself to three major problems viz., selectivity, timing, and diversification. The related questions would be : which specific shares/ debentures to buy, when to buy, and how best to combine them in a way that risk is reduced to a minimum for a given level of expected return?

Portfolio Revision

As time passes, the investor would discover that securities which once were very attractive have ceased to be so. Also, new securities with promises of high returns and relatively low risk have emerged. In view of such developments it would be necessary for him to review the portfolio. He would liquidate the unattractive securities and acquire the new stars from the market. In a way, he repeats the first three steps of the investment process. He sets new investment policy, undertakes security analysis afresh, and re-allocates his cash for the new portfolio. It must be observed that the transaction costs incurred in the buy-sell activities relating to the new portfolio and also the extent of improvement expected in the future outlook of new securities would be important considerations in the revision of a given portfolio.

Portfolio Performance Evaluation

A rational investor would constantly examine his chosen portfolio both for average return and risk. Measures for doing so must be developed. Also, the calculated risk-return positions must be compared with certain yardsticks or norms. This step in the investment process, thus, acquires considerable significance since the tasks involved are quantitative measurement of actual risk and return and their evaluation against objective norms.

Activity 3

State whether the following statements are True or False :

i) Investment decisions are concerned only with financial assets. True/False

ii) When an individual invests he commits his funds with an expectation to obtain an adequate return. True/False

iii) A rational investor maximises his current and future wealth. True/False

iv) Investors do not care for the 'real rate of return' and ignore inflation. True/False

v) All investors require an abnormal compensation even for low levels of risk. True/False

vi) Investible funds have an opportunity cost which influences the investor's required return. True/False

vii) Some investors will not accept any risk whatsoever but some others would be virtual 'dare-devils'. True/False

viii) Equity shares are less risky than debentures. True/False

1.4 THE INVESTMENT ENVIRONMENT

Investment decisions to buy/sell securities taken by individuals and institutions are carried through a set of rules and regulations. There are markets—money and capital—which function subject to such rules and established procedures and are, in turn, regulated by legally constituted authority. Then there are securities or financial instruments which are the objects of purchase and sale. Finally, the mechanism which expedites transfers from one owner to another comprises a host of intermediaries. All these elements comprise the investment environment. Investors have to be fully aware of this environment for making optimal investment decisions.

Discussion in the following paragraphs provides a brief overview of the three elements of the investment environment viz., instruments, institutions, and markets, in that order.

1.4.1 Financial Instruments

Financial assets or instruments can be classified in a variety of ways. We will classify them into creditorship and ownership securities on the basis of the nature of the buyer's commitment. The description will then be split into public and private issues differentiating the two major forms of issuance.

Creditorship Securities

Debt instruments furnish an evidence of indebtedness of the issuer to the buyer. Periodic payments on such instruments are generally mandatory and all of them provide for the eventual repayment at maturity of the principal amount. Securities may also be sold at a price below the eventual redemption price, the difference between the redemption price and the sale price constituting the interest. For example, a buyer of a Rs. 100 bond/debenture may receive an interest at 6 per cent for one year in one of the following ways:

a) he pays Rs. 100 at the time of investment and receives Rs. 106 at the end of one year, or b) he pays Rs. 94.30 at the beginning and receives Rs. 100 at maturity i.e., he receives 6 per cent of Rs. 94.30 which is equal to the difference between Rs. 100 (redemption price) and Rs. 94.30 (issue price). The latter arrangements are known as **zero-interest** bonds. The interest amount in rupees measured as a per cent of the par value of a debt instrument is known as nominal or coupon rate of interest. For example, Rs. 28 payable per year on a debenture whose face/par value is Rs. 200 yields a coupon rate of 14 per cent per annum.

Debt instruments can be issued by public bodies and governments and also by private business firms.

Public Debt Instruments

Governments issue debt instruments for long and short periods. They are rated the best in terms of quality and are risk-free. A common term used to designate them is 'gilt-edged securities'. The 182-day treasury bills issued by the Government of India are examples of short-term instruments and 11.5 per cent Loan 2009 (V issue) of the Government of India, an example of long-term instruments. State governments and local bodies also issue series of loans and bonds. Banks, insurance, pension and provident funds, and several other organisations buy government debt in compliance with their statutory obligations. Such debt instruments are usually over-subscribed.

Private Debt Instruments

They are issued by private business firms which are incorporated as companies under the Companies Act, 1956. Generally these instruments are secured by a mortgage on

the fixed assets ot a company. Unsecured or naked debentures are now of theoretical importance. A very popular variety of such debentures is 'convertible' whereby either the whole or a part of the par value of a debenture is convertible (usually automatically) on the expiry of a stipulated period after issue. The terms of conversion are stated in advance. There may be a series of conversions and while the terms of the first conversion are invariably made explicit at the time of issue itself, second and subsequent conversions are left to the discretion of the Controller of Capital Issue with or without a ceiling as to premium on conversion.

Select Indian companies can now raise short-term funds by issuing a debt instrument known as Commercial Paper (CP). The Reserve Bank of India have issued detailed guidelines in January 1990 in this regard. They are contained in "Non-Banking Companies (Acceptance of Deposits through the Commercial Paper) Directives, 1989". The eligibility for entering into the CP market is based on transparent norm which companies themselves can readily assess. These conditions were relaxed in April 1990. Companies have been permitted to issue CP since January 1990 and the amount outstanding as on August 24, 1990 was Rs. 188.60 crores in respect of 18 companies. The effective rate of interest ranged between 11.87 per cent and 13.32 per cent.

Special Debt Instruments

With a view to mop up resources and innovating the spectrum of debt-instruments, two new debt instruments deserve a special mention viz., Public Sector Undertaking (PSU) Bonds (long-term), and Certificates of Deposit (short-term).

The PSU bonds are issued to the general public and financial institutions by pub ic sector undertakings, usually, with tax incentives. Out of the total PSU bonds issued in 1989-90, issues aggregating Rs. 2,657 crores were tax-free bonds with a coupon rate of 9.0 per cent per annum and Rs. 912 crores were taxable interest bonds with a coupon rate of 13.0 per cent per annum. It is interesting to note that a large proportion of PSU bonds is privately placed with banks, their subsidiaries, and financial institutions. For example, PSUs floated 14 bond issues for Rs. 2566 crores in 1988-89 of which Rs. 100 crores were for public subscription and the rest were privately placed.

Certificates of Deposits (CDs) were introduced in June, 1989. Commercial banks can now issue CDs within a ceiling equal to 2 per cent of their fortnightly average outstanding aggregate deposits (as against the earlier ceiling at 1 per cent). On this basis, the banking system could issue CDs worth Rs. 3017.0 crores during the year 1989-90. The outstanding amount of CDs issued by 37 banks as on July 13, 1990 was of the order of Rs. 2000 crores. The maturity of 3 months at the short-end and one-year at the long-end were generally popular with investors. Interest rates for maturities of 3 months ranged between 9.0 per cent and 16.33 per cent.

Ownership Securities

These instruments are called 'equities' because investors in them get a right to a share of residual profits. Equity investment may be acquired indirectly or directly or even through a hybrid instrument known as preference shares. They are discussed in this order.

Indirect Equities

The investor acquires special instruments of institutions who take the buy-sell decisions for him. Such institutions are unit trust or mutual funds. An individual who buys unit gets a dividend from the income of the trust/mutual fund after meeting all expenses of management. The units can be only bought from and sold to the institution (in the case of the UTI) at sale and repurchase prices announced from time to time (on a daily basis). In the case of other mutual funds like the canshare or even the UTI's Mastershare, sales and purchases can be affected through secondary markets. The objective of trusts and mutual funds is to use their professional expertise in portfolio construction and pass on the benefits to the small investor who cannot repeat such a performance if left alone to subscribe to equity shares directly.

Direct Equities

The investor subscribes directly to the equity issues placed on the market by new companies or by existing companies. If he/she is already a shareholder of an existing company which enters the capital market for additional issue of equity shares, such an investor would get a pro rata right to subscribe, on a pre-emtive basis, to the new issue. Such offerings are known as **'rights shares'**. Established companies reward their shareholders in the form of **'bonus shares'** as well. They are given out of the accumulated reserves and shareholders have not to pay any cash consideration as happens in the case of 'right shares'. For example, a company may announce a bonus issue on a one-for-one basis. This amounts to a 100 per cent bonus issue (or, loosely stock dividend) so that the number of shares held by a shareholder after the bonus would be doubled. The chances for an increase in the potential dividend income become very bright and this would happen unless the company imposes a proportionate cut in future dividends. Thus, a shareholder who held 100 shares of Rs. 10 each in a company got a dividend income of Rs. 200, the dividend announced being 20 per cent. His shareholding after a 100 per cent bonus now increases to 200. Now, if the company maintaining the same rate of dividend as last year viz., 20 per cent, the dividend income of the shareholder would go up to Rs. 400. He will, of course, get only Rs. 200 even after the bonus if the company prunes the dividend to 10 per cent.

A less popular instrument is called 'preference share'. It is neither full debt nor full equity and is, therefore, recognised as a 'hybrid security'. Such a shareholder would have certain preference over equity shareholder. They may relate to dividends, redemption, participation, and conversion etc. The most common is with regard to dividends which, when not paid for any particular year, get accumulated and no equity dividend would be payable in future until such accumulated arrears of preference dividend are cleared. The dividend rate on these shares is less than the one on equity shares.

You may get an idea of the growth in issues of various kinds of instruments by public limited companies in the non-government sector from Table 1.1.

Table 1.1 : New capital issues by non-Government public limited companies

Year April-March	Equity Shares		Preference Shares		Debentures	
	No. of issues	Amount (Rs. Crs)	No. of issues	Amount (Rs. Crs.)	No. of issues	Amount (Rs. Crs)
1985-86	758	898.4	9	1.2	83	845.7
1986-87	424	1007.5	3	.7	94	1555.7
1987-88	174	1104.0	5	6.9	45	666.13
1988-89	256	1029.2	6	3.3	79	2132.4
1989-90	267	1206.2	4	7.9	133	5222.5

Source : RBI, Report on Currency & Finance, 1989-90 Vol. I, Table IX-2, p. 302.

Activity 4

Study Table 1.1 and list out main trends and conclusions with regard to the size and relative popularity of various instruments of finance.

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Activity 5

Visit your nearest stock exchange and list the shares which were being traded actively on the day of your visit. Collect data with regard to the dividend and earnings record of these companies.

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Activity 6

You want to buy 100 shares of Bombay Dyeing immediately at the best obtainable price. Contact a broker and summarise your conversation with him on the subject.

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1.4.2 Financial Intermediaries

Financial intermediaries perform the intermediation function i.e., they bring the users of funds and the suppliers of funds together. Many of them issue financial claims against themselves and use cash proceeds to purchase the financial assets of others. The Unit Trust of India and Mutual funds, belong to this category.

Most financial institutions underwrite issues of capital by non-government public limited companies in addition to directly subscribing to such capital either under a public issue or under a private placement. Table 1.2 presents the pattern of absorption of private capital issues and focusses attention on the intermediation function of financial institutions.

Table 1.2 : Underwriting of private capital issues by all intermediaries

(Rs. lakhs)

Items/year ended March 31	1971	1976	1981	1987	1988	1989
1. Amount offered to the public	33,30	56,39	74,10	689,89	316,43	1083,70
2. Amount subscribed by public other than underwriters	19,15	28,56	65,59	623,63	260,39	1014,32
3. Amount subscribed by underwriters (a+b)	13,84	27,83	8,33	63,62	54,83	11,70
a) As investors	6,82	17,24	2,09	44,82	18,19	—
b) As underwriters	7,02	10,58	6,23	18,80	36,64	57,68
4. Amount unsubscribed	31	—	19	2,64	1,21	—
5. Amount underwritten	30,52	54,75	42,12	418,40	194,89	432,25
(5) as % of (1)	91.7	97.1	56.8	60.6	61.6	39.9

The financial institutions engaged in intermediary activities include the Industrial Development Bank of India, Industrial Finance Corporation of India, Industrial Credit and Investment Corporation of India, Unit Trust of India, Life Insurance Corporation, and General Insurance Corporation. Two institutions which have broadened financial services activities in India deserve a special mention. They are: The Credit Rating Information Services of India Ltd. (CRISIL), and the Stockholding Corporation of India Ltd. (SHCIL).

CRISIL was set up jointly by ICICI, UTI, LIC, GIC, and Asian Development Bank as the first credit rating agency in the country. It started operations in January 1988 and has rated 101 debt instruments upto March 31, 1990. These instruments aggregated to a value of Rs. 3093.4 crores. Out of these, ratings for 48 instruments covering a debt volume of Rs. 1887.6 crores have been accepted by the concerned companies and are in use. CRISIL ratings provide a guide to investors as to the risk of timely payment of interest and principal on a particular debt instruments. It provides ratings for debentures, fixed deposits, short-term instruments and preference shares on receipt of request from a company. Ratings relate to a specific instrument and not to the company as a whole. They are based on factors like industry risk, market position and operating efficiency of the company, track record of

management, planning and control system, accounting, quality and financial flexibility, profitability and financial position of the company, and its liquidity management. CRISIL ratings are expected to improve the marketability of debt instrument of the company and consequently its fund-raising capability.

The SHCIL was sponsored by IDBI, IFCI, ICICI, UTI, LIC, GIC and IRBI to introduce a book entry system for the transfer of shares and other types of scrips replacing the present system that involves voluminous paper work. The corporation commenced its operations in August 1988. SHCIL received delivery instructions for purchase and sale of securities of Rs. 349 crores in 1989 as against Rs. 110 crores in the previous year. Commencing its operations with UTI, SHCIL has now extended its operations to GIC, LIC mutual fund, and New India Assurance Co. Ltd. The Corporation started its depository in Bombay. This has a capacity to store about 78 lakh securities. Computerisation of operations is well on way and electronic transfer of scrips through a Central Securities Depository (CSD) is shortly to be taken up.

1.4.3 Financial Markets

Securities markets can be seen as primary and secondary. The primary market or the new issues market is an informal forum with national and even international boundaries. Anybody who has funds and the inclination to invest in securities would be considered a part of this market. Individuals, trusts, banks, mutual funds, financial institutions, pension funds, and for that matter any entity can participate in such as market. Companies enter this market with initial and subsequent issues of capital. They are required to follow the guideline prescribed by the Controller of Capital Issues from time to time unless they are expressly exempted from doing so. A prospectus or a statement-in-lieu of prospectus is a necessary requirement because this contains all material information on the basis of which the investor would form judgement to put or not to put his money. Concealment and misrepresentations in these documents have serious legal implications including the annulment of the issue.

Some companies would use the primary market by using their 'in house' skill but most of them would employ brokers, broking and underwriting firms, issue managers, lead managers for planning and monitoring the new issue. New guidelines issued by the Securities & Exchange Board of India (SEBI) now require the compulsory appointment of a registered merchant banker as issue manager where the amount of the capital issue exceeds Rs. 50 lakhs.

Secondary markets or stock exchanges are set up under the Securities Contracts (Regulation) Act, 1956. They are known as recognised exchanges and operate within precints that possess networks of communication, automatic information scans, and other mechanised systems. Members are admitted against purchase of a membership card whose official prices vary according to the size and seniority of the exchange. Membership cards generally command high unofficial premia because the number of members is not easily expandible. Business is transacted on the trading floor within official working hours under the open bid system. Methods of recording and settlement are laid down in advance and members are obligated to follow them. Arbitration procedures exist for the resolution of disputes. Most active scrips are traded with a mechanism to use the clearing house for the settlement of cross deals. The spirit of law is to discourage speculation but modest carry forward is not supposed to be frowned upon. In India, we have recognised stock exchanges at Bombay, Calcutta, Madras, Delhi, Bangalore, Hyderabad, Kanpur, Indore, Ahmedabad, Cochin, Jaipur, Ludhiana, among others.

The volume of business transacted at the floors is often too inadequate. Consequently, enormous deals take place outside the floors and during off-business hours. They are known as 'kerb' deals. In view of the vast flows of transactions and an astronomical increase in equity-holdings, demands are being made for multiple exchanges to replace the erstwhile convention of 'one-state-one-exchange'.

The small investor is unfairly handicapped almost invariably. Moreover, the existing recognised stock exchanges work only for limited hours and even if they organise odd lot sessions their business, by and large, remains centred on the 'market lots'. The demand for an over-the-counter market has been keenly felt and the Government of India approved the creation of an OTC market in August 1989. This would help in introducing a multi-tiered market in the country.

The regulatory mechanism is also under a thorough overhaul. The Securities and Exchange Board of India (SEBI) is now to take over the responsibilities of monitoring and controlling the stock market operations, new capital issues, working of mutual funds and merchant banking subsidiaries of banks. The capital market developments may take it to a new era of self-discipline, unitary control, and progressive automation.

1.5 SUMMARY

Security analysis and portfolio management is emerging as widely practised profession and an extensively researched theoretical domain. The foundation of the basic knowledge in the area goes to the basic concept of investment. An individual who saves operates under the stimulus of expanded future wealth. This makes him forego current consumption and apply the resources saved to avenues which add to his wealth at a future moment.

The fundamental investment decision is never premised on the limitless pursuit of extraordinary wealth. This would never be possible as the investor would be exposed to tremendous risk. Much of what he invests would, therefore, be a trade-off between risk and return.

A recent development in investment management is the perception of an investor that he/she would not hold an asset in isolation. 'The portfolio' is his major concern. If he/she can skilfully construct one for him/her, it is fine. But if the required skill and experience does not exist, services of professional experts known as security analysis and portfolio managers would be hired. The hiring cost and the net potential gains would be compared before 'self-service' is dispensed with. Portfolios once constructed would be continually revised and evaluated for their performance in terms of risk and returns.

Portfolio management acquires an added significance in a dynamic investment environment. Many new and innovative instruments are opening up as investment alternatives. A number of specialised institutions are emerging. And the nucleus and the reach of organised securities markets are being extended. Regulatory mechanisms are being streamlined and rationalised. The corporate sector appears abuzz with activity now when the era of the de-regulation has been opened up. All these add up to a scenario when investment is accelerated and trading systems strained. These appear to be the future challenges of investment management.

1.6 KEY WORDS

Ex ante : Before event or fact.

Expected return : Ex ante return on an investment.

Ex post : After the event or fact.

Ex post return : Actual or realised return or an investment.

Financial Assets : Documentary evidence of financial claim of the holder, say of shares on debentures, over the issuer.

Financial intermediation : A function which brings the savers and users of funds together, usually performed by specialised agencies and institutions like banks and underwriters for an agreed/stipulated commission.

Investment : Commitment of funds for a period usually exceeding one year in expectation of a required rate of return.

Investment decision : The decision to acquire, hold, or dispose asset by rational and risk-averse individuals/organisations.

Marketable securities : Financial claims which are tradeable in organised markets at the best prices.

Portfolio : A collection of two or more assets, generally employed in the context of financial assets.

Portfolio construction : Building up a portfolio of financial assets with considerations of selectivity, timing, and diversification or raising a portfolio with rational selection criteria, at the right time, and in a way that the risk is reduced to the minimum for a given level of expected return.

Portfolio revision : A review of an existing portfolio in the light of changes in risk-return dimensions.

Portfolio evaluation : Assessing the performance of a portfolio on the basis of some aptly developed norms or yardsticks.

Real assets : Physical assets held to perform an activity with an expected income/pay off profile.

Realised return : The pay-off rate on an investment which occurs after an event/fact i.e., the actual return.

Risk : The probability that the realised return would be different from the anticipated return on an investment.

Risk-averse investors : Rational individuals who avoid risk and demand a compensation for assuming risk.

Risk-free rate of return : The monetary rate of return obtainable on financial assets with zero probability of default on principal and periodic payments, e.g. government or gilt edged securities.

Risk-return trade-off : An approach to investment decision-making whereby the utility/welfare maximising individuals acquire assets in a way that their returns are maximised for given levels of risk or risk is minimised for given level of return.

Security analysis : A methodology whereby forecasts of financial variables like earnings, dividends, cash-flow are made for individual securities, (i.e., micro level) or for securities as a homogeneous industry group (macro-level) using either past data or a discounting approach.

Securities market : Organised and recognised trading centres where financial claims bought and sold as per established rules and procedures.

Zero-interest bonds : *Creditorship securities on which a coupon rate is not made explicit but the compensation is provided through a discount on the purchase price or a premium on redemption.*

1.7 SELF-ASSESSMENT QUESTIONS/EXERCISES

1) Define investment.
2) Describe the steps involved in the investment process.
3) Briefly explain the problems of selectivity, timing, and diversification in portfolio construction.
4) Distinguish the following :
   a) Financial asset and real asset
   b) Risky investment and risk-free investment
   c) Debt instruments and equities
   d) Recognised stock exchange and over the Counter Market
5) Define the following terms :
   a) Risk
   b) Coupon rate
   c) Zero-interest bonds
   d) Bond-rating
   e) *Depository functions*
6) State and explain the effect of changes in investment environment on investment decisions.
7) Why should portfolio be continually evaluated?
8) Tick the correct alternative in the following :
   a) All risk-averse investors crave for maximum wealth. Yes/No

b) Risk is the probability of actual return diverging from expected return. True/False

c) Kerb trading is trading activity on the floor of recognised stock exchanges. Yes/No

d) A non-member cannot operate on the trading floor recognised stock exchange. /No

e) Preference shares are equities. Yes/No

f) All public sector bonds provide tax free interest. Yes/No

g) CRISIL provides comprehensive financial consultancy to those who approach it. True/False

h) Financial institutions do not directly subscribe to the shares and debentures of companies. True/False

i) A registered merchant banker must be appointed as a manager for a new issue exceeding Rs. 50 lakhs. Yes/No

j) An ex ante return is the return which has been planned or expected. Yes/No

1.8 FURTHER READINGS

D' Ambrosio, Charles A., 1976. *Principles of Modern Investments,* Chicago : SRA, Inc.

Jones, Charles P., Futtle, Donald L., and Heaton, Cherill P. 1977. *Essentials of Modern Investments*, New York Ronald Press.

Fuller, Russell J., and Farrell, James L. 1987. *Modern Investments and Security Analysis*, New York : McGraw-Hill Book Co.

Reilly, Frank K. 1979. *Investment Analysis & Portfolio Management, Hinsdale, Illinois :* The Dryden Press.

Answers

Activity 1

Ans. Since the flat is being used even in the present, the case appears to be one of partially postponed consumption. However, the bulk of the consumption is in future and hence postponed. Further, the situation can be clarified by exposing the couple to the alternative of renting a large independent house for one year for a sum equal to the down payment (Rs. 75000/-) and the annual mortgage payment (viz., Rs. 2250 × 12 = Rs. 27,000/-). It can be clearly seen that the alternative of renting (not investing) promises a lavish current consumption which gets substantially reduced when an ownership flat is acquired.

Activity 3

i) False ii) True iii) True iv) False
v) False vi) True vii) True viii) False

Answers to Self-Assessment Questions

Q. 8 a) No c) No e) No g) False i) Yes
b) True d) Yes f) No h) False j) Yes

UNIT 2 COMPONENTS OF INVESTMENT RISK

Objectives

The objectives of this unit are to:

- explain the concept of risk and genesis of total investment risk
- pinpoint the distinction between 'systematic' and 'unsystematic' risk
- underline the factors that specially affect risk in investment in equity shares.

Structure

2.1 Concept of Investment Risk
2.2 Evolution of Risk Connotations
2.3 The Interest Rate Risk Factor
2.4 The Market Risk Factor
2.5 The Inflation Risk Factor
2.6 The Default Risk Factor
2.7 The Management Risk Factor
2.8 The Liquidity Risk Factor
2.9 Summary
2.10 Key Words
2.11 Self-Assessment Questions/Exercises
2.12 Further Readings

2.1 CONCEPT OF INVESTMENT RISK

You have come across terms like 'risky assets', 'risk-averse investors', 'risk-free rate' and so on in Unit 1. The discussion in Unit 1 only used the word 'risk' in different contexts but did not explain the phenomenon behind it. This is sought to be done now in this section of the present unit.

In fact, the word 'risk' is common vocabulary and is widely used in the world of investments. It would be no exaggeration to state that no investment decision can be analysed and taken without taking the riskiness of the alternative into account. For example, notice the following alternatives:

Rs. 100 11.5% 2015 Government of India Loan
Rs. 200 14.5% 1995 TISCO Non-convertible Debentures
Rs. 10 Colgate Equity shares (60% dividend in 1990-91)

It is to state the obvious that the Government Loan would have zero risk since the Government system does not fail and interest payments as well as principal repayments are absolutely assured. In the case of TISCO debentures, there are protective covers in the form of corporate assets and continued good financial performance but there is a chance of bad performance and possibility of default. The Colgate equity is quite a risk-borne alternative. There could be spells of good performance and spells of adverse results too. You will observe the returns of the three securities moving in this order only viz., 11.5%, 14.5% and 60%. The greater the risk the higher would be the return, other things remaining the same. You may note that the ranking by risk-class given in this example is based on issue prices of the three securities. Except in the case of the Government Loan where the market price will diverge from the issue price on maturity considerations, for the debenture and the equity cases, risk perceptions of investors will keep changing and so will be the market prices.

A very generalised conception of risk has its origin in decision-making, which, in turn, relates to some future time period. A decision would be centred on some event whose future outcome would not be, perfectly predictable. Such a situation creates conditions or risk. For example, a manufacturer prepares a schedule of supplies to his overseas buyers. While so-doing, he has estimates of availability of shipping

capacity. Now, there may be a war and ships are either engaged in moving war supplies or suspend their voyages to avoid war risks. Such a contingency is difficult to predict and creates risk for the manufacturer. Of course, there is chance that there is no war and he honours the delivery schedule completely.

You will observe that availability of prior information about future is critical for rational decisions. Three situations can be broadly identified. On one extreme is the availability of complete fore-knowledge. This case of sure knowledge is known as a situation of certainty. The other extreme is a case of no knowledge at all. This is recognised as 'uncertainty'. What lies between the two extremes is all the risk zone. A decision-maker has to grapple with this zone most of the time.

Two elements in the concept of risk as applied to the world of investment and finance deserve attention. One, risk in the investment sense is associated with return. A person buys a financial asset with expectations of a return. The investment decision would be premised on an 'expected return' which may or may not actually be realised. The chance of an 'unexpected' or 'adverse' return would be the risk carried by an investment decision. For example, you buy a Colgate share at Rs. 370 expecting a dividend of 60% in the coming year and expecting the price to rise to Rs. 450 in a year's time. You are basing your decision to buy on a return of Rs. $\frac{(450-370)+6.0}{370} =$ 23.2 per cent.

Now, the price may rise only to Rs. 380 in which case the actual return downs to a bare 4.2 per cent, if the company comes out with a dividend of 60 per cent on a Rs. 10 equity share. Should the dividend be pruned to, say, 40 per cent the return would further fall to 3.3 per cent. The other point to be stressed about investment risk is that it is generally considered synonymous with uncertainty. The investor is most of the time dealing with uncertainty and yet figuring out his subjective probabilities for the expected return. The risk-zone in which the investor moves is characterised by 'stochastic knowledge' and his beliefs about the expected return enable him to work out a probability distribution of possible outcomes. This is illustrated in the paragraph that follows.

Assume that you are interested to buy 1000 equity shares of Boots Co. (India) Ltd. The market price on October 1, 1991 of a ten-rupee share is Rs. 200. The highest prices were : 1988-89 Rs. 135; 1989-90 Rs. 146; and 1990-91 Rs. 235. You expect the price to go up to Rs. 250 within a year of your purchase. The company paid the following dividends : 1988-89 23%; 1989-90 30%; and 1990-91 32%. There has been a liberal record of five bonuses in the past, the last bonus being in 1987-88 in the ratio of 1 : 1. This information enables you to figure an expected return of 26.6% assuming that the company will maintain the dividend of 32% in 1991-92 and that the price at the time of your sale will be Rs. 250.

You must note that you are using past information to work out your expected return of 26.6%. This must, however, be appropriately modified for changes you expect would affect the company during your holding period of 1 year.

Another point requiring attention is that your figure of expected return is a single estimate. Since future is uncertain, you may have to examine the probability of several other possible returns. Thus, the expected return may be 20%, 30%, 35% or 10%. Now, you will have to assign the chances of occurrence of these alternative possible returns on the basis of your information and subjective beliefs. For example, you expect as follows:

X_i Possible return	$P(X_i)$ Probability of Occurrence
10%	10
20%	20
26.6%	50
30%	20
35%	10

You are clearly now not working on a point estimate. That is one of the five sets of outcomes you have generated. The table above is known as a probability distribution and you can use it to have an insight into the riskiness of your proposal to buy 1000

Boots shares. The procedure would be as follows:

i) Estimate the expected value of the five possible outcomes. If the possible returns are denoted by X_i and the related probabilities by $P(X_i)$, the expected value EV would be : $\sum_{i=1}^{n} X_i P(X_i)$. In words, it is the sum of products of possible returns with their respective probabilities. This would be : .10(.10)+.20(.20)+.266(.50)+ .30(.20)+.35(.10)=.01+.04+.133+.06+.035=.278 or 27.8%.

ii) You will be in a position to have some idea of risk by estimating the variability of possible outcomes from the expected value of outcomes you have estimated in (i) above. A statistical procedure used for the purpose is the calculation of standard deviation which is given as follows :

$$\sigma = \sqrt{\sum_{i=1}^{n}[(X_i - EV)^2 P(X_i)]}$$

where 'σ' denotes standard deviation and all other terms as in (i) above. The table below provides the required calculations:

Possible Returns (1)	Probability (2)	Products (3)	Deviations (4)	Deviations Squared (5)	$(X_i-EV_i)^2P(X_i)$ (6)
X_i	$P($	(1)×(2)	(X_i-EV)	$(X_i-EV)^2$	(5) × (2)
.100	.10	010	− .178	.032	.0032
.200	.20	040	− .078	.006	.0012
266	.50	133	− .012	.0001	.00005
300	.20	.060	.022	.0005	.0001
.350	.10	.035	.072	.0052	.00052
	$EV = X_iP(X_i)$ =	.278			σ^2 = .00507

$$\sigma = \sqrt{.00507} = .0712$$

iii) Calculations in (i) and (ii) can be repeated for several alternatives and if the investor's objective is to minimise risk, the one with minimum standard deviation can be selected. You may note that squared standard deviation (σ^2) is known as 'variance' and is an equally useful measure of risk. Further, interpretation of variance or standard deviation can be refined by introducing the concept of 'normal curve'. We don't extend the discussion beyond basic fundamentals in this unit.

The standard deviation or variance provides only a measure of total risk which may now be defined as the probability or chance that the actual outcome from an investment will differ from the expected outcome. Obviously, investors would perceive risk only when the actual outcome can be less than the expected outcome. Also, the more variable the possible outcomes or the broader the range of possible outcomes greater will the risk be.

Activity 1

Write one sentence answers to the following questions :

a) How many possible return outcomes could be estimated for a Government security?

.....

b) What would be the probability of occurrence of the 'outcome(s)' in (a) above?

.....

c) State how would you figure the one-period return on a risky security.

.....

d) What does the standard deviation of possible return show?

.....

e) Define risk.

.....

f) Can risk of an investment be considered without reference to return?

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Activity 2

Please look up the 'Performance Indicators' data in any Monday issue of Economic Times (a daily financial newspaper). Pick up any share and work out its possible return (not expected return) using the information available. What additional information you need and how would you get it for estimating the 'expected return'?

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2.2 EVOLUTION OF RISK CONNOTATIONS

Section 2.1 has introduced you to a procedure of measuring investment risk which has emerged as a standard approach. It may be of interest for you to know that this concept and its later refinements have evolved over a time-period. In the early years of the present century analysts would use financial statement data for evaluating the risk of securities of a company. The broad indicators used by them was the amount of debt employed by the firm. Their rule was : 'the higher the amount of debt the greater the riskiness of securities.' Graham Dodd and Cottle, who are considered pioneers of 'security analysis' as a discipline laid emphasis on 'margin of safety' as a measure of risk in the 1962 edition of their monumental work titled 'Security Analysis'. They were of the view that security analysis must calculate the 'intrinsic value' of a security independent of its market price. According to them, 'intrinsic value of a security would be a security analyst's own judgement based on its earning power and financial characteristics and without reference to its market price. The difference between 'intrinsic value' and 'market price' was called the 'margin of safety' and the rule used for assessment of risk was : 'the higher the margin of safety, the lower the risk.'

Graham and Dodd not only concentrated on the individual security but also recognised the importance of its contribution to the risk of a well-diversified portfolio. It must, however, be mentioned that what brought the concepts of risk for a portfolio and a security under a clearer focus was the work of Markowitz and the later development of the capital asset pricing model (CAPM). You will know more about these developments in the area of investment risk in Block IV. In case you liked to know about the original underpinnings of the work done by Markowitz, you may please refer to his classical article published in the March 1952 issue of the *Journal of Finance* with the caption, "*Portfolio Selection*".

Several measures, other than the standard deviation discussed in the preceding section, have been used to measure risk viz., range, semi-variance, and mean absolute deviation. But standard deviation has been accepted in general because its knowledge permits probability statements for most types of distributions. William Sharpe observes as follows in support of the measure : "The standard deviation of a portfolio's return can be determined from (among other things) the standard deviations of the returns of its component securities, no matter what the distributions. No other relationship of comparable simplicity exists for most other variability measures." (Emphasis ours.) (See : W. Sharpe, Investments, IInd. ed., 1981, p. 121) You may note that the risk of a portfolio is not just the mathematical addition of the risk of each of the individual securities that comprise. You may further note that where the portfolio is well-diversified, portfolio risk would be less than this mathematical total.

You would have also come across a statement in this unit that the standard deviation measures the total risk of an investment. The later developments, in the theory of investment risk decompose this 'total' into several of its components. And this can be done in two ways : one, dividing total risk into systematic and unsystematic risk; and two, dividing total risk into parts each of which has an origin in some causal force. Obviously, the first part of the decomposition exercise is broad and has relation to the market. This will be briefly explained in this section only. The second part of the exercise relates to the factors or causes which produce risk in investments. All the remaining sections of this unit will devote attention to each of them separately.

The division of total risk into 'systematic' and 'unsystematic' or 'non-systematic' owes its origin to developments in the area of portfolio theory. Sources of risk that cause variability of returns may be perceived as belonging to two general classes : those that are pervasive and affect all securities though in varying degrees e.g., inflation, interest rates, market sentiment etc., and those that are specific to a particular security e.g., financial risk or business risk. When variability of returns moves with the market it is recognised as 'systematic'. Firms cannot eliminate such a risk and they are of major concern to the investor. For example, when prices rise, all firms would be affected in terms of their costs and realisations which, in turn, would affect variability of returns. This will be a market phenomenon and would tend to stay for all. The investor would demand compensation for this risk component in figuring out his expected rate of return. On the other hand, when variability of returns occurs because of firm-specific factors like the failure to obtain a prestigious overseas contract, or a higher exposure to the risk of default in payment of interest charges and debt obligations, the risk is termed 'non-systematic'. A moment of thinking will make it clear that once you are able to identify such specific factors associated with individual firms you can always build up the portfolio of your investments in a way that this risk component is neutralised to zero. If a bad security exists in your investments and you cannot dispose it off immediately, you may acquire another security which is stronger and does not suffer from the same weakness as the 'bad security'. The result would be a balanced portfolio yielding stable returns over your holding period. Such a portfolio is also known as a 'diversified portfolio' and the non-systematic risk as 'diversifiable risk.'

The two components of total risk are additive and the following relationship prevails :

Total risk=Systematic risk+Non-systematic risk

Activity 3

Indicate whether the following statements are True or False :

a) Margin of safety is the difference between intrinsic value and market price .....

b) Standard deviation is a better measure of risk because it can explain all distributions .....

c) Total investment risk cannot be calculated by absolute mean deviations .....

d) Systematic risk can be eliminated .....

e) A government security, a bond, and an equity share cannot form a portfolio .....

f) Inflation creates diversifiable risk .....

g) A diversified portfolio consists of securities which yield maximum returns .....

2.3 THE INTEREST RATE RISK

Securities produce cash income streams over future time periods. They are discounted by the market to yield present values which influence prices of these securities. This is a continuous market process and whenever the discount factor or the cash stream changes, prices also change. Interest rate risk arises from variations in such rates which cause changes in market prices. It can be seen that a rise in market interest rates causes a decline in market prices of securities and *vice versa*.

The time-period over which the cash income is received also affects market prices of securities. Thus, given the total cash income, the longer the time span over which it is received the lower the present value and the lower would be the market price. These effects are illustrated below :

Illustration

Assume a Rs. 200 14% secured non-convertible debenture for five years. The market interest rate (as against the 14% coupon rate) is 15% and rises to 20%. Show the effect on present values if the period of interest payment is stretched away by one year, ignoring repayment of principal.

Solution

$$\text{PV at 15\%} = \sum_{t=1}^{5} \frac{.14(200)}{(1.15)t} = 28 \times \text{PVIF at 15\% for 5 years}$$

$$= 28 \times 3.3522 = \text{Rs. } 93.86$$

$$\text{PV at 20\%} = \sum_{t=1}^{5} \frac{.14(200)}{(1.20)t} = 28 \times \text{PVIF at 20\% for 5 years}$$

$$= 28 \times 2.9906 = \text{Rs. } 83.74$$

$$\text{PV at 15\% (When payment stretched away by one year)} = \frac{0}{1.15} + \frac{28}{(1.15)^2} + \frac{28}{(1.15)^3} + \frac{28}{(1.15)^4} + \frac{28}{(1.15)^5} + \frac{28}{(1.15)^6}$$

$$= 0+21.17+18.41+16.01+13.33+12.10$$

$$= \text{Rs. } 81.02$$

$$\text{PV at 20\% (When payment stretched away by one year)} = \frac{0}{1.2} + \frac{28}{(1.2)^2} + \frac{28}{(1.2)^3} + \frac{28}{(1.2)^4} + \frac{28}{(1.2)^5} + \frac{28}{(1.2)^6}$$

$$= 0+19.44+16.20+13.50+11.25+9.38$$

$$= \text{Rs. } 69.77$$

The first part of the solution shows that the present value of the annuity of Rs. 28 declines from Rs. 93.86 (at 15%) to Rs. 83.74 when the discount rate rises to 20%. And when the period of payment of the same five annuities of Rs. 28 each is stretched away by one year present values further decline to Rs. 81.02 and Rs. 69.77 respectively at the two discount rates.

In order to assess the effect of stretching, notice the difference between two sets of present values using discount rates of 15% and 20%. For the five-year period, difference between the PV at 15% and that at 20% is Rs. 93.86−Rs. 83.74=Rs. 10.12; while for the six year period, this difference amounts to Rs. 81.02−Rs. 69.77=Rs. 11.25. The magnified difference is due to stretching or duration.

It can now be stated that the market prices (or present values) of securities would be inversely related both to market interest rates (or yield to maturity) and duration. You will recognise that the interest rate risk is the price fluctuation risk which the investor is likely to face when interest rates and/or duration of interest payments change.

With a view to avoid the interest rate and duration risk, the investor, may like to invest in short-term securities. Rather than buying a 5-year debenture he may buy a one-year security every time the earlier one-year security matures. This strategy, though successful in reducing the interest rate or the price fluctuation, would possibly expose the investor to another risk. Even the coupon rates in successive short-term securities may vary and the range of variation may be wide too. What the investor would now encounter is the 'coupon rate risk'. It will be the constant endeavour of investor to weigh between the interest rate risk and the coupon rate risk while keeping funds invested over his holding period.

You would have noticed in our discussion of financial instruments in Unit 1 that interest payments on bonds and debentures are contractual payments and the

company can be sued for default. Cumulative preference dividends must also be paid to avoid trouble from preference shareholders. Equity dividends can always be skipped if the company is in deep financial troubles and a dividend payment would hasten insolvency. In such a situation the cash dividend yield will be much more risky than the coupon yield on debentures.

Interest rate risk varies in degree for different financial assets. Historical data reveals that average dividend yields of equity and preference shares fluctuated together with the average market interest rates of debentures over a period of years, even if there were some differences. For example, equity shares will have the lowest average yield because many companies do not pay high levels of dividends and investors obtain a large part of their returns in the form of capital gains. In contrast, preference shares have high average yields because they are a bigger insolvency risk than debentures. The fact that various yields fluctuate together in spite of these differences shows that all securities have some common interest rate risk factor. It must, however, be noted that even if the present value model remains relevant for all securities, prices of preference and equity shares do not change exactly together with debenture or bond prices because the former face default and management risks more than bonds and debentures. Thus, the interest rate risk is the maximum in bonds and debentures followed by preference shares and equity shares in that order.

Diversifiable Vs. Non-diversifiable Interest Rate Risk

When all interest rates move together, they are correlated. This makes interest rate risk systematic or non-diversifiable. It is necessary to point out that market forces bring about this tendency of all market interest rates to get positively correlated. It may happen, for example, that the demand for funds from first-grade bonds may increase at a particular point of time relative to the supply of a loanable funds by investors in such bonds. This will push up interest rates and will attract suppliers of funds from, say, the low-grade bonds market. But then the low-grade bonds market will get a position of dis-equilibrium and shortage of loanable funds due to withdrawal in favour of first-grade bonds will push interest rates on low-grade bonds. Many such actions by investors produce systematic trends in markets and, barring some exceptions, will make all market interest rates correlated positively.

In the midst of a state of positive correlation between market rates of interest may stand a particular firm which, say, faces a deep financial crisis and needs funds desperately to avoid closure. Bonds and debentures of such a firm would not be purchased except at higher interest rates. This may go against the general trend of interest rates to decline and will be known as a situation of unsystematic action. Investors may purchase these bonds and debentures to diversify their portfolios which otherwise comprise only normal bonds and securities.

2.4 THE MARKET RISK

Market risk arises because market prices in general move up or down consistently for some time periods. These movements can be observed on a graph which plots daily, weekly, or monthly shifts in a market index like the BSE Sensitive Index (based on price quotations of 30 most active specified shares) or the BSE National Index (based on price quotation of 100 active shares).

Broadly two mutually opposite patterns in Index movements can be noticed and their duration observed. One of the patterns is known as bull market. When a security index rises fairly consistently from a low point called a **trough** and continues to rise for a significant period of time, the bull market is said to have arrived. A bull market will end when the Index reaches a market peak and begins the downward trend till it reaches another trough. This phase from the 'peak' to next trough is called the bear market.

You may notice that the duration and coverage of both bull and bear markets are 'on an average'. In actual practice, there may be days, weeks, and months within a particular, say, bear phase when the Index rises. Likewise, there may be some individual shares which may oppose the particular phase i.e., their prices may rise in the midst of a bear phase and fall when there is a bull phase.

Studies point out that bear markets are shorter in terms of average life than bull markets. It is being hypothesized for the US market that their were about twice as many bullish months as bearish months. Such a hypothesis,would appear to be true for all those markets where the market prices show a long-term upward trend.

Market risk is demonstrated by the increased variability of investor returns due to alternating bouts of bull and bear phases. Efforts to minimise this component of total investment risk requires a fair anticipation of a particular phase. This needs an understanding of the basic cause for the two market phases.

It has been found that business cycles are a major determinant of the timing and extent of the bull and bear market phases. This would suggest that the ups and downs in securities markets would follow the cyle of expansion and recession in the national economy.

A bear market triggers pessimism and price falls on an extensive scale. There is empirical evidence which suggests that it is difficult for investors to avoid losing in bear markets. Of course, there would be exceptions.

The question of protection against market risk naturally arises. Investors can protect their portfolios by withdrawing invested funds before the onset of the bear market. A simple rule to follow would be : 'buy just before the security prices rise in a bull market and sell just before the onset of the bear market', that is, buy low and sell high. This is called **good investment timing.**

A very interesting study by R. Piccini was reported in the July-August 1980 issue of Financial Analysts Journal. Thirteen recessions were examined in this study to determine the time that normally elapses between a market peak and the onset of a recession. Although the durations of bear markets and recessions differ, the study makes the following observations as hints for investment timing. First observation was that, on an average, 1 to 3 months before a recession starts is a good time for an investor to sell common stocks. The second hint advises an investor to wait for six months after a recession starts and then think about buying common stocks in order to benefit from the next bull market. By this time, the market index will be down 11 per cent from where it was when the recession started.

Market risk as pointed out earlier is also classed as systematic and non-systematic. When a combination of systematic forces cause the majority of shares to rise during a bull market and fall during a bear market, a situation called systematic market risk is created. As already noted, a minority of securities would be negatively correlated to the prevailing market trend. These unsystematic securities face diversifiable market risk. For example, firms granted a valuable patent of obtaining a profitable additional market share, by the bankruptcy of a tough rival may find its share prices rising even when overall gloom prevails in the market. Such unsystematic price fluctuations are diversifiable and the securities facing them can be combined with some systematic shares so that the resulting diversified portfolio offsets the systematic losses by gains from the non-systematic securities.

2.5 THE INFLATION RISK

Inflation risk is the variability in the total purchasing power of an asset. It arises from the rising general price level. The interest rate on bonds and debentures and dividend rates on equity and preference shares are stated in money terms and if the general price level rises during some future period the buying power of the cash interest/dividend income is likely to be received for that period would decline. And if the rate of inflation is equal to the money rate of return, the investor does not add anything to his existing wealth since he obtains a zero rate of return.

Many investors believe that if the market prices of their financial assets increase they are financially better off in spite of inflation. Their argument is : 'after all money is increasing'. A moment's contemplation would confirm that this is nothing but 'money illusion'. Consider, for instance, a situation when the market price of a security you are holding doubles and the general price level increases four-fold. Would you say that you are richer simply because your command over money doubles by selling the security. But you can't dismiss the fact that your command over goods and services

(which is the eventual objective of all investment decisions) has declined due to a four-fold rise in prices in general.

The money illusion is partly rectified by obtaining real rates of return (interest/dividend cash income + capital gains) which are equivalent to the inflation-adjusted monetary or nominal rates of return. If the real rate of return is denoted by R_r, inflation rate by q, and nominal rate of return by R, then:

$$R_r = \frac{1.0+r}{1.0+q} - 1$$

For example, a Rs. 500 debenture earns a coupon rate of 15% per annum. Inflation rate expected in the coming one-year period is 12%. Then the real rate of return would be :

$$R_r = \frac{1.15}{1.12} - 1 = 1.027 - 1 = .027 \text{ or } 2.7\%.$$

You may notice the drastic fall in the real rate of return to 2.27% from the coupon rate of 15% due to inflation rate of 12%.

Again, an equity share of Rs. 10 promises a dividend of 20% and you expect the price of the share to rise from the current level of Rs. 60 to Rs. 80 in a year's time. Inflation during the next year is estimated at 14%. The real rate of return would be :

$$\text{Nominal rate (R)} = \frac{\text{Rs. } 80 - \text{Rs. } 60 + 2.0}{\text{Rs. } 60} = 36.7\%$$

$$\text{Real rate of Return } (R_r) = \frac{1+.367}{1+.14} - 1 = \frac{1.367}{1.14} - 1$$

$$= 1.199 - 1 = .199 \text{ or } 19.9\%$$

The above examples clearly highlight the effects of purchasing power risk on the wealth and returns of an investor.

A question is sometimes asked about negative real rates of returns, that is, a situation where the inflation rate exceeds the nominal rate. Should an investor stop investing in such situations? The answer would depend on what alternative uses the investor would have in the event of not investing. If the money withheld from investment is kept as idle cash with zero nominal return then investing even with negative real returns, may be advisable because, as shown in the example below, non-investment would yield a larger negative real return than investing. And even though normal investment objectives would be to earn positive real rates, in abnormal situations like the one stated above, the objective would be to reduce the negative real rate of return.

Assume that a security is expected to yield a nominal rate of return of 12% and the rate of inflation is expected to be 15%. We have now to work out the choices of the investor, further assuming that if he does not invest his cash will have to remain idle.

Now, if our hypothetical investor decides to invest his real rate of return would be :

$$R_r = \frac{1+r}{1+q} - 1 = \frac{1.12}{1.15} - 1 = .974 - 1.0 = -.026$$

It works out to a negative 2.6% return. Should the investor decide to keep idle cash, the real rate of return would be :

$$R_r = \frac{1+0.0}{1+15\%} - 1 = \frac{1.0}{1.15} - 1$$

$$= .869 - 1.0 = -.131$$

It is manifest that it would be better to have a negative return of 2.6 than to end with a negative return of 13.1% by keeping cash idle.

You have seen that the purchasing power risk arises even if the market prices of assets rise. Likewise, this risk may emerge even if the asset prices do not fluctuate. The reason for these relationships is that the purchasing power risk arises from fluctuations in the purchasing power of real income and/or real price of assets and not from fluctuations in buying power of their nominal income and/or nominal prices.

It has already been stated that investment assets are real assets like land, real estate, gold, diamonds and financial or monetary assets like shares, bonds, and debentures. It has been observed that prices of real assets move with inflation and are positively correlated with it. In contrast, prices of monetary assets are relatively rigid and are negatively correlated with inflation. In consequence, real assets do not lose purchasing power as do the monetary assets in periods of inflation. In other words, real assets are good inflation hedges but monetary assets are not. Hence, monetary assets cannot form part of a portfolio which already has got a high degree of purchasing power risk. Such a portfolio can be diversified with real assets. This makes the purchasing power risk of monetary assets non-diversifiable or systematic and that of real assets diversifiable or non-systematic.

Activity 4

Collect monthly data of movements in the BSE National Index since inception of the Index in 1983-84.. Plot them on a graph with months and years on the horizontal scale and Index levels on the vertical scale. Read the resulting graph and point out.

a) No. of peaks
b) No. of troughs
c) Duration of all peaks and troughs
d) Average duration of all peaks and troughs.

Also write down a brief comment on the formation of 'bull' and 'bear' markets from the information that you obtained.

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Activity 5

Tick the correct alternative in the following multiple-choice questions :

a) Market risk
   i) is an unimportant source of investor's total variability of returns
   ii) can be diversified away
   iii) arises primarily from the economy level cycle of recession and expansion

b) The real rate of return is
   i) the inflation-adjusted rate of return
   ii) the rate at which an investor's purchasing power declines
   iii) both (i) & (ii) above

c) Interest rate risk is
   i) the variability of return that arises from fluctuations in market interest rates
   ii) perfectly identical with unpredictability of future dividend rates
   iii) the difference between coupon rates on Government securities and those on corporate debentures.

d) The interest rate risk on a government security
   i) is zero
   ii) is influenced by variations in market interest rates
   iii) is indicated by changes announced in coupon rates.

2.6. THE DEFAULT RISK

The default risk arises from a deterioration of financial strength of the company that issues securities. Holders of such securities have to experience a greater variability of returns when financial strength begins to worsen. Since the basic parameter is 'financial health', default risk is also known as financial risk.

If not handled properly, the default episodes of a firm may as well finally end up in bankruptcy. This would, however, not be quite a swift process and one may notice

warning signals before the final disaster strikes. For example, a company may begin stopping payment of its bills, accumulate arrears of cumulative preference dividends and accrued interest on loans, default on debenture interest, incur persistent losses, slash the equity dividend, and finally skip it, and so on. In more objective terms, adverse movements in financial ratios like the current ratio, the acid-test ratio, the cash to operating expense ratio, the net-worth to total assets ratio and so on can be put on the watch. The point is that bankruptcy will not be a bolt from the blue except when an act of nature destroys all assets which are not insured.

Firms operating in the financial services sector like CRISIL and the IFCI credit rating agency undertake an ongoing exercise to provide quality-ratings to the debt instruments of issuing companies. They are at present being solicited in India by companies who want to raise funds from the capital market. In Western countries, the rating programme is a voluntary and continual exercise performed by eminent firms like Standard & Poor and Merill Lynch etc. Ratings as given by these agencies are a significant aid to the investor in estimating the probabilities of default in a particular debt issue.

When the first signs of a weakening financial health of a firm are noticed, market prices of its securities react and take a deep dip when investors find a trending up of such weakness. When market prices decline, the investor would experience a fall in his rate of return and that is what would be his potential risk in the event of a default. The immediate target groups would be lenders and loan creditors but ultimately even shareholders would suffer. In fact, if the worst happens losses of equity holders could be total and they may end up with share prices nearly dropping to zero. Also, even at such absyemally low levels, there may not be any takers.

As with other risk factors, there may be diversifiable and non-diversifiable components of default risk. Thus, tight credit conditions created by the Reserve Bank of India would push up interest rates and financially weak companies may not be able to borrow. Similarly, a recession may curtail orders and firms that are already weak may start defaulting when their sales and income decline. These are examples of systematic forces that affect all firms simultaneously and systematically push them toward default. You should note that these are extraordinary circumstances and would push up the normal default rate of firms. Thus, a systematic default risk element is added to the normal default risk which remains diversifiable. The former will affect even the most diversified portfolios but the latter will nearly vanish in such portfolios.

The systematic element in default risk is more harmful to the investor than the diversifiable element. The latter can be anticipated and managed. For example, a government security can be added to the portfolio unless securities exposed to normal default risk themselves are yielding, on an average, a return that is very much in excess of the default-free securities.

2.7 THE MANAGEMENT RISK FACTOR

Management risk is that part of total variability of return which is caused by managerial decisions in firms where owners are not managers. Howsoever qualified and capable the management team; there are, after all, chances for judgemental errors and wrong decisions. Owner-investors are rightly aggrieved when executives are paid high salaries and perks and are allowed ego-bolstering non-income consumption like luxury cars, lavishly furnished offices and yet they plunge the firm in severe difficulties by their inept decisions.

Management errors are the main reasons which give rise to management risk component of total investor risk. There errors are so numerous that it is difficult to either list them or even to classify them. Nevertheless, some potential areas of management errors can be highlighted. The one great blunder that management might commit is to ignore product obsolescence. In fact, adequate expenditure must be made on R&D so that alternative products are promoted before the life-cycle of existing ones comes to an end. Single product firms will be more exposed to this risk than firms with diversified product lines. Another risk area is the dependence of a firm on a single large customer. Management must adequately diversify customer

groups. Many firms supplying defence equipment have been found caught up in deep financial distress when the Government announces cuts in defence spending. Yet one more area of management errors could be the wrong handling of a correct decision when it is subjected to unfair criticism and is even fought out in a court. For example, an automobile manufacturer develops a fuel-efficient small car much ahead of times. Some ardent consumer protection group brings a law-suit one grounds of user-safety being threatened. The firm then announces abandonment of the product, forcing investors to bear the loss of infructuous outlay and lost revenues in future. You should note that these cases are only illustrative and the list may go to an infinite number of factors.

Agency Theory and Management Risk

A recent development in the area of explaining management risks is concerned with research that seeks to explain the basic motivations of owners and managers. It has been stated that owners work harder than managers who do not have ownership interest in a company. Moreover, non-owner managers have strong incentives to consume non-pecuniary benefits since they are hired employees. The emerging theory hypothesises that owner-non-managers delegate all authority to non-owner-managers who then operate under a principal-agent relationship. Since *ex-post* rewards and punishments are not perfect and just, hired executives may not make as much *ex ante* effort to generate profitable investment opportunities than they would if they owned the firm. Thus, there is a conflict of interest between owners and managers and the latter may abuse the authority delegated to them much to the detriment of owners. In consequence, investors who are rational individuals, would pay a higher price for shares of owner managed firms than for shares of employee-managed firms. The difference between the two sets of prices has been termed as 'agency cost' and the whole logic presented in this para as 'agency theory' It must be observed that the theory has not gone without criticism but the view is getting increasingly accepted.

Evaluating Management

An investor and security analysts must attempt to evaluate the management team of a company for its strengths and deficiencies. The task, though difficult and highly subjective, must be done using some vital checkpoints which are briefly stated below:

1) Age, health, and experience profile of executives
2) Growth-orientation and aggresiveness of management
3) Product and customer diversification
4) Composition of Board of Directors and the number of o' side directors; Effectiveness of the Board.
5) Management depth of the firm i.e., extent of delegation and decentralisation and development of managers at all levels with a strong middle-management team.
6) Dynamism and flexibility of management
7) Profit margins and profitability of product lines and subsidiaries, if any
8) Rate of return on equity compared to competitors
9) Dividend payout policy and cash dividend record
10) The depth and transparency of annual reports to shareholders
11) Compensation to managers including special arrangements like stock option plans
12) Compliance record of environmental, consumer protection, and fair trade practices legislations
13) The hiring and firing record of the company vis-a-vis senior and key executives.

Diversifiable and Non-diversifiable Elements

Management errors are instances of management weaknesses. During normal periods they go unnoticed but during periods of difficulty not only are these errors conspicuously observed but the responses of weak managements become very poor also.

Difficulties crop up when stresses are built up for all firms irrespective of the quality of management. For example, a shortage of petroleum products or emergence of a

strong global competitor would aggravate problems and increase their number manifold. Since all firms would be affected, the investor would have no choice to diversify. Of course, he would sell off shares of firms with weaker management because they would be more prone to committing management errors during such stresses or systematic pressures. This would lower security prices of such firms and investors would hold them only if higher rates of return are offered. But while this may happen, there is no escape for the investor. If he moves from a weaker firm to a firm which is not so weak, systematic pressures would still work. Hence, this component of management risk is known as systematic or non-diversifiable risk.

It must be observed that errors can be committed even by best managements during normal periods. This would be a case of diversifiable management risk. Normal management errors occur randomly and investors can diversify by shifting their investments across companies.

2.8 THE LIQUIDITY RISK FACTOR

Liquidity risk of securities results from the inability of a seller to dispose them off except by offering price discounts and commissions. It is easy to rank assets according to liquidity. The currency unit of a country is immediately saleable at par and no discount etc. need be given. Government securities and blue chip shares are the next highly liquid group of assets. Debt securities and equity shares of some small and less known companies are less liquid or even illiquid.

The investor cannot recover his asked price while selling illiquid securities. He has to face a bid price which is always the highest of the potential buyer but even so is always less than the asked price. The difference between the asked price and the bid price is known as the bid-asked spread. This spread increases with illiquidity of assets. Investors must consider the liquidity risk factor while selecting securities.

Activity 6

Select a small and a medium-sized/large-sized company and contact some key officials for information on check-points listed in section 2.7 for evaluation of management. Write a note on your experience about the interview. Did you find reluctance of officials to provide the needed information? Assess management risk of the two companies on the basis of whatever information you could gather. Also use financial statements of the companies for accomplishing your objective. Comment on differences in management quality of a small and a medium/large company.

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Activity 7

You are given four pairs of statements below. Indicate for each pair the statement which is true and the one which is false.

1) a) Default risk is always the risk of bankruptcy
   b) Default may end up in bankruptcy

2) a) Liquidity risk results from a situation when securities cannot be sold except at a price discount.
   b) Liquidity risk arises when an investor cannot sell his securities at his best prices.

3) a) Being absentee-owners, investors in general are more likely to commit management errors.
   b) Managers who do not own equity shares are prone to commit management errors and magnify management risks

4) a) The stronger ami ms may be driven to a situation that it makes default.
   b) Bankruptcy does not spare even the financiall. strong firms.

2.9 SUMMARY

Considerations of risk are vital for investments. A potential investor looks at some expected return which occurs in future. And what is certain about future is that it is uncertain. A decision today for a tomorrow which is uncertain is the kind of topography on which an investor has to walk. The path is rugged and the journey full of risk.

An intelligent investor would want to make his journey as smooth as possible. He would attempt to anticipate the kind of risks he is likely to face and also the vast number of factors that probably produce these risks. Even though he understands that the task is highly subjective he makes his best efforts to remain anchored to canons of rationality.

The two-step procedure that he follows in accomplishment of his objective is to get some specific insights into his total investment risk and then to familiarise himself with the various elements and factors that sum up to such total risk. For estimating the total risk, the investor uses his past experience and modifies it appropriately for the changes he expects to occur in future and then develops a subjective probability distribution of possible returns from the proposed investment. This probability distribution is then employed to estimate the expected value of the return and its variability. The 'mean' gives the expected value and 'variance' or 'standard deviation' the variability or the measure of risk. The widely used procedure for assessing risk is known as the mean-variance approach.

The 'variance' or 'standard deviation' provides an overview of risk. It measures 'total risk'. In actual practice, various factors produce this total risk. A decomposition of total risk would be necessary to gain knowledge of the influence of these factors individually.

Recognising some recent developments in the theory of risk measurement, especially the portfolio aspects, a first step in reaching out to the components of total risk is to divide it into systematic or market-related risk and non-systematic or diversifiable risk. When the returns of a security are positively correlated with the market it cannot be used for diversification and is the source of non-diversifiable or market-related risk. But securities with returns negatively related to the market would have diversifiable risk. Such securities can be combined in a portfolio to ensure stable returns which, in turn, would minimise the wide ups and downs in returns. It must be noted that the wider the range of these ups and downs the greater the risk.

When it comes to specifying the factors influencing total risk. One may group them into two broad classes, viz., factors which produce non-diversifiable or systematic risk and factors which cause non-systematic or diversifiable risk. The former category comprises causes like interest rate variations, inflation, or market sentiment (or bull-bear market) which would affect all firms and it would be difficult to select securities in a portfolio whose returns are negatively correlated. The latter categor would, on the other hand, include causes like management quality, liquidity, and chances of default. They affect some firms but no others. Hence, they can be used to diversify a portfolio to reduce risk.

It must finally be observed that the grouping of risk factors into diversifiable and non-diversifiable is very broad. It cannot be neat and rigid because each of the factors would have diversifiable and non-diversifiable elements. Thus, getting to the various components of total risk cannot really speaking be very specific and accurate. The subjective insights would undoubtedly aid the security analyst in minimising his judgemental errors while evaluating risk of investments.

2.10 KEY WORDS

Agency Theory : Documents the view that managers have incentives to consume as against owners who have motivation to work hard. The corporate decision-making process is based on delegation of authority to executives who manage on behalf of owners. Agency theory postulates non-owners managers to be more susceptible to management errors.

Agency Cost : The difference between the value of a firm managed by executive delegates and the one managed by owners, the latter value being higher than the former.

Bear Market : A period (measured generally in months) during which the market indexes and prices of most shares decline in a given market. This phase is characterised by pessimism and low volume.

Bull market : A period during which the market indexes and prices of most shares rise in value in a given market and when optimism prevails.

Coupon rate risk : The probability of the coupon rate of interest printed on the face of a debt security as a percentage of its face value being changed in successive short periods.

Diversifiable risk : Variability of return caused by factors that are unique to one or a few securities. Such variability is averaged out to zero in a diversified portfolio and can, therefore, be eliminated.

Default Risk : The variability of returns to investors caused by changes in the probability that the company issuing securities might default. Also known as financial risk and/or bankruptcy risk.

Duration : The weighted average time that the funds remain invested in a bond, weights being the present value of cashflows. Duration is generally less than the period of maturity except in case of zero-coupon bonds where the two are equal. Duration measures the interest rate risk of a security.

Illiquid Assets : Assets including securities which cannot be readily sold unless deep price discounts and/or commissions are given.

Inflation Hedge : An asset whose market price rises as fast or even faster than the rate of inflation so that the owner does not lose in terms of purchasing power.

Liquidity risk : The probability that securities will not be sold out for cash without price discounts and/or commission.

Management depth : An organisation structure which provides for adequate decentralisation, delegation, and opportunities for the development of managers at all levels.

Management evaluation : An assessment of a firm's managements aggressiveness, growth-orientation, research and development plans, utilization of board of directors depth, flexibility, ability to earn profits and stay abreast of modern developments, experience, education, and compensation plans.

Product obsolescence : An old product suffering from reduced demand owing to superior technology of competitors and/or shifts in consumer taste.

Quality ratings : Quality grades developed by rating firms and agencies which indicate the relative probability that a security issue will default. These grades are indicated by different combinations of alphabets.

Recession : A period during which general business activity declines for several months or even a few years.

Trough : It occurs when general business activity has bottomed out at the end of a recession. The usual timing of a trough is at the end of a recession and the beginning of a recovery in business activity.

Undiversifiable risk : Variability in the investor's rates of return arising out of common and macro-level factors like an economic downturn, general rise in prices, increase in interest rates, and bull/bear phases of the securities market. All securities returns are systematically affected by these factors. Hence, the risk is also known as 'systematic risk'.

2.11 SELF-ASSESSMENT QUESTIONS/EXERCISES

1) Which of the following concepts of 'risk' would you consider better and why?
   a) Margin of Safety
   b) Debt Ratio
   c) Standard deviation

2) Explain the following terms :
   a) Diversifiable interest rate risk
   b) Liquidity risk
   c) Real rate of return
   d) Peaks and troughs of business activity
   e) Duration

3) Distinguish between
   a) Financial risk and business risk
   b) Diversifiable risk and Non-diversifiable risk
   c) Nominal rate of return and Real rate of return
   d) Market interest rate risk and coupon rate risk
   e) Individual security risk and portfolio risk.

4) The following information is available for a hypothetical company :

Year	Equity Share Price at end of year	Dividends for the year
	(Rs.)	(Rs.)
1986	24.70	1.105
1987	27.20	1.26
1988	36.30	1.42
1989	35.75	1.58
1990	38.25	1.62

If the share was bought at the beginning of each year at the closing price of the immediately preceding year and sold at the closing price of the year of purchase, calculate holding period yields for each of the years 1987, 1988, 1989 and 1990.

5) Match the words and phrases listed below with the most appropriate definitions or descriptions

Word or phrase	Definition or description
1) Undiversifiable management risk	A) The portion of an assets total risk that is caused by discounts and selling commission that must be given up to sell it.
2) Agency cost	B) Variability of return caused by changes in the price level.
3) Undiversifiable market risk	C) Difference in expenses at owner-managed and employee-managed firms.
4) Bull market	D) Costly management errors that occur systematically at the worst times.
5) Purchasing power risk	E) Variability of return caused by simultaneous fluctuations in the prices of most securities.
6) Total risk	F) Systematic price movements that sweep most stocks along in alternating bull and bear market price swings.
7) Bull and bear market	G) A period of prevailing optimism that carries the price of most securities to high levels.
8) Liquidity risk	H) The aggregate variability of return an asset derives from all its risk factors.

6) Indicate if the following statements are True or False :
   a) Price fluctuations rises results from systematic changes in the prevailing market interest rates.

   True/False

   b) Most losses from default occur after the default.

   True/False

   c) Price of a firm's share drop on the news of a little drop in earnings per share because it is considered a fore-warning to cut in dividends and possible default and bankruptcy.

   True/False

d) A continual turnover of able executives hired into the firm from its competitors suggests that the firm suffers from lack of management depth.

True/False

e) Consumption by top-level executives of excessive amounts of non-pecuniary benefits such as expensive chauffer-driven cars, private plane services, luxurious meetings scheduled at glamour spots, and special residences is all evidence of agency costs.

True/False

f) About 70 per cent of the shares listed on the BSE declined in price, on average, during the recent bull market.

True/False

g) An investor would earn real rate of return only when his portfolio rises steadily.

True/False

h) Purchasing power risk can be minimised by seeking securities with high positive nominal rates of return.

True/False

2.12 FURTHER READINGS

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Answers

Activity 1

a) Only one

b) One because there is only one outcome and the sum of probabilities of all outcomes must be 1.0.

c) Return (R_t) in time period 't' $= \dfrac{\text{Capital Gain + Income}}{\text{Purchase Price}}$

$= \dfrac{\text{Sale Price } (P_1) - \text{Purchase Price } (P_0) + \text{Dividend in Year 't'}}{\text{Purchase Price } (P_0)}$

d) Total risk of an investment as measured by the range of variation of possible outcomes.

e) The probability of actual return being less than the expected return or the probability of adverse return.

f) No; Risk and return in investment go together.

Activity 2

The additional information for estimating the 'expected return' would have to be with regard to 'probabilities of occurrence' of all possible returns. This will have to be generated on the basis of past facts and subjective beliefs.

Activity 3

a) True; b) True; c) False; d) False; e) False; f) False; g) False.

Activity 5

a) iii: b) iii; c) i; d) ii.

Activity 7

1) a) False b) True
2) a) True b) False
3) a) False b) True
4) a) True b) False

Answers to Self-Assessment Questions

4)

1987	15.22%
1988	38.68%
1989	2.84%
1990	11.52%

5) 1. D; 2. C; 3. F; 4. G; 5. B; 6. H; 7. E; 8. A.

6) a) True; b) False; c) True; d) True
e) True; f) False; g) False; h) False

UNIT 3 VALUATION OF SECURITIES

Objectives

The objectives of this unit are to:

- explain the fundamentals of valuation as applied to securities
- discuss the relevance of the three-step valuation process as used traditionally
- familiarise you with the general approach to valuation as influenced by the rules of market and different classes of investors
- analyse the specifics of fixed-income securities valuation
- examine valuation methodologies generally employed by preference and equity investors
- emphasise and illustrate that the factors garmane to valuation are risk and return.

Structure

3.1 Introduction
3.2 The Three-step Valuation Process
  3.2.1 Economy Influences
  3.2.2 Industry Influences
  3.2.3 Empirical Support for the Valuation Sequence
3.3 The General Valuation Framework
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  3.4.1 Estimating Returns on Fixed Income Securities
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  3.6.1 The Present Value of Expected Stream of Benefits from Equity Shares
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3.10 Further Readings

3.1 INTRODUCTION

You have studied in Unit 1 that a rational investor prefers certainty to uncertainty and is, therefore, averse to risk. Consequently, when he is about to take an investment decision he does not instantaneously pick up the securities that may provide him the maximum return. His concern is that if he chooses to maximise return, he may, albeit unwillingly, be maximising his risks too. The investor would, however, minimise the risk and maximise the returns. He is, thus, constantly working out a risk-return trade off.

Unit 2 exposed you to the concept and components of risk along with an elementary look at measurement of total risk. It stressed the basic axiom about security analysis and portfolio management viz., 'risk and return go together'. There is no conception of risk without at the same time considering return and *vice versa*. In fact, 'risk' would be defined in terms of 'volatility or variability of return'. The present unit examine the fundamentals of security valuation.

Even if motives behind investing could range from a naive holding by small investors to acquisitions for prestige and control (e.g., take-overs and purchase of large lots of shares), an average decision is founded on a buy-sell strategy with the expected holding-period return in the foreground.

It must be stressed that all classes of investors stated in the foregoing paragraph would be interested in knowing the value of securities they plan to hold for periods ranging from short to infinity. Since the securities investor belongs to a special class of general

buyers-and-sellers, he would be influenced in his decision to buy/sell by two sets of values: one, his own value, and two, the value externally determined by the market and known as 'price'. These are the determinants of the buy-sell decision of any goods or services in general. It is important to emphasise that 'risk' and 'return' do vitally affect the valuation process both of the individual investor and the whole constallation of investors that constitute the market.

Valuation is thus a key concept for investment decisions. No buy/sell action will emerge without 'values'.

An investor who is practising the profession of investment management would generally follow a broad two-stage methodology in his investment decisions. First, he prepares the risk-return profiles of available securities for his future holding period. This is known as security analysis. Second, he compares the risk-return particulars of individual securities with each other in some meaningful manner so that he is enabled to allocate his funds over them on a continuing basis. This is known as portfolio analysis selection, and management.

3.2 THE THREE-STEP VALUATION PROCESS

Implicit in all rational buy-sell transactions relating to claims, goods, and services is the question: 'Is it a good deal?' The investor surrenders a cost (time or money) in exchange for promised benefits. Both cost and benefits have to face uncertainty since nothing except death and taxes appear certain in this world. The basic valuation process, therefore, is a constant exercise in rationality with cost, benefits, and uncertainty as important variables.

The question of the valuation process following a sequence has been examined in the literature and a widely prevalent view is that the performance of a firm is linked to the performance of the industry to which it belongs, and the industry performance, in turn, is linked to performance of the economy and the market in general. The three sequential steps in the valuation process would, therefore, be as follows :

a) Economy analysis
b) Industry analysis
c) Company analysis.

3.2.1 Economy Influences

All firms are parts of the overall system known as the 'general economy' which records ups and downs. It is logical to begin the valuation process with projections of the 'macro economy'. What you should grasp is the vast number of influences that affect the 'general economy'. To give only a few examples : fiscal policy affects spending both directly and through its multiplier effects. Monetary policy affects the supply and cost of funds available to business units. Interest rates and hence required rates of return are influenced by expected inflation. Balance of payments position, exchange rates, monetary devaluations, world opinion, and several other international factors affect the performance of the economy. A well-informed investor will first attempt to project the future course of the economy. Should he anticipate a recession he should get his cash back and say 'good bye' to new investments. If his projections indicate conditions of boom, he should select industries most likely to benefit from the expected prosperity phase.

3.2.2 Industry Influences

All industries are not influenced equally by changes in the economy nor are they are affected by business cycles at just one single point of time. For example, in an international environment of peace-treaties and resolution of cold war, profits of defence-related industries would wane. The upturn in construction industry generally lags behind the economy. Similarly, a boom or expansion of the economy is not likely to benefit industries subject to foreign competition of product obsolescence. A weak firm in booming industry might prove more rewarding than a leader in a weak or declining industry. Of course, the investor would continuously be through a search process so that he identifies the best firms in strong industries, and narrow down his area of search for investment outlets.

3.2.3 Empirical Support for the Valuation Sequence

You may, at this stage, ask a question : "why should the 'company-level' be the last stage in the valuation sequence?" The valuation sequence can be defended and your question aptly answered if it could be shown that earnings, rates of return, prices, and risk levels of a company bear relationships with the economy or with the market which is used as a substitute factor for the 'general economy'. Many studies are available on the subject and it may not be out of place to provide an overview of their basic findings.

Brown and Ball (1967) :

This study selected 316 firms belonging to different industries. Earnings of each firm were first related to earnings of all 316 firms (dummy for 'economy') and then to earnings of each of the firm belonging to its respective industry for the 1947-1965 period. It was found that 30-40 per cent of variability of each firm's earnings was **related** to the variability of earnings of **all** firms, plus, 10-15 per cent of the firm's earnings variability was **related** to the earnings variability of the industry. Also, larger and more diversified firms were more closely related to the economy while the small and specialised firms showed greater independence.

(For more details, you may see "Some preliminary findings on the Association between the Earnings of a Firm, Its Industry and the Economy," Empirical Research in Accounting, Selected Studies, 1967, Supplement to Vol. 5, Journal of Accounting Research, pp. 55-77).

Shiskin :

The focus of this study was the predictability of stock prices. **Firstly,** the stock price series was examined for seasonal, irregular, and trend-cycles. It was found that prices displayed irregular movements at short intervals. From this, one is inclined to practise the following rule . 'don't follow daily/weekly price changes; they are irregular and do not leave any guidance for the future course. **Secondly,** the percentage of the total of eighty industry price indicators moving in one direction were calculated. They were called 'Diffusion Index'. Here again, patterns emerged when the period between two readings was increased within a range of 9 to 12 months. In such cases, the diffusion indexes even led the stock prices. The apparent conclusion is : 'industry prices are cyclical and can be used to predict stock prices of the individual firm belonging to its industry group.' **Finally,** stock price series were related to macro economic series on employment, income, production and results indicated that stock prices consistently conform to economic expansion and contractions and also that they clearly led the general economy. Thus, though it may be difficult to predict stock prices, they do contain cycles and it may be useful to predict these cycles and find if such cycles relate to individual stock price returns.

(For more details, you may see Julius Shiskin, "Systematic Aspects of Stock Price Fluctuations", reprinted in James Lorie and Richard Brealey, Modern Developments in Investment Management, Second ed., Hnisdale, Illinois : The Dryden Press, 1978 pp. 640-658).

King (1960) :

This study examined the firm, industry, and economy relationships using the rate of return as the base variable. The rate of return was defined as the monthly percentage change in price. The exercise covered 63 stocks representing six industries for 403 months from June 1927 through December 1960. Fifty-two per cent of the variation in stock prices was explained by variations in the prices of the whole market and another ten per cent by industry variability. Even though the influence of the market factor did decline over time, King's study confirms the valuation sequence being discussed in this section.

(For more details, you may see Benjamin F. King, "Market and Industry Factors in Stock Price Behaviour," Journal of Business, Vol. 39 No. 1, Part-2, January 1960, pp. 139-190).

Myers (1973) :

Using King's methodology, this study enlarged the sample by adding 5 stocks from each of the twelve industry groups and extended the sample period to December

1967. The market explained more than 55 per cent of the variance for individual prices prior to 1944 but its explanatory power declined to less than 35 per cent during the 1952-1967 period. The industry influence also weakened after 1952. The industry influence was very weak when the industry was heterogeneous. Overall, the market and industry need to be analysed before looking at individual stocks.

(For more details, you may see Stephen L. Myers, "A Re-Examination of Market and Industry Factors in Stock Price Behaviour," Journal of Finance, Vol. 28, No. 3, June 1973, pp. 695-705).

Blume (1971) :

This study examined the influence of the market studying all the New York Stock Exchange (NYSE) stocks for the period July 1926 through June 1968. Systematic risk factor was computed with beta as the measure. The influence of the market was found to decline but still it explained about 30 per cent of the variance is individual shares.

(For more details, you may see Marshall E. Blume, "On the Assessment of Risks," Journal of Finance, Vol. 26, No. 1, March, 1971, pp. 1-10).

The results of these studies suggest strongly that a knowledgeable investor must first project the state of the economy in view of its close relationship with the stock market. And once an expansion is anticipated, serious common stock analysis would be imperative.

Sharpe (1975) :

The period of this study viz., 1929-1972 was split into three sub-periods : 1929-1972, 1932-1972, and 1946-1972. Two types of investor strategies were considered i.e., active and passive. The active strategy consisted of buying-selling two securities viz., common stocks and treasury-bills. The passive strategy excluded selling and its main plank was : 'buy-and-hold.'

According to this study to be able to get gains out of an active strategy, the investor would have to work out the timing of his buy and sell decisions. This, in turn, would be determined by his ability to predict the market. The investor could predict the annual peaks and troughs. Also, he could predict good and bad years in the beginning of each year. Returns on common stocks would be more than those on treasury bills in good years and *vice versa*. If the investor is able to exercise perfect foresight, he will invest in treasury-bills in bad years or troughs and in common stocks when there are good years or peaks around. In contrast, the passive investor would buy and wait and estimate the capital growth of his Investment for any period.

The active investor would be using perfect foresight when he predicts correctly 100 per cent of the time and his returns exceed those of the 'buy-and-hold policy'. Sharpe found that the excess return situation did not arise until at least 74 per cent of the time the guesses came out to be correct. When the investor could predict correctly only 50 per cent of the time, his active strategy yielded negative returns compared to the 'buy-and-hold' strategy. Sharpe concluded as follows :

Attempts to determine the best time to buy/sell using perfect foresight are not likely to yield an additional annual return exceeding four per cent over the 'buy-and-hold' policy. Moreover, unless an investor (or investment manager) can predict whether the market will be good or bad each year with considerable accuracy (e.g., be right at least seven times out of ten), he should probably avoid attempts to time the market altogether.

(For more details, you may look up William F. Sharpe, "Likely Gains from Market Timing", Financial Analysts Journal, Vol. 32, No. 2, March-April 1975, pp. 60-69)

Activity 1

1) Who among the following did not agree with the valuation sequence : economy/market – industry – firm?

   a) Brown and Ball b) Shiskin c) Sharpe d) Blume f) Myers, g) King

2) The passive investor

   a) only buys and waits
   b) buys and sells after short period
   c) buys, sells, and switches continuously from one security to another

d) only sells after long periods
e) does neither of the above

3) Perfect foresight is evidenced when predictions about good and bad markets are right

a) 50 per cent of the time
b) At least 74 per cent of the time
c) At least one-third of the time
d) 55 per cent of the time
e) Zero per cent of the time

4) Perfect foresight is assumed by Sharpe to be reached when returns from active strategy are

a) less than returns from passive strategy
b) more than returns from passive strategy
c) equal to returns from passive strategy
d) one-hundred per cent more than returns from passive strategy
e) none of the above

5) Valuation of securities depends on

a) expected return only
b) present cost of purchase/acquisition only
c) uncertainty about expected returns only
d) uncertainty about cost only
e) all of the above

6 Which of the following variables can be used to the valuation-sequence relationships between economy (market), industry, and individual stocks?

a) Earnings per share
b) Rate of Return
c) Stock prices
d) Macro series on employment, income, production etc.
e) All of the above

Activity 2

Three investors started with an investment of Rs. 10,000 in 1929, 1934, and 1946 respectively. Their holding period ended in 1972. The following table gives their ending wealth using the two alternative active and passive strategies :

Table : Performance of Alternative Strategies

Investor	Annual Average Returns	Period	Strategy	Ending Wealth (Rs.)
A	10.64%	(1929-72)	Buy-and-hold	8,70,000
	14.86%	(1929-72)	Perfect foresight	44,76,000
B	12.76%	(1934-72)	Buy-and-hold	10,92,000
	15.25%	(1934-72)	Perfect foresight	25,63,000
C	12.79%	(1946-72)	Buy-and-hold	2,59,000
	14.63%	(1946-72)	Perfect foresight	4,02,000

You are required to study the above table carefully and give your observations in **not more than** five sentences.

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3.3 THE GENERAL VALUATION FRAMEWORK

Most investors look at price movements in securities markets. They perceive opportunities of capital gains in such movements. All would wish if they could successfully predict them and ensure their gains. Few, however, recognise that value determines price and both change randomly. It would be useful for an intelligent investor to be aware of this process. The present section examines this process in detail. We first present a brief outline of the basic valuation model and then proceed to discuss the relationship of value with price via investor-market-action. We shall also recall active and passive investment strategies and finally figure out the dynamic valuation model.

3.3.1 The Basic Valuation Model

Value of a security is a fundamental variable and depends on its promised return, risk, and the discount rate. You may recall your basic understanding of present value concept with the mention of fundamental factors like return and discount rate. In fact, the basic valuation model is none else than the present value procedure. Given a risk-adjusted discount rate and the future expected earnings flow of a security in the form of interest, dividend, earnings, or cash flow, you can always determine the present value as follows :

$$PV = \frac{CF_1}{1+r} + \frac{CF_2}{(1+r)^2} + \frac{CF_3}{(1+r)^3} + \text{———} + \frac{CF_n}{(1+r)^n}$$

Where PV = Present value

CF = Cash flow, interest, dividend, or earnings per time period upto 'n' number of periods.

r = risk-adjusted discount rate (generally the interest rate)

Expressed in the above manner, the model looks simple. But practical difficulties do make the use of the model complicated. For instance, it may be quite in the fitness of things that a single value is not generated. Whosoever does the valuation job (a professional analyst or an intelligent investor), the safest course would be work out a margin of error. Thus, the value estimated may be Rs. 100 ± Rs 20 and not just Rs. 100 or Rs. 80 or Rs. 120. You will realise that market operations would become tedious with a range of values. Secondly, return, risk, and value would tend to change over time. Thus, security prices may rise or fall with buying and selling pressures respectively (assuming supply of securities does not change) and this may affect capital gains and hence returns expected. Consequently, estimates of future income will have to be revised and values reworked. Similarly, the risk complexion of the security may change over time. The firm may over borrow (and face operating risk) or engage in a risky venture (and fact operating risk). An increase in risk would raise the discount rate and lower value. It would then seem to be a continuous exercise. Every new information will affect values and the buying and selling pressures which keep prices in continuous motion would drive them continuously close to new values. The last part of this section portrays this dynamic valuation model with ever-changing information inputs.

3.3.2 Value-Price Relationship

Present value, also known as intrinsic value or economic value, determines price. We have said this in the preceding section. But how does it happen? Again, a hint to the answer for this question has been stated in the foregoing paragraph. You should have noted the role of 'buying and selling pressures' which make prices more toward value. Now, you would ask : 'what these pressures are and how do they occur?' You will briefly understand that 'investor action' in the wake of revisions of values spurs such pressures.

You would recall that investment strategies can be 'passive' or 'active'. Following this, investors and investment managers can also be broadly grouped in 'passive' and 'active' categories. You should note that buying and selling pressures dominantly originate with active investors. And they follow certain rules of the game which are outlined below :

Rule 1 : Buy when value is more than price. This underlines the fact that shares are **underpriced** and it would be a bargain to buy now and sell when prices move up toward value.

Rule 2 : Sell when value is less than price. In a situation like this, shares would be **overpriced** and it would be advantageous to sell them now and avoid less when price later moves down to the level of the value.

Rule 3 : Don't trade when value is equal to price This is a state when the market price is in equilibrium and is not expected to change.

An example would make the operation of these rules and the consequential investor action clear. Assume that the share of a hundred-per cent-export-unit (EOU) is currently trading at Rs. 80 against a face value of Rs. 10. Now, the news of the company having lost a valuable export contract amounting to around 40 per cent of its expected total export sales of the coming year is gained by most active investors in the market. They revise the estimates of future income downward by 40 per cent and, risk, discount rate and other things remaining unchanged, rework the present value at Rs. 48 (60% of Rs. 80). Now, this takes you to rule 2 when value is less than price (or more appropriately when price is more than value). One would expect a decline in price due to an adverse news afflicting the present value. Active investors would begin selling to avoid probable losses so that selling pressure would be generated and if supply of shares does not change, such a pressure would reduce price till such time that it nears the new present value viz., Rs.48. Contrarily, take the case of a company whose share was trading at Rs. 20 (with a par of Rs. 10). Now, the alert and active investors get the news of the lifting of a half-year-long lock-out and signing of a three-year wage agreement quite beneficial to management much before even the media could get it. Other things including risk and discount rate remaining unchanged, analysts revise their estimates of the present value to Rs. 40 (Rs. 10 below the peak of the last year when the company was working normally). You will see the case now falling under rule 1. Investors would expect price to move up toward the new value of Rs. 40 and would immediately start buying at or around the current price of Rs. 20. This will generate buying pressures and the price would increase if supplies of the scrip do not increase at the same time.

3.3.3 The Cootner Hypothesis

Cootner adds one more dimension to the general view of investor action and buy-sell pressures. He classifies active investors further into two groups viz., 'professional investors' and 'unsophisticated investors'. The former are resourceful enough to discover news and develop estimates of intrinsic value even before the unsophisticated investors get the news. They will, therefore, be the first to commence market action the moment a value-price mismatch is discovered. 'Unsophisticated investors' including hasty speculators who act on 'hot tips' would not get any news other than public news and will not have the skill to interpret even such public news. They will, however, act in the market but such an action would be incompatible with true changes in intrinsic value. For instance, some of them might have got retirement benefits and would desperately want to invest in shares and securities. And unfortunately, such an action may come up at a time when price is more than value. Likewise, some such investors may have to finance a marriage in the family and would have to sell shares held by them even if price is already ruling at a level lower than the intrinsic value. It is obvious that the action of unsophisticated investors would cut against the trading pressures needed to rectify the disequilib ium between value and price. It is only when their irrational action takes prices to substantial 'highs' or 'lows' that the professional investors re-enter the scence and pocket enormous profits even while attempting to realign the errant prices to intrinsic values.

The following figure shows the effect of Cootner hypothesis on the valuation process :

Figure 3.1 plots prices and value on the vertical axis and time on the horizontal axis. The dotted horizontal line plotted against Rs. 20 is the intrinsic value line and the two solid lines on either side of the value line are price lines, one against Rs. 35 being the higher and the other against Rs. 25 being the lower price line. Notice price movements within the range Rs. 25 – Rs. 35 and observe the two sets of movements marked as phase I and phase II. During phase I, the **price moves** beyond the intrinsic value line. This happens even when the price **(Rs. 35) is more than the** intrinsic value

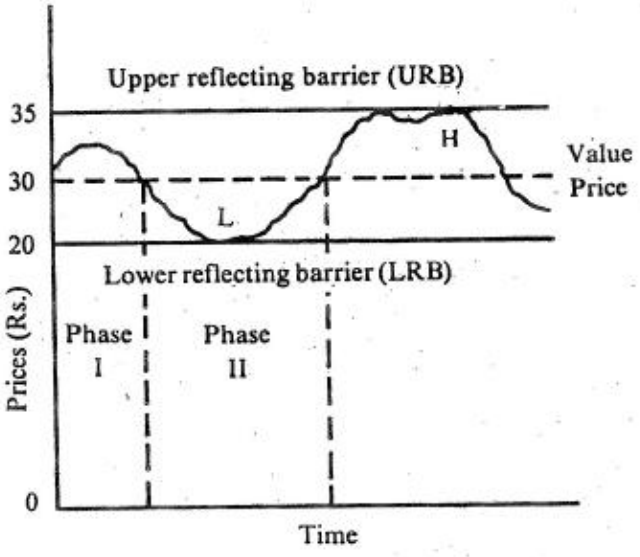


Fig. 3.1

(Rs. 30). Likewise, the price moves down below the intrinsic value is phase II even when the current price (Rs. 25) is less than the true value (Rs. 30). You will readily understand from discussion in the preceding paragraph that this unusual buying (phase I) and selling (phase II) which only strengthens the deviation between value and price occurs due to irrationality of unsophisticated investors. In fact, prices move aimlessly between Rs. 25 and Rs. 35. It is only when prices move significantly out of line at points L (lower bound) and H (upper bound) that the professionals move into action. They begin buying after 'L' and selling after 'H' and realign the prices to the intrinsic value. In the process, the professionals get substantial profits. Generally, they would not rise into action ti'l such time that they get worthwhile earnings out of the wanderings of the unsophisticated investors. In fact, they will be found to have erected upper and lower bounds for their action called by Cootner as Upper Reflecting Barrier (URB) and Lower Reflecting Barrier (LRB) respectively. The market situation described in this part is known as the intrinsic value random-walk marked or the constrained random walk. The URB and the LRB are the two constraints within which price moves randomly.

Paul Samuelson has supplemented the Cootner formulation of the valuation model by stressing the state of continuous equilibrium. Such a situation would be formed when prices adjust at high speed to values. Instantaneously adjusting prices to 'vibrating values' would be known as perfectly efficient prices which would be assumed to reflect all information. A security with perfectly efficient prices would be in continuous equilibrium.

Activity 3

Indicate if the following statements are True or False :

a) **Perfectly efficient prices reflect all information.** True/False

b) **Continuous equilibrium is a state when action of the professional investors brings prices closer to intrinsic value.** True/False

c) **The discount rate used to estimate present values is the risk adjusted interest rates.** True/False

d) **The reflecting barriers on the ultimate resistance points to aimless price movements erected by professional investors.** True/False

e) **The buying pressure is built when active professional investors begin buying inconditions of price exceeding intrinsic value.** True/False

f) Don't trade when price is either more or less than value, is basic rule

True/False

3.3.4 The Dynamic Valuation Process

You should have by now understood the dynamic nature of valuation. Estimates of present value, riskiness and discount rates, future income, and buy-sell action have to be reviewed from time to time in response to new bits and sets of information. Figure 3.2 depicts the dynamic valuation process which is an over continuing phenomenon. The investors start with their estimates of intrinsic value using the present value procedure. Working on the trading rules, they buy, sell or don't trade. In the process, buying and selling pressures are generated and prices either move up or down. In either case, future returns will be influenced by the latest market price reacting to buying/selling pressures. This will require present values to be reworked. The process will thus go on.

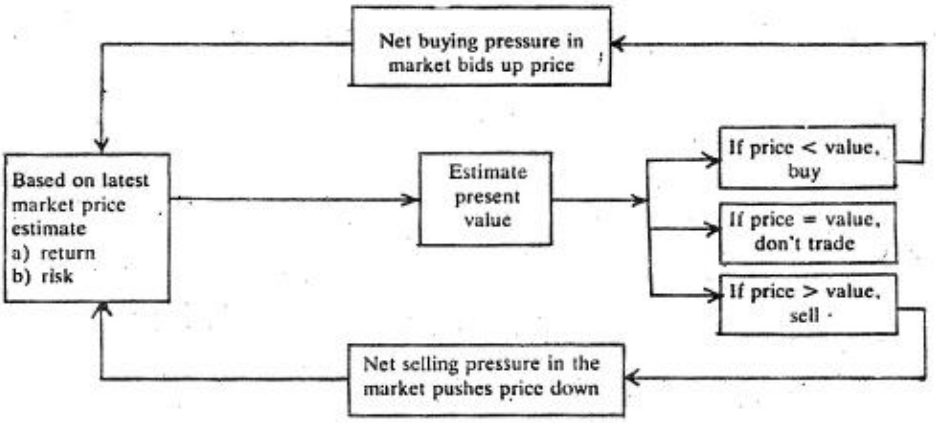


Figure 3.2 : The Dynamic Valuation Model

Activity 4

Read the Section 3.3 carefully and look at Figure 3.2 depicting the dynamic valuation model. After this, write five sentences on the dynamic valuation model. Also state what happens when the investor/security analyst works on just one-time estimates of value.

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3.4 VALUATION OF FIXED INCOME SECURITIES

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

The intrinsic value of a 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 :

$$PV = \sum_{t=1}^{n} \frac{C}{(1+r)^t} + \frac{TV}{(1+r)^n} \qquad (3.1$$

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

The valuation methodology implicit in the above equation can be illustrated. Consider Rs. 1,000 bond A issued with a maturity of five years at par to yield 10%. Interest is paid annually and the bond is newly issued. The value of the bond would be as follows :

$$PV_A = \frac{Rs.\ 100}{1+.10} + \frac{Rs.\ 100}{(1+.10)^2} + \frac{Rs.\ 100}{(1+.10)^3} + \frac{Rs.\ 100}{(1+.10)^4} + \frac{Rs.\ 100 + Rs.\ 1000}{(1+.10)^5}$$

$$= 100 \times .9091 + 100 \times .8264 + 100 \times .7513 + 100 \times .6830 + 1100 \times .6209$$

$$= 90.91 + 82.64 + 75.13 + 68.30 + 682.99$$

$$= 999.97 \text{ or Rs. } 1000 \text{ approx.}$$

You should recognise that the present value of the bond viz., Rs. 1000 estimated above is equal to the issue price because the bond has just been sold at par of Rs. 1000.

Now, consider another Rs. 1000 bond B is issued ten years ago at a coupon of 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 per cent 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. 1000 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 next five years. The present value of bond B will be determined as follows :

$$PV_B = \frac{Rs.\ 60}{1+.10} + \frac{Rs.\ 60}{(1+.10)^2} + \frac{Rs.\ 60}{(1+.10)^3} + \frac{Rs.\ 60}{(1+.10)^4} + \frac{Rs.\ 60 + Rs.\ 1000}{(1+.10)^5}$$

$$= 60 \times .9091 + 60 \times .8264 + 60 \times .7513 + 60 \times .6830 + 1000 \times .6209$$

$$= 54.55 + 48.59 + 45.08 + 40.98 + 658.15$$

$$= \text{Rs. } 847.35$$

You will observe that the numerator of the PV equation will be given at the time of issuance of the bond or the debenture. The maturity period, timing of interest payments, and maturity value will also be specified. What remains to be determined is the denominator of the equation viz., the discount rate. You may notice that the discount rate is the current market interest rate which investors can earn on comparable investments such as new bonds with the same features. In other words, it is an opportunity cost. Thus, the discount rate incorporates the effect 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 'C_t' and 'r' both by 2 and multiply 'n' by 2. The resultant equation will be :

$$PV = \sum_{t=1}^{2n} \frac{Ct/2}{(1+r/2)^t} + \frac{TV}{(1+r/2)^{2n}} \qquad (3.2)$$

Assuming semi-annual payments, present values of bonds A and B in the above examples can be solved as under :

$$PV_A = \sum_{t=1}^{10} \frac{Rs.\ 50}{(1.05)^t} + \frac{Rs.\ 1000}{(1.05)^{10}}$$

$$= \text{Rs. } 999.985 \text{ or Rs. } 1000 \text{ approx.}$$

$$PV_B = \sum_{t=1}^{10} \frac{Rs.\ 30}{(1.05)^t} + \frac{Rs.\ 1000}{(1.05)^{10}}$$

$$= \text{Rs. } 845.551$$

3.4.1 Estimating Returns on Fixed Income Securities

Several measures of returns on bonds are available. They are : the coupon rate, the current yield, and the yield to maturity. The coupon rate is specified at the time of issue and is all too obvious. The other two measures can be discussed.

Current yield : This is calculated as follows :

$$\text{Current yield} = \frac{\text{Stated (coupon) interest per year}}{\text{Current market price}}$$

For example, if a 15% Rs. 200 debenture is currently selling for Rs. 220, the annual current yield would be :

$$\frac{\text{Rs. } 30}{\text{Rs. } 220} = 13.64\%$$

You must notice that the 15% debenture is currently selling for Rs. 220 because interest rates subsequently declined and debenture/bond prices move inversely with interest rates. The current yield having declined to 13.64% from the coupon rate of 15% reflects this.

Current yield is a superior measure to coupon rate because it is based on the current market price. However, it does not account for the difference between the purchase price of the bond/debenture and its maturity value.

Yield-to-maturity (YTM): This is the most widely used measure of return on fixed income securities. It may be defined as the indicated (promised) compounded rate of return an investor will receive from a bond purchased at the current market price and held to maturity. Computing YTM involves equating the current market price of a bond with the discounted value of future interest payments and the terminal principal repayment; thus YTM equates the two values, viz., the market price and the present value of future payments including the principal repayment. You may note that the compounding intervals may be annual, semi-annual or quarterly. Equations 3(1) or 3(2), the latter being modified for compounding intervals more frequent than one year, are generally used. The difference would have to be with regard to known variables and the variable to be solved. Thus, while calculating the present value, numerator values (being interest and principal payments), timing of such payments, and the appropriate discount rate will be known. In other words, the entire left-hand side of the equation 3(1) or 3(2) will be known and you will have to solve for the right hand side variable viz., the present value. On the other hand, for calculating yield-to-maturity, you are given the right hand side variable in the form of current market price, numerator values on the right hand side, and the timing and maturity of the numerator values. What is not known is the discount rate which is solved to equate the two sides of the equation.

Assume that an investor purchased a 15% Rs. 500 fully secured non-convertible debenture at par five years ago. The current market price of the debenture is Rs. 400 which implies increase in market interest rates subsequent to the issue of the security. Five years remain to maturity and the debenture is repaid at par. The yield-to-maturity can be estimated as follows :

$$MP = \sum_{t=1}^{n} \frac{C_t}{(1+YTM)^t} + \frac{TV}{(1+YTM)^n}$$

$$\text{or, Rs. } 400 = \sum_{t=1}^{5} \frac{\text{Rs. } 75}{(1+YTM)^t} + \frac{\text{Rs. } 500}{(1+YTM)^5}$$

What is required in this case is a value of YTM which equates Rs. 400 with the sum of present values of Rs. 75 per year for 5 years and of Rs. 500 receivable at the end of the fifth year. Clearly, a process of trial-and-error is indicated. Several values of YTM can be tried till the equating value emerges. Trials can be started with the coupon rate with the next trial rate increased if the present value of the preceding trial exceeds the current market price and *vice versa*. Thus, trying at 15%, the following present value of the right hand side cash flows is estimated.

$$PV_{15\%} = \text{Rs. } 75 \text{ per annum} \times PVIF_{a,\ 5\ yrs.,\ 15\%} + \text{Rs. } 500 \times PVIF_{15\%,\ 5\ yrs.}$$

$$= \text{Rs. } 75 \times 3.3522 + \text{Rs. } 500 \times .4972 = \text{Rs. } 251.42 + 248.60$$

$$= \text{Rs. } 500.08$$

Since the PV of Rs. 500.08 exceeds Rs. 400, a higher discount rate must be tried. The second trial may be made at 20%.

$PV_{20\%}$ = Rs. 75 × 2.9906 + Rs. 500 × .8333

= Rs. 224.295 + Rs. 200.95

= Rs. 425.245

Even the second trial has failed to equate the two values. Hence, you can go over to the third trial at, say, 24%.

$PV_{24\%}$ = Rs. 75 × 2.7454 + Rs. 500 × .3411

= Rs. 205.91 + Rs. 170.55

= Rs. 376.46

The third trial has lowered the present value to Rs. 376.46 which is less than Rs. 400. Hence, the required YTM must lie between 20% and 24%. The estimate can be obtained by interpolating, thus :

$$YTM = 20\% + \frac{425.245 - 400.00}{425.245 - 376.46} \times (24\% - 20\%) = 20\% + \frac{25.245}{48.785} \times 4\%$$

= 20% + 2.07% = 22.07%

You may note that YTM calculation is similar to calculating the internal rate of return. Calculators and computers have made these calculations extremely easy. You may further note that the YTM is just a promised yield and the investor cannot earn it unless the bond/debenture is held to maturity. And if you have to hold the security till maturity, you cannot, at the same time, sell it. Thus, there would be no trading. One significant implication of such a state is that the investor simply buys and holds and assumes all intermediate cash flows in the form of interest and principal repayments be reinvested at YTM. In other words, the YTM concept is a compound interest concept with the investor earning interest-on-interest at YTM throughout the holding period till maturity. You should understand that if intermediate cash flows are not reinvested at YTM, the realised yield actually earned will differ from the promised YTM. The following table gives an idea of the realised return on a Rs. 1000, 10% 20 year, bond whose intermediate receipts are reinvested at different rates (interest being receivable semi-annually) :

Table 1 : Showing realised yield on a 10%, 20-year, bond purchased at par, using different reinvestment rates

Coupon Interest Income (Rs.) (1)	Assumed Reinvestment rate (%) (2)	Interest on interest Income (Rs.) (3)	Total Return (Rs.) (4)	Realised Return (%) (5)
2000	0%	0	2000	5.57
2000	5%	1370	3370	7.51
2000	8%	2751	4751	8.94
2000	9%	3352	5352	9.46
2000	10%	4040	6040*	10.00
2000	11%	4830	6830	10.56
2000	12%	5738	7738	11.14

Notes :

Col. 1 : Coupon interest @ 10% on Rs. 1000 received for 20 years semi-annually = Rs. 50 × 40 periods = Rs. 2000.

Col. 3 : Interest on interest at the assumed reinvestment rate for 40 periods.

Col. 4 : Col. 1 + Col. 3 = Col. 4

Example : Sum of an annuity of Rs. 50 for 40 periods at 5% semi-annual reinvestment rate is thus

5% 40 period annuity factor = 120.80 × 50 = Rs. 6040*

Col. 5 : Realised return = (Future value per rupee invested)$^{1/N-1}$

Future value per rupee invested = $\frac{\text{total return + cost of bond}}{\text{cost of bond}}$

The realised return is the compound return on semi-annual basis. For an annual basis, this figure must be doubled.

The table above clearly demonstrates the critical nature of the reinvestment rate assumption of YTM. You may note that the realised return is equal to the YTM of 10% only when the reinvestment rate is 10%. At a reinvestment rate of Zero (i.e., the investor consumes away all intermediate cash flows from the bond), interest-on-interest is zero and the realised return is a low of 5.57%. In contrast, at a reinvestment rate of 12%, the interest-on-interest is Rs. 5738 (i.e., 5738/7738 = around 75% of total return) and the realised return 11.14%.

Investors must make specific assumptions about future re-investment rates in order to gain ideas about realised returns. Zero coupon bonds eliminate the reinvestment rate risk because investors know at the time of purchase itself the YTM that will be realised when the bond is held to maturity.

YTM can be approximated and tedious calculations avoided using the following formula :

$$\text{Approximate YTM} = \frac{\text{Coupon Interest} + MP_n - MP_t}{[MP_n + MP_t]/2}$$, where MP_n is market price at maturity and MP_t is market price (or cost) at beginning.

3.5 VALUATION OF PREFERENCE SHARES

Preference shares are a hybrid security. They have some features of bonds and some of equity shares.

Theoretically, preference shares are considered a perpetual security but there are convertible, callable, redeemable and other similar features which enable issuers to terminate them within a finite time horizon. In the case of redeemable preference shares, legal mandates require creation of redemption sinking funds and their earmarked investments to ensure funds for repayment.

Preference dividends are specified like bonds. This has to be done because they rank prior to equity shares for dividends. However, specification does not imply obligation, failure to comply with which may amount to default. Several preference issues are cumulative where dividends accumulate over time and equity dividends require clearance of preference arrears first.

Preference shares are less risky than equity because their dividends are specified and all arrears must be paid before equity holders get dividends. They are, however, more risky than bonds because the latter enjoy priority in payment and in liquidation. Bonds are secured also and enjoy protection of principal which is ordinarily not available to preference shares. Investors' required returns on preference shares are more than those on bonds but less than on equity shares. In exceptional circumstances when preference shares enjoy special tax-shields (like in U.S., inter-corporate holdings of preference shares get exemption on 80% of preference dividends) required returns on such shares may even be marginally below those on bonds.

Since dividends from preference shares are assumed to be perpetual payments, the intrinsic value of such shares will be estimated from the following equation valid for perpetuities in general :

$$V_p = \frac{C}{(1+K_p)} + \frac{C}{(1+K_p)^2} + \ldots\ldots\ldots\ldots$$

$$= \frac{C}{K_p}$$

Where V_p = the value of a perpetuity today

C = the constant annual payment to be received

K_p = the required rate of return appropriate for the perpetuity.

You have only to substitute preference dividend (D) for 'C' and the appropriate required return (K_{ps}) for 'K_p' and obtain the following equation for valuing preference shares :

$$V_{ps} = \frac{D}{K_{ps}}$$

You may note that 'D' is a perpetuity and is known and fixed forever. A perpetuity does not involve present value calculations and the equation provides for computing any of the three variables viz., value of the perpetuity (V_{ps}), preference dividend (D), required rate of return (K_{ps}) only if the remaining two variables are known. Thus, the value of a preference share can be calculated if the dividend per share and the required rate of return are known. Similarly, the required rate of return (or yield) can be known if the value of the perpetuity and dividend per share are known.

A hypothetical example can be used to illustrate the valuation process of a preference share. Consider firm A issuing preference shares of Rs. 100 each with a specified dividend of Rs. 11.5 per share. Now, if the investors' required rate of return corresponding to the risk-level of firm A is 10% the value today of the share would be :

$$V_{ps} = \frac{\text{Rs. } 11.50}{.10} = \text{Rs. } 115.00$$

Should the required return increase (say in the wake of rising interest rates and, in consequence, the higher opportunity costs) to 12%, value will be :

$$\frac{\text{Rs. } 11.50}{.12} = \text{Rs. } 95.83$$

You may note that the value changes inversely to the required rate of return.

If you are an observer of market prices, you may notice the price of any preference share on any day and calculate its yield on that day using the above formula. Thus, if the current market price of the preference share in question is Rs. 125.00, the required rate of return or yield can be calculated as under :

$$V_{ps} = \frac{D}{K_{ps}} \quad \text{or,} \quad \text{Rs. } 125.00 = \frac{\text{Rs. } 11.50}{K_{ps}}$$

$$\text{or,} \quad K_{ps} \frac{\text{Rs. } 11.50}{125.00} = 9.2\%$$

Thus, the yield declines after issue of the shares by 'A'. May be, interest rates declined or other factors changed to produce the downward shift in the yield.

You can observe price shifts over various ranges of time, say weeks, months, and years and examine causes for shifts in yields of preference shares.

Activity 5

Collect price data of any 12 preference shares for the past twelve months, say, on a monthly time interval. Using specified dividend rates as numerators, compute investor's required rates of return and tabulate the information in the following format.

Investors Required Returns at

Preference Shares	END OF MONTHS												% change in returns
	1	2	3	4	5	6	7	8	9	10	11	12	
A													
B													
C													
D													
E													
F													
G													
H													
I													
J													
K													
L													

What conclusions do you draw from your workings?

3.6 VALUATION OF EQUITY SHARES

You have known the basic features of equity shares in Unit 1. Unit 2 introduced the risk-return complexion of such securities. Calculating total return for the holding period on equity shares was also explained and illustrated in Unit 2. Factors affecting the riskiness of equity shares and other securities were also discussed in Unit 2. This section of the present unit will confine attention to valuation of equity shares using present value principles. The three broad approaches to valuation viz., efficient market, technical, and fundamental will be examined in detail in Block 3. However, much of what would be said and analysed here would relate to 'fundamental approach to valuation of equity shares'.

3.6.1 The Present Value of Expected Stream of Benefits from Equity Shares

Fundamental analysis is centred on present value which is computed as the discounted value of future stream of benefits. In the case of equity shares, the future stream of earnings poses two problems. **One,** it is neither specified (as in the case of preference shares) nor perfectly known in advance as an obligation (as in the case of bonds and debentures). Consequently, future benefits and their timing have both to be estimated in a probabilistic framework. **Two,** there are at least three candidates which are posited as alternative measures of such benefits viz., dividends, cash flows, and earnings.

Solution to the first problem is offered by past data which is appropriately modified for future projections. Also, the holding period of investors on the margin (i.e., the major players in the market who influence the pricing process in the case of active strategists and 'infinity' in the case of those who follow the 'buy-and-hold' strategy provide the base for determining the timing of these benefits. A major modification to past data will be premised on some perceived growth rates of return on equities.

The second problem can also be viewed as a case of the three alternatives not really conflicting with each other. The real question is : which cash flows are appropriate in the valuation of equity shares? Now, if you buy equity shares and place them all in a trust fund for your and your heir's perpetual benefit, what cash flows will be received in the trust fund? The answer is 'dividends' because this is the only cash distribution which a company makes to its shareholders. Even though earnings per share in any year do belong to the shareholders, companies do not distribute them all.

There is no doubt that investors who follow the 'buy-and-sell' strategy i.e., active strategists, would sell their shares whenever price changes are favourable. But since, a price is the present value of future dividends investors regard cash flows from equity shares as a combination of dividends and a future price at which the shares can be sold and this is equivalent to the stream of all dividends to be recevied on the shares.

Finally, should you regard earnings as important and use them as a measure of future benefits? Obviously, the answer is 'yes'. All dividends are paid out of earnings. Moreover, a popular approach to valuation of equity shares known as P/E ratio uses earnings as its basis. Hence, earnings are important. Now, if all earnings are paid out as dividends, they will be accounted for as dividends. In the event of a part of earnings being retained and reinvested, the effect will be to increase future earnings and finally future dividends also. Present value analysis should not count earnings reinvested currently and paid later as dividends. Such a risk of double counting is present when 'earnings' are used as a measure of future benefits. In fact, the two can be properly defined and separated in which case the two variables viz., earnings and dividends would produce the same results. You would therefore, recognise that more than one present value model is possible in the case of equity shares viz., dividends, earnings, and cash flow (i.e., earnings after tax plus depreciation). However, it is always correct to use dividends as the numerator of the present value equation used to estimate the intrinsic value of equity shares. The preesnt value model which uses dividends as its variable representing the cash flow stream is known as the **dividend valuation model.** This model is discussed below and is followed by a discussion of the P/E approach to equity shares valuation.

3.6.2. Dividend Valuation Model

A difficult problem in using the dividend valuation model is the timing of cash flows from dividends. Since equity shares have no finite maturity the investor must forecast

all future dividends. This might imply a forecast of an infinitely long stream of dividends. Clearly, this would be almost impossible. And to manage the problem, therefore assumptions are made with regard to the future growth of the dividend of the immediately preceding period available at the time the investor wants to determine the intrinsic value of his/her equity shares. These assumptions can be :

a) Dividends do not grow in future i.e., the constant or zero growth assumption,

b) Dividends grow at a constant rate in future, i.e., the constant-growth assumption,

c) Dividends grow at varying rates in future time periods i.e., multiple-growth assumption.

The dividend valuation model is now discussed with these assumptions.

a) **The Zero-growth Case :** The growth rate of dividend D at time 't' will be known by solving for 'g' in the following:

$$D_t = D_{t-1}(1+g_t) \quad \ldots (3.3)$$

$$\text{or.} \quad \frac{D_t - D_{t-1}}{D_{t-1}} = g_t \quad \ldots (3.4)$$

You can easily see that when $g_t=0$, equation 3.3 will yield $D_t=D_{t-1}$ which means all future dividends would be equal to be current dividend (i.e., the dividend of the immediately preceding period available as on date).

Now, the present value of dividends for an infinite future period would be :

$$V = \frac{D_1}{1+K} + \frac{D_2}{(1+K)^2} + \frac{D_3}{(1+K)^3} + \ldots\ldots\infty \quad \ldots (3.5)$$

$$= \sum_{t=1}^{\infty} \frac{D_t}{(1+K)^t}$$

Since, $D_0=D_1=D_2=D_3$, under the zero-growth assumption, the numerator D_t in equation 3.5 is replaced by D_0 to get

$$V = \sum_{t=1}^{\infty} \frac{D_0}{(1+K)^t}$$

Taking the uniform 'D_0' out of summation, we obtain :

$$V = D_0 \left[\sum_{t=1}^{\infty} \frac{1}{(1+K)^t} \right] \quad \ldots (3.6)$$

You will appreciate that discounting cash flows over a very distant long future period would be meaningless. And mathematics tells us that if $K>0$ then the value of an infinite series like the one in equation (3.6) is reduced to '$\frac{1}{K}$' so that equation (3.6) results in the following :

$$V_0 = D_0 \left[\frac{1}{K} \right] = \frac{D_0}{K_0} \quad \ldots (3.7)$$

and since $D_0 = D_1$, equation 3.7 can also be written as

$$V = \frac{D_1}{K} \quad \ldots (3.8)$$

You may recall that equation 3.8 was used for the valuation of preference shares. This is one case for the application of the zero-growth assumption.

The calculation underlying the zero-growth model can be illustrated. Consider a preference share on which the company expects to pay a cash dividend of Rs. 9 per share for an indefinite future period. The required rate of return is 10% and the current market price is Rs. 80.00. Would you buy the share at its current price?

This is a zero-growth case because the dividend per share remains Rs. 9 for all future time periods. You may find the intrinsic value of the share using equation 3.7 or 3.8 as follows:

$$V = \frac{\text{Rs. } 9.00}{10} \quad \text{Rs. } 90$$

Since the intrinsic value of Rs. 90 is more than the market price of Rs. 80, you would consider buying the share.

b) **The Constant Growth Case :** When dividends grow in all future periods at a uniform rate 'g',

$$D_t = D_0(1+g)^t \tag{3.9}$$

Substituting 'D_0' in equation 3.5 by the value of D_t in equation 3.9, we get

$$V = \sum_{t=0}^{\infty} \frac{D_0(1+g)^t}{(1+K)^t} \tag{3.10}$$

Being a constant amount, 'D_0' can be written out of summation to obtain the following equation :

$$V = D_0 \left[\sum_{t=0}^{\infty} \frac{(1+g)^t}{(1+K)^t} \right] \tag{3.11}$$

Using the mathematical properties of infinite series, if $K > g$, then it can be shown that

$$\sum_{t=1}^{\infty} \frac{(1+g)^t}{(1+K)^t} = \frac{1+g}{K-g} \tag{3.12}$$

Substituting equation 3.12 into equation 3.11 yields the valuation formula for the constant growth situation as follows :

$$V = D_0 \left(\frac{1+g}{K-g} \right) \tag{3.13}$$

Equation 3.13 can be re-written as follows

$$V = \frac{D_0(1+g)}{K-g} = \frac{D_1}{K-g}, \tag{3.14}$$

Example

Alfa Ltd., paid a dividend of Rs. 2.00 per share for the year ending March 31, 1991. A constant growth of 10% per annum has been forecast for an indefinite future period. Investors required rate of return has been estimated to be 15%. You wan' to buy the share at a market price quoted on July 1, 1991 in the stock market at Rs. 60.00. What would be your decision?

Solution

This is a case of constant-growth-rate situation. Equation 3.14 can be used to find out the intrinsic value of the equity share as under :

$$V = \frac{D_1}{K-g} = \frac{\text{Rs. } 2\,(1.10)}{.15-.10} = \frac{\text{Rs. } 2.20}{.05} = \text{Rs. } 44.00$$

The intrinsic value of Rs. 44 is less than the market price of Rs. 60.00. Hence, the share is overvalued and you should not buy.

c) **The Multiple-Growth Case :** The multiple-growth assumption has to be made in a vast number of practical situations. The infinite future time-period is viewed as divisible into two or more different growth segments. The investor must forecast the time 'T' upto which growth would be variable and after which only the growth rate would show a pattern and would be constant. This would mean that present value calculations will have to be spread over two phases viz., one phase would last until time 'T' and the other would begin after 'T' to infinity.

The present value of all dividends forecast upto and including time 'T' $V_{T(i)}$ ould be :

$$V_{T(i)} = \sum_{t=1}^{T} \frac{D_t}{(1+K)^t} \tag{3.15}$$

The second phase present value is denoted by $V_{T(2)}$ and would be based on constant-growth dividends forecast after time 'T'. The position of the investor at time 'T' after which the second phase commences can be viewed as a point in time wher he is forecasting a stream of dividends for time periods T + 1, T + 2, T + 3, and so on which grow at a constant rate. The second phase dividends would be :

$D_{T+1} = D_T (1 + g)$

$D_{T+2} = D_{T+1} (1 + g) = D_T (1 + g)^2$

$D_{T+3} = D_{T+2} (1 + g) = D_T (1 + g)^3$

and so on. The present value of the second phase stream of dividends can, therefore, be estimated using equation 3.14 and at time 'T' :

$$V_T = D_{T+1} \left(\frac{1}{K-g} \right) \tag{3.16}$$

You may note that 'V_T' given by equation 3.16 is the present value at time 'T' of all future expected dividends. Hence, when this value has to be viewed at time 'zero', it must be discounted to provide the present value at 'zero' time for the second phase present value. The latter can also be viewed at time 'zero' as a series of cash dividends that grow at a constant rate as already stated. The resulting second phase value $V_{T(2)}$ will be given by the following equation :

$$V_{T(2)} = V_T \left[\frac{1}{(1+K)^T} \right] \tag{3.17}$$

$$= \frac{D_{T+1}}{(K-g)(1+K)^T}$$

Now, the two present values of phase 1 and phase 2 can be added to estimate the intrinsic value of an equity share that will pass through a multiple growth situation. The following describes the summation procedure of the two phases :

$V_o = V_{T(1)} + V_{T(2)}$

$$= \sum_{t=1}^{T} \frac{D_t}{(1+K)^t} + \frac{D_{T+1}}{(K-g)(1+K)^T} \tag{3:18}$$

Example

Cronecom Ltd., paid dividends amounting to Rs. 0.75 per share during the last year. The company is expected to pay Rs. 2.00 per share during the next year. Investors forecast a dividend of Rs. 3.00 per share in the year after that. At this time, the forecast is that dividends will grow at 10% per year into an indefinite future. Would you buy/sell the share if the current price is Rs. 54.00? The required rate of return is 15%.

Solution

This is a case of multiple growth. Growth rates for the first phase must be worked out and the time-partition between the two phases established. It is clear that 'T' = 2 years. Hence, this becomes the time-partition. Growth rates before 'T' are :

$$g_1 = \frac{D_1 - D_0}{D_0} = \frac{\text{Rs. } 2.00 - \text{Rs. } 0.75}{\text{Rs. } 0.75} = 167\%$$

$$g_2 = \frac{D_2 - D_1}{D_1} = \frac{\text{Rs. } 3.00 - \text{Rs. } 2.00}{\text{Rs. } 2.00} = 50\%$$

The values $V_{T(1)}$ and $V_{T(2)}$ can be calculated as follows :

$$V_{T(1)} = \frac{\text{Rs. } 2.0}{(1+.15)^1} + \frac{\text{Rs. } 3.0}{(1+.15)^2} = \text{Rs. } 4.01$$

$$V_{T(2)} = \frac{\text{Rs. } 3.30}{(.15-.10)(1+.15)^2} = \text{Rs. } 49.91$$

Since $V_o = V_{T(1)} + V_{T(2)}$, the two values can be summed to find the intrinsic value of a Cromecon equity share at time 'zero'. This is given below :

V_o = Rs. 4.01 + Rs. 49.91 = Rs. 53.92

At the current price of Rs. 54.00, the share is fairly priced and hence you won't trade.

3.6.3 The P/E Approach to Equity Valuation

The first step here consists of estimating future earnings per share. Next, the normal price-earnings ratio will be found. Product of these two estimates will give the expected price. For a single year holding period with D_1 as expected dividends in the coming year, the expected return of an investor can be found as under :

$$\text{Expected Return} = \frac{D_1 + (p_1 - P)}{P} \qquad (3.19)$$

Estimating normal price-earning ratios is central to the P/E approach for valuing equity shares. The procedure has been described in the following paragraphs.

You may go back to equation 3.5 and introduce the earnings variable in it by *expressing D_t as a function* of earnings per share and the payout ratio, so that

$$D_t = p_t \cdot E_t \qquad (3.20)$$

Where p_t = pay-out ratio, and E_t = earnings per share in time 't'. So, if you forecast earnings per share and payout ratios you have, in fact, forecast dividends per share. Now, use equation 3.20 to restore equation 3.5 where *D_t will be replaced by $p_t \cdot E_t$* as follows :

$$V = \frac{D_1}{1+K} + \frac{D_2}{(1+K)^2} + \frac{D_3}{(1+K)^3} + \text{---------}$$

$$= \frac{p_1 E_1}{1+K} + \frac{p_2 E_2}{(1+K)^2} + \frac{p_3 E_3}{(1+K)^3} + \text{---------}$$

$$= \sum_{t=1}^{\infty} \frac{p_t E_t}{(1+K)^t} \qquad (3.21)$$

Now, if earnings like dividends also grow at a rate 'g_e in future time periods as that

$$E_t = E_{t-1}(1+g_{et}) \qquad (3.22)$$

and which *would also imply that*

$E_1 = E_o (1+g_{e1})$

$E_2 = E_1 (1+g_{e2}) = E_o (1+g_{e1})(1+g_{e2})$

$E_3 = E_2 (1+g_{e3}) = E_o (1+g_{e1})(1+g_{e2})(1+g_{e3})$

and so on where E_o is the **actual** level of earnings per share over the past year, E_1 is *the expected level* of earnings over the forthcoming year; E_2 is the expected level of earnings per share for the year after E_1, and E_3 is the expected level of earnings per share for the year after E_2.

Substituting these equations in equation 3.21, we get

$$V = \frac{p_1[E_o(1+g_{e1})]}{1+K} + \frac{p_2[E_o(1+g_{e1})(1+g_{e2})]}{(1+K)^2} +$$

$$\frac{p_3[E_o[1+g_{e1})(1+g_{e2})(1+g_{e3})]}{(1+K)^3} + \text{---------} \qquad (3.23)$$

Now, you may recall that 'V' is the intrinsic value or the price at which the share would be selling if it were fairly priced. Then, V/E_o would be the price-earnings ratio that must prevail if the share were fairly priced. In other words, V/E_o would be the **normal** price-earnings ratio. To obtain a normal price-earnings ratio from equation 3.23, divide both sides of the equation by E_o and simplify. The resultant equation would be :

$$\frac{V}{E_o} = \frac{p_1(1+g_{e1})}{1+K} + \frac{p_2(1+g_{e1})(1+g_{e2})}{(1+K)^2} +$$

$$\frac{p_3(1+g_{e1})(1+g_{e2})(1+g_{e3})}{(1+K)^3} + \text{---------} \qquad (3.24)$$

You can now interpret equation 3.24 to show that a share's normal price-earnings ratio will be higher :

the greater the expected payout ratios ($p_1, p_2, p_3, \ldots$); the greater the expected growth rates in earnings per share ($g_{e1}, g_{e2}, g_{e3}, \ldots$); the smaller the required rate of return (K).

The above relationships are qualified by the phrase *'other things being equal'* which means that changes in variables except one should not neutralise changes in this *exceptional variable. For example*, the normal price-earnings ratio would increase with increase in payout ratio but no company can ever achieve this result only by *concentrating* on an increase in the payout ratio. What happens with an increased payout ratio is a corresponding decrease in reinvestment of earnings and consequently a diminution in the growth rate; increased payout would be neutralised

by decreased growth and so on. Consequently, intrinsic value and hence the normal price-earnings ratio will not increase.

Two further points need to be noted with regard to normal price-earnings ratios. **First**, a share would be under-priced if its normal price-earnings ratio (V/E_o) exceeds the actual price-earnings ratio (P/E_o) and it would be overpriced when the normal price-earnings ratio is less than the actual price-earnings ratio. This is directly derived from the intrinsic value-market price rule already stated. Both intrinsic value and market price are divided by a constant viz., E_o and the new rule obtained. **Second,** equation 3.24 is based on an infinite series of dividends. For the growth situations, the equations can be derived as follows :

The Constant Growth situation : $\frac{V}{E_o} = p\left[\frac{1+g_e}{K-g}\right]$ ..... (3.25)

Zero Growth Situation : $\frac{V}{E_o} = \frac{1}{K}$ ..... (3.26)

Example

a) Zeta Ltd., is paying dividends on its equity shares at Rs. 8 per share and expects to pay it for an indefinitely long period in future. The equity share currently sells for Rs. 65 and investors' required rate of return is 10%. Determine if the Zeta share is fairly priced using the P/E approach to valuation.

Solution

This is a zero-growth case and the normal price-earnings ratio can be found as under :

$$\frac{V}{E_o} = \frac{1}{K} = \frac{1}{10} = 10$$

The actual price-earnings ratio = P/E = Rs. 65/Rs. 8 = 8.1. Since the normal price-earnings ratio of 10 is more than the actual price-earnings ratio of 8.1, the share at Rs. 65.0 is underpriced.

b) Now, assume that Zeta paid a dividend of Rs. 1.80 per share over the past year and the forecast is that they would grow at 5 per cent per annum for ever. The required rate of return is 11% and the current market price is Rs. 40 per share. Using P/E approach, determine if the Zeta share is fairly priced. E_o may be taken as Rs. 2.70.

Solution

This is a constant-growth case. The normal price-earnings ratio (V/E_o) can be found as under :

$$\frac{V}{E_o} = p\left[\frac{(1+ge)}{K-g}\right]$$

$$= 1.80/2.70\left[\frac{1+.05}{.11-.05}\right]$$

$$= .6667\left[\frac{1.05}{.05}\right] = 11.67$$

$$\frac{P}{E_o} = \frac{\text{Rs. } 40.0}{\text{Rs. } 2.70} = 14.81$$

Since $\frac{V}{E_o} = 11.67 < \frac{P}{E_o} = 14.81$, the share is overpriced.

3.7 SUMMARY

There are three approaches to valuation of securities viz., the efficient market hypothesis (EMH), the technical or the chartist approach, and the fundamental approach. The last of these approaches has been discussed in this unit.

The primary focus of the fundamental approach is on the intrinsic value of a share which, in turn, depends on fundamental factors like earnings, dividends, cash flows etc. If properly defined, these fundamentals when incorporated in a present value equation would produce identical results.

The present value is a general concept and share valuation is one of its several applications. The intrinsic value of a share at any point of time is the prensent value of a series of cash dividends in future time periods with assumptions about varying growth levels and situations being introduced to make calculations usable in practice. Dividend valuation models with zero growth, constant growth, and super-normal growth assumptions are found useful for the practising security analysts and the investors. The discount rate in all these models is the required rate of return of the investor appropriately adjusted for the time value of money and riskiness of returns. This facet of the problem will be examined in detail in the unit on Capital Asset Pricing Model in Block 4.

The Price-earnings approach to valuation uses current earnings as the basis for determining normal price-earnings ratios (V/E_o) and calculating actual price-earnings ratios (P/E_o). It may be noted that present values which form the numerator of normal price-earnings ratios (V/E_o) are based on future estimates of cash flows and these are linked-upto current earnings (E_o) through varying growth assumptions. The primary focus of valuation is to determine if a share is overpriced, underpriced, or fairly priced at any given market price.

Valuation is at the heart of an investment decision and risk-return are its primary determinants. A value is known at a given discount rate or market yield or the investors' required return. Likewise, a yield is estimated from a given market price. Thus, returns and values are closely linked together. Risk factors, together with movements in interest rates, have a close bearing on investors' required rate of return (They were examined in detail in Unit 2). Of the many versions of return, the holding-period-return holds the key. For bonds and debentures, it is the yield-to-maturity which is a key-concept.

Finally, valuation of equity securities in particular has a sequence starting from the macro-level of economy or the market down to industry and to the micro-level of the firm which will be discussed in-depth in Block 3. Predicting fair prices of securities is convassed the main concern of security analysis. The valuation sequence is posed as a substantial aid in prediction but evidence is mixed.

3.8 KEY WORDS

Active Investment Strategy : A form of investment management which involves buying and selling financial assets with the objective of earning positive risk-adjusted returns.

Constant Growth Model : A version of the dividend valuation model which assumes that dividends are expected to grow at a constant rate overtime. It can be used to solve of the current price of a share.

Current Yield : The yield on a security resulting from dividing interest payments or dividends by the current market price of the security.

Dividend Valuation Model : A widely used model to value equity shares. The model states that the current price of a share is equal to the discounted value of all future dividends.

Earnings Multiplier : The P/E approach which states that the price of a share is equal to the product of its earnings and a multiplier.

Expected Return : The ex ante return expected by investors over some future holding period. The expected return often differs from the realised return.

Fundamental Analysis : A form of security analysis which seeks to determine the intrinsic value of securities based on underlying economic factors. These intrinsic values are compared to current market prices to estimate current levels of mispricing.

Holding Period Return : The total return from an investment for a given period of time, including both yield and capital gain or loss.

Interest Rate Risk : The uncertainty in the return on a fixed-income security caused by unanticipated fluctuations in the value of the asset due to changes in interest rates.

Multiple Growth Model : A type of dividend valuation model in which dividends are assumed to grow at different rates over specifically defined time periods.

P/E Ratio : The ratio of share price to earnings using historical, current or estimated data. This ratio is also referred to as multiplier.

Passive Investment Strategy : A strategy whereby investors do not actively seek out trading possibilities in an attempt to out perform the market.

Promised Yield-to-maturity : The yield-to-maturity on a bond calculated assuming that all promised cash flows are received on a full and timely basis.

Security Analysis : A component of the investment process that involves determining the prospective future benefits of a security, the conditions under which such benefits will be received, and the likelihood of such conditions occurring.

Timing : An aspect of security analysis which entails forecasting the price movements of asset classes relative to each other.

Top-down forecasting : The valuation sequence in security analysis which entails first making forecasts for the economy, then for industries and finally for individual companies. Each level of forecast is conditional on the previous level of forecasts made.

Valuation Sequence : Same as top-down forecasting.

Yield-to-Maturity : The indicated (promised) compounded rate of return that an investor will receive from a bond purchased at the current market price and held to maturity.

3.9 SELF-ASSESSMENT QUESTIONS/EXERCISES

1) Arun is considering investment in the equity shares of the industry leader, TISCO, and has performed detailed analysis and research into the history and performance of the company. To be on sound wickets, what other information should be obtained before taking the final decision?

2) A 5% Rs. 1000 bond has 25 years remaining to maturity. What would be the intrinsic value of the bond today if the current market yield is 6.5%. Interest is payable on the bond semi-annually.

3) A 5% Rs. 1000 bond paying interest at annual intervals and having 25 years to maturity is currently selling for Rs. 816. It is anticipated that the market yield is likely to decline 5.5%. Estimate the intrinsic value of the bond two years hence.

4) Indicate the correct alternative in the following :

   a) The value of a security
      i) is synonymous with its price
      ii) depends on the assessed value of the firm's physical assets
      iii) equals the discounted present value of its future income.

   b) An investor would be taking a rational decision if
      i) he buys when price is greater than value
      ii) he does not trade when price is less than value
      iii) he buys when price is less than value.

   c) The Cootner hypothesis states that
      i) prices and values both fluctuate
      ii) prices fluctuate within upper and lower reflecting barriers that bracket the consensus value estimate
      iii) all of the above

   d) The erratic price changes in securities markets are caused by
      i) the supply and demand conditions of primary issues
      ii) the continuous arrival of new information
      iii) the size of trading volume in the security

   e) A perfectly efficient securities market is one where
      i) prices and values fluctuate
      ii) prices equal values in a continuous equilibrium and they vibrate together randomly
      iii) all of the above

5) Match the following words and phrases with their correct definitions :

Word or phrase	Definition or Description
1) Price per share	A) Present value of an equity share based on all future dividends that grow at different rates.

2) Passive investment Strategy	B) Promised yield on a bond purchased at at current market price and held to maturity
3) Intrinsic value per share	C. The correct decision when it is underpriced
4) Continuous equilibrium	D) A value determined by market processes that can sometimes be irrational
5) Buy a security	E) A buy-and-hold strategy with no trading
6) Yield-to-maturity	F) A value estimated by an informed analyst
7) Multiple growth dividend valuation	G) The value and price fluctuate randomly together.

6) The equity share of Manjit Textiles Ltd., is currently selling at Rs. 55.00. Earnings per share and dividends per share of the company over the past year were Rs. 3.00 and Rs. 0.75 respectively. Fundamental analysts have worked out the following forecasts of dividends, earnings, growth rates, and payout ratios for the next two years.

Year 1

D_1 = Rs. 2.00; E_1 = Rs. 5.00; g_{e1} = 67%; p_1 = 40%

Year 2

D_2 = Rs. 3.00; E_2 = Rs. 6.00; g_{e2} = 20%; p_2 = 50%

It has been further forecast that earnings and dividend are expected to grow at a constant rate of 10% after year 2. Consequently, the data for year 3 would be as follows :

Year 3

D_3 = Rs. 3.30; E_3 = Rs. 6.60; g_{e3} = 10%; and p = 50%.

You are required to estimate the normal price-earnings ratio of Manjit Textiles if the required rate of returns is 15%. Do you think that the Manjit Textiles equity share is fairly valued?

7) Indicate if the following statements are True or False :

a) If the economic outlook suggests a recession that will have an impact on all industries and all companies, investors would be advised to maintain high portfolio liquidity.

b) Cyclical industries typically do much better than the aggregate economy during downturns, but suffer more during upturns.

c) A study by Shiskin indicated that stock prices consistently conform to economic expansions and contractions, but stock prices clearly lead the economy.

d) It is not really necessary to know the time pattern of returns from an investment so that the income stream can be properly valued relative to alternative investments.

e) Results of a study by King showed that about 62 per cent of the security's price changes were explained by a combination of market and industry components.

f) A bond promises interest payments every six months equal to one-half the coupon rate times the face value of the bond and the payment of the principal at its maturity.

g) The Dividend Valuation Model states that the value of share is the presen value only of peak dividends of all future periods.

h) The higher the payment ratio higher will be the normal price-earning unde all circumstances.

i) The expected price of a share that will prevail a year from now can be estimated by earnings-dividends multiplier model

3.10 FURTHER READINGS

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Answers

Activity 1

1) (c); 2) (a); 3) (b); 4. (b); 5) (e); 6. (e)

Activity 3

a) True b) False c) True d) True e) False f) False

Answers to Self-Assessment Questions/Exercises

1) Additional information required will relate to :
   a) current state of the economy with forecasts for the future;
   b) the historical relationship of steel industry to the aggregate economy; and
   c) the historical relationship of TISCO to the steel industry's performance.

2) $$V = \sum_{t=1}^{2n} \frac{C_{/2}}{(1 + r/2)^t} + \frac{TV}{(1+r/2)^{2n}}$$

$$= 50/2 \sum_{t=1}^{50} \frac{1}{(1+.065/2)^t} + 1000 \frac{1}{(1+.065/2)^{50}}$$

$$= 25\ (24.5516) + 1000\ (.2021) = \text{Rs. } 815.90$$

3) $$V = 50 \sum_{t=1}^{23} \frac{1}{(1.055)^t} + 1000 \frac{1}{(1.055)^{23}}$$

$$= 50\ (12.875) + 1000\ (.2919)$$

$$= \text{Rs. } 935.65$$

4) a) iii; b) iii; c) iii; d) ii; e) iii.

5) 1. D; 2. E; 3. F; 4. G; 5. C; 6. B; 7. A.

6) Normal price-earnings ratio of Manjit Equity share can be found out as under :

$$\frac{V}{E_o} = \frac{.40(1+.67)}{(1+.15)} + \frac{.50(1+.67)\ (1+.20)}{(1+.15)^2} + \frac{.50(1+.67)\ (1+.20)\ (1+.10)}{(.15-.10)\ (1+.15)^2}$$

$$= .58 + .76 + 16.63 = \text{Rs. } 17.97$$

Since the actual price-earning ratio is Rs. 55/Rs. 3 = 18.33 and it is very close to the normal price-earnings ratio of 17.97, the share can be considered as fairly valued.

7) a) True; b) False; c) True; d) False; e) True;
   f) True; g) False; h) False; i) True; j) False;

Uttar Pradesh
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PGDFM-03

Security Analysis and Portfolio Management

Block

2

SECURITIES MARKET IN INDIA

UNIT 4
Organisation and Functioning 5

UNIT 5
Regulation 26

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BLOCK 2 SECURITIES MARKET IN INDIA

This block comprises two units. Unit 4 titled 'Organisation and Functioning' discusses primary and secondary markets for securities in India. Primary market which is also known as new issues market and secondary market, also known as stock market, are well established markets in India with a history of more than 100 years. In Unit 4, besides distinguishing between these two segments, various financial instruments, players and trading arrangements prevalent in Indian securities market have also been discussed. Unit 5 titled 'Regulations' highlights the history of securities market regulation in India. Besides discussin g regulatory framework applicable to the primary, stock market and Over The Counter Exchange of India, this unit discusses at length the origin, functions, organisation and activities of the Securities and Exchange Board of India (SEBI), the nodal regulatory agency for securities market in India created as an administrative body in 1988 and as a statutory body since January 1992. This unit also pin-points the role of self- regulation of securities market vis-a-vis legislative regulation. In one word, this block provides an introduction to the organisation, functioning and regulation of securities market i ' India to enable the reader to get a feel of the securities market environment in India.

UNIT 4 ORGANISATION AND FUNCTIONING

Objectives

The objectives of this unit are to :

- distinguish between primary market and secondary market
- highlight various types of traded securities, market players and trading arrangements which exist in India
- to discuss organisation and functioning of primary and secondary markets for various types of securities in India

Structure:

4.1 Introduction
4.2 Primary vs Secondary Markets
4.3 Types of Traded Securities
4.4 Stock Market in India
  4.4.1 Origin and Growth
  4.4.2 Role and Functions
  4.4.3 Membership, Organisation & Management
  4.4.4 Trading System
  4.4.5 Stock Market Information System
  4.4.6 Principal Weaknesses
  4.4.7 Directions of Reform
4.5 Over the Counter Exchange of India (OTCEI)
4.6 Summary
4.7 Self-assessment Questions/Exercises
4.8 Further Readings

4.1 INTRODUCTION

In every economic system, some units which may be individual or institutions are surplus-generating while others are deficit- generating. Surplus-generating units are called savers while deficit-generators are called spenders. In our country, at sectoral level, households are surplus-generating while corporates and government are deficit-generating. This is, however, true only at an aggregative level. You would definitely come across individual households who are deficit generating and corporate bodies who are surplus-generating at some point of time. The question that arises here is : What do the surplus-generating units do with their surpluses or savings ? You can readily imagine that they have only two alternatives before them. They can either invest or hold their savings in liquid cash. Holding liquid cash is required to meet transaction or precautionary or speculative needs. The surplus-generating units could invest in different forms. They could invest in physical assets viz. land and building, plant and machinery or in precious metal viz. gold and silver, or in financial assets viz. shares and debentures, units of the Unit Trust of India, treasury bills, commercial paper etc.

The financial assets are also **called** financial claims or financial securities or paper assets. These financial **securities** are issued by deficit-generating units to surplus-generating units in **exchange** for their savings. It is for this reason that surplus-generating units are **called investors** while deficit- generating units are called issuers. These investors and **issues** of financial securities constitute two important elements of the securities markets. The third critical element of markets is the intermediaries who act as conduits between the investors and issuers. Regulatory bodies, which regulate the functioning of the securities markets, constitute the last but very significant element of securities markets. Thus, there are four important elements of securities markets namely investors, issuers, intermediaries and regulators. Now depending upon the nature of the relationship among these elements of securities markets , the markets are classified as primary and secondary. Further, depending upon the maturity,

securities are classified as short term and long term, and depending upon the issuers, these are classified as government securities or industrial securities. Government securities are also called gilt-edged securities. In order to pick up the right kind of securities, an investor or a portfolio manager should be fully conversant with the different segments of securities markets, different types of securities which are traded and different trading arrangements which exist in the market. In this unit, we shall distinguish between primary market and secondary market for securities and discuss various traded securities and trading arrangements prevalent in India. Let us begin by distinguishing primary and secondary markets.

4.2 PRIMARY VS. SECONDARY MARKET

Primary market is the segment in which new issues are made whereas secondary market is the segment in which outstanding issues are traded. It is for this reason that the Primary Market is also called New Issues Market and the Secondary Market is called Stock Market.

TABLE 4.1
Issues and Approvals for New Issues by Public Limited Companies

		1990-91		1991-92		1991		1992	
	1	2	3	4	5	6	7	8	9
		No.	Rs. cr.	No	Rs. cr.	No	Rs. cr.	No	Rs. cr.
	Approvals of which	1105	12633	1263	19402	539	7306	567	9111
A.	Non-Government companies	1074	6425	1243	12341	533	5238	564	8731
(i)	Equities@	841	2854	868	4291	351	1625	463	4198
(ii)	Debentures	233	3571	375	8050	182	3613	101	4533
B.	Government companies	31	6208	20	7061	6	2068	3	380
(i)	Equities@	14	201	3	76	1	53	2	330
(ii)	Public sector bonds	17	6007	17	6985	5	2015	1	50
	Issues by non-Government Public limited companies* of which	365	4202	519	5753	227	1583	479	9846
(i)	Equities**	252	1261	373	1733	159	486	383	3877
(ii)	Debentures	113	2941	146	4020	68	1097	96	5969

Changes over the previous year (per cent)

	Approvals of which			25
A.	Non-Government companies	-19	92	67
(i)	Equities@	40	50	158
(ii)	Debentures	-39	125	25
B.	Government companies	49	14	-82
(i)	Equities@	141	-62	523
(ii)	Public sector bonds	47	16	-98
	Issues by non-Government public limited companies* of which	-35	37	522
(i)	Equities**	3	37	698
(ii)	Debentures	-44	37	444

* Provisional; excluding issues privately placed with financial institutions etc. and including oversubscription retained in some cases.
** Excludes bonus issues, but includes preference shares and cumulative convertible preference shares.
@ Includes premia and bonus shares.
Source: *Economic Survey, 1992-93, Ministry of Finance, Government of India.*

In the primary market, new issues may be made in three ways namely, public issue, rights issue and private placement. Public Issue involves sale of securities to members of public. Rights issue involves sale of securities to the existing shareholders/debenture holders. Private placement involves selling securities privately to a selected group of investors. In the primary market, equity shares, fully convertible debentures (FCD), partially convertible debentures (PCD), and non-convertible debentures (NCD) are the securities commonly issued by non-government public limited companies. Government companies issue equity shares and bonds. Table 4.1 shows issues and approvals for new issues by public limited companies.

According to a study by Prime Database, for the Indian primary capital market, the year 1992 recorded a phenomenal 245 percent increase in amount raised and 96 per cent in number of issues including Public and Rights. While 1991 had a total of 441 issues aggregating Rs. 4826.36 crore, 1992 closed with a tally of 864 issues for a whopping amount of Rs. 16656.98 crore. The year belonged to the mega issues, specially on the rights front. In aggregate, there were as many as 65 issues during the year which crossed Rs. 50 crore, and 36 issues crossed the Rs. 100 crore mark. The primary market frenzy began with the scrapping of the Capital Issues Control Act and free pricing of issues introduced by Securities and Exchange Board of India (SEBI) which has been constituted as a statutory body since Jan 30, 1992. SEBI had functioned as an administrative body since 1988 and we will learn more about it in Unit 5.

In the primary market, issues are made either 'at par' or 'at premium'. Pricing the new issues is regulated under guidelines on Capital issues or what are also known as guidelines for disclosure and investors protection issued by the Securities and Exchange Board of India (SEBI). Prior to the promulgation of the ordinance no. 9 of 1992 by which the Capital Issues (Control) Act has been repealed, the pricing of the new issues was regulated under the Controller of Capital Issues' (CCI) pricing formula.

Companies entering the capital market are required to advertise in the newspapers announcing the proposed public issue. Apart from announcements, companies also place advertisements in the newspapers/television in support of the public issue. New issues are also publicised by mass mailing. It has become a general practice to distribute prospectus, application forms and other literature regarding new issues among the investing public. Thus information about new issues may be obtained by investors from different sources viz. newspaper, television, mail, stock exchange members, brokers and sub-brokers, investment advisory firms etc. In order to curb the tendency on the part of issuers of securities to give exaggerated or misleading information at the time of a new issue, a number of circulars and guidelines have been issued by the Department of Company Affairs, The Stock Exchange Division of the Ministry of Finance, Government of India, and the Securities and Exchange Board of India. Since 1991, the format of the prospectus to be sent along with the application form for public issue was revised and a memorandum containing the salient features of the Prospectus was prescribed. Among other disclosures, the companies are now required to highlight the risk factors of the projects in the prospectus as well as in the memorandum. A new financial instrument, 'Stock invest' has been introduced to be used by the investors as application money for new issues. Indeed, in order to protect the interest of investors in the new issues market as well as stock market specific provisions have been made under the Companies Act, 1956, Capital Issues (Control) Act, 1947 (repealed since May 29, 1992), Securities Contracts (Regulation) Act, 1956 and the Securities and Exchange Board of India Act, 1992. Detailed discussion of the regulatory provisions has been made in Unit 5.

The secondary market as pointed out above is the segment in which outstanding issues are traded. The secondary market however differs from the primary market in a fundamental sense. While in primary markets the investors exchange their savings for securities issued by deficit-units primarily for gaining expected returns, in the secondary market investors exchange their holdings with other investors for liquidity. The secondary market is thus primarily aimed to liquify the investment made in the primary market and thereby performs a complementary role. Investors, who seek both profitability and liquidity, need both primary and secondary markets. There is thus a direct and complementary interface between the primary and secondary markets. We will discuss more about it after discussing the origin and growth of Stock markets in India under 4.4. But right now let us briefly explain various types of securities traded in the secondary market in the following section.

4.3 TYPES OF TRADED SECURITIES

The securities which are traded in the secondary market may be classified as follows :

On the basis of **issuer**, securities may be classified as industrial securities, government securities and financial intermediaries securities. Industrial securities are the securities issued by industrial and commercial undertakings in the private and public sectors whereas government securities are the securities issued by the central government, state governments, municipalities and public utilities. Government securities are generally considered risk-free, low return securities compared to industrial securities. Besides these two classes of issuers, financial intermediaries are emerging as the third important group. The securities issued by financial institutions and banks would fall, in terms of risk-return features, somewhere in between the industrial securities and government securities.

On the basis of **maturity**, securities may be classified into short term and long term or money market and capital market securities. Treasury bills, commercial bills, commercial paper, certificate of deposit are short term or money market securities. Equities, preference shares, debentures and bonds are long term or capital market securities. On the basis of **settlement** of deals, securities may be classified into forward securities and cash securities. Forward securities are those settlement date for which can be shifted from one settlement date to the other by paying badla charges. Gash securities are those for which settlement dates cannot be shifted. Forward securities are known by different names viz. specified shares, group A shares or forward section. Cash securities are also known as Non-specified shares, group B shares or cash section.

Activity - I

a) List out different types of securities issued by non- government limited companies in the primary market.

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b) List out different types of securities issued by government companies in the primary market.

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c) Briefly comment on the differences if any, you observed between (a) & (b) above.

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d) Please look up any national newspaper and list out five forward and five cash shares.

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e) What justification could you provide for classifying shares into forward and cash sections?

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f) Try to know from stock exchange authorities or brokers the justification for classifying shares into forward and cash securities.

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4.4 STOCK MARKET IN INDIA

From scattered and small beginnings in the 19th Century, India's stock market has risen to great heights. By 1990, we had 19 stock exchanges in the country. There were around 6,000 listed companies and the investors population stood around 15 million. You might be interested in knowing more about the origin and the growth of stock market in India. What functions does it perform ? What is the form of organisation of stock exchanges in India? How are these administered ? What is the trading system followed on these exchanges? We shall address to these and other questions in the following :

4.4.1 Origin and Growth

Organisations and institutions, whether they are economic, social or political, are products of historical events and exigencies. The events continually replace and/or reform the existing organisations, so as to make them relevant and operational in contemporary situations. It is, therefore, useful to briefly acquaint ourselves with the origin and growth of the stock market in India.

Stock exchanges of India in a rudimentary form originated in 1800 and since that time have developed through six broad stages.

1800-1865: The East India Company and few commercial banks floated shares sporadically, through a very small group of brokers. According to a newspaper in 1850, in Bombay during 1840- 1850 there were only half a dozen recognised brokers. The year 1850 marked a watershed. A wave of company flotations took over the market; the number of brokers spurted to 60. The backbone of industrial growth and the resulting boom in share flotation was the legendary personality of the financial world, Premchand Roychand.

In 1860 the stock market created a unique history. The entire market was gripped by what is known as "share mania". The American Civil War created cotton famine. Indian cotton manufacturers exploited this situation and exported large quantities of cotton. The resulting increase in export earnings opened opportunities for share investments. New companies started to come up. Excessive speculation and reckless buying became the order of the day. This mania lasted upto 1865. It marks the end of the first phase in the Indian stock exchange history because with the cessation of the Civil War, demand for Indian cotton slumped abruptly. The share became worthless pieces of paper. To be exact, on July 1, 1865 all shares ceased to exist because all time bargains which had matured could not be fulfilled.

1866-1900: We find another distinct phase during 1866-1900. The mania effect haunted the stock exchange of Bombay during these 25 years. Above everything else, it led to foundation of a regular market for securities. Since the market was established in Bombay, it soon became and still is the leading and the most organised stock exchange in India. A number of stock brokers who geared up themselves, set up a voluntary organisation in 1887, called Native Share and Stockbrokers Association. The brokers drew up codes of conduct for brokerage business and mobilised private funds for industrial growth. It also mobilised funds for government securities (gilt edged securities), especially of the Bombay Port Trust and the Bombay Municipality. A similar organisation was started at Ahmedabad in 1894.

1901-1913: Political developments gave a big fillip to share investment. The Swadeshi Movement led by Mahatma Gandhi encouraged the indigenous trading and business class to start industrial enterprises. As a result, Calcutta became another major centre of share trading. The trading was prompted by the coal boom of 1904-1908. Thus the third stock exchange was started by Calcutta stock brokers. During Inter-war years demand for industrial goods kept increasing due to British involvement in the World Wars. Existing enterprises in steel and cotton textiles, woollen textiles, tea and engineering goods expanded and new ventures were floated. Yet another stock exchange was started at Madras in 1920.

The period 1935-1965 can be considered as the period of development of the existing stock exchanges in India. In this period industrial development planning played the pivotal role of expanding the industrial and commercial base of the country. Two more stock exchanges were set up, at Hyderabad in 1943 and at Delhi in 1947. At the time of Independence seven stock exchanges were functioning located in the major cities of the country. Between 1946 and 1990, 12 more stock exchanges were set up trading the shares of 4843 additional listed companies. Table 4.2 gives a quick view of the growth of the stock market in India between 1946 and 1990.

Table 4.2 : Growth of Stock Market in India

	1946	1961	1971	1975	1980	1985	1988	1990
No. of Stock Exchanges	7	7	8	8	9	14	15	19
No. of listed companies	1125	1203	1599	1852	2265	4344	5841	5968
No. of Stock Issues of the listed companies	1506	2111	2838	3230	3697	6174	7694	8289
Capital (paid up) of listed companies - Rs. crores	270	753	1812	2614	3973	9723	21465	27761
Market value of the capital - Rs. crores	971	1292	2675	3273	6750	25302	51379	70521
Capital per listed company - Rs. crores	24	63	113	141	175	224	367	465
Market value of capital per listed company - Rs. lakhs	86	107	167	177	298	582	880	1182

Source : *The Official Stock Exchange Directory, Bombay, 1991*, Vol. 29 (iii) Annexure 1.

It is evident from Table 4.2 that the Stock Exchanges of India are a highly developed organisation. They have grown in size and depth.

- From seven stock exchanges in 1946, the country has moved to form 19 stock exchanges by 1990. There were 5968 companies listed on these exchanges as against 1125 in 1946; correspondingly the number of stock issues of these listed companies had grown from 1506 in 1946 to 8289 in 1990.
- The paid up capital of these issues has multiplied several fold. From Rs. 270 crores in 1946 it rose to Rs. 27761 crores in 1990. As a result paid up capital per listed company has risen from Rs. 24 lakhs in 1946 to Rs. 465 lakhs in 1990.

By 1992, the number of stock exchanges had increased to 21 and number of listed companies to over 6500.

It is equally important to note that the network of Indian stock exchanges is spread through the length and breadth of the country. Figure 4.1 clearly shows the spread of recognised stock exchanges and collection centres throughout the country. In addition to recognised stock exchanges, there are 36 collection centres. At these centres, licensed dealers are authorised to transact business in securities. Bombay, Delhi, Ahmedabad, Calcutta and Madras are linked by the PTI stockscan service.

Activity 2

What were the broad phases of the growth of stock exchanges in India ?

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4.4.2 Role and Functions

The history of stock exchanges in foreign countries as well as India shows that the development of joint stock enterprise would never have reached its present stage but for the facilities which the stock exchanges provided for dealing in securities. Stock exchanges have a very important function to fulfil in the country's economy. In Union of India vs. Allied International Products Ltd [(1971) 41 Comp Cas 127 (SC): (1970) 3 SCC 5941], the Supreme Court of India has enunciated the role of the stock exchanges in these words:

"A Stock Exchange fulfils a vital function in the economic development of a nation: its main function is to 'liquify' capital by enabling a person who has invested money in, say a factory or a railway, to convert it into cash by disposing off his shares in the enterprise to someone else. Investment in joint stock companies is attractive to the public, because the value of the shares is announced day after day in the stock exchanges, and shares quoted on the exchanges are capable of almost immediate conversion into money. In modern days a company stands little chance of inducing the public to subscribe to its capital, unless its shares are quoted in an approved stock exchange. All public companies are anxious to obtain permission from reputed exchanges for securing quotations of their shares and the management of a company is anxious to inform the investing public that the shares of the company will be quoted on the stock exchange".

The stock exchange is really an essential pillar of the private sector corporate economy. It discharges three essential functions in the process of capital formation and in raising resources for the corporate sector.

First, the stock exchange provides a market place for purchase and sale of securities viz., shares, bonds, debentures etc. It, therefore, ensures the free transferability of securities which is the essential basis for the joint stock enterprise system. The private sector economy cannot function without the assurance provided by the stock exchange to the owners of shares and bonds that they can be sold in the market at any time. At the same time those who wish to invest their surplus funds in securities for long-term capital appreciation or for speculative gain can also buy scrips of their choice in the market.

Secondly, the stock exchange provides the linkage between the savings in the household sector and the investment in corporate economy. It mobilises savings, channelises them as securities into those enterprises which are favoured by the investors on the basis of such criteria as future growth prospects, good returns and appreciation of capital. The importance of this function has remained undiminished inspite of the prevalence on the Indian scene of such interventionist factors as industrial licensing, provision of credit to private sector by public sector development banks, price controls and foreign exchange regulations. The stock exchanges discharge this function by laying down a number of regulations which have to be complied with while making public issues e.g. offering at least the prescribed percentage of capital to the public, keeping the subscription list open for a minimum peiod of three days, making previsions for receiving applications at least at the centres where there are recognised stock exchanges and allotting the shares against applications on a fair and unconditional basis with the weightage being given to the applications in lower categories, particularly those applying for shares worth Rs. 500 or Rs. 1,000 etc. Members of stock exchanges also assist in the flotation of new issues by acting as managing brokers/official broker of new issue. In that capacity, they, inter alia, try to sell these issues to investors spread all over the country. They also act as under-writers to new issues. In this way, the broker community provide an organic linkage between the primary and the secondary markets.

Thirdly, by providing a market quotation of the prices of shares and bonds-a sort of collective judgement simultaneously reached by many buyers and sellers in the market-the stock exchange serves the role of a barometer, not only of the state of health of individual companies, but also of the nation's economy as a whole. It is often not realised that changes in share prices are brought about by a complex set of factors, all operating on the market simultaneously. Share values as a whole are subject to secular trends set by the economic progress of the nation, and governed by factors like general economic situation, financial and monetary policies, tax changes, political environment, international economic and financial developments, etc. These trends are influenced to some extent by periodical cycles of booms and depressions in the free market economies. As against these long- term trends, the day-to-day prices are influenced by another variety of factors notably, the buying or selling of major operators, the buying and selling of shares by the investment financial institutions such as the U.T.I. or L.I.C. which have in recent years emerged as the largest holders of corporate securities, speeches and pronouncements by ministers and other government spokesmen, statements by company chairmen at annual general meetings and reports of bonus issues or good dividends by companies etc. While these factors, both long-term and short- term, act as macro influences on the corporate sector and the level of stock prices as a whole, there is also a set of micro influences relating to prospects of individual companies such as the reputation of the management, the state of industrial relations in the enterprises, the volume of retained earnings and the related prospects of capitalisation of reserves, etc. which have a bearing on the level of prices. In the complex interplay of all these forces, which leads to day-to-day quotation of prices of all listed securities, speculation plays a crucial role. In the absence of speculative operations, every purchase by an investor has to be matched by a sale of the same security by an investor-seller, and this may lead to sharp fluctuation in prices. With speculative sale and purchases taking place continuously, actual sale and purchase by investors on a large scale are absorbed by the market with small changes in prices. There are always some professional operators who are hoping that the prices would rise. There are others predicting that prices will fall. Both these groups acting on their respective assumption buy or sell continuously in the market. Their operation helps to bring about an orderly adjustment of prices. Without these speculative operations, a stock exchange can become a very mechanical thing. However, excessive speculation endangers market equilibrium and must be discouraged through appropriate safeguards. The regulatory authorities should always take necessary precautionary measures to prevent and penalise excessive speculation and to discipline trading.

A fact which needs to be emphasised is that the stock exchanges in India also serve the joint sector units as also to some extent public sector enterprises. There is substantial private participation in the share capital of a number of government companies such as Balmer Lawrie, Andrew Yule, Gujarat State Fertilizers Corporation, Gujarat Narmada Fertilizers Corporation, Hyderabad Allwyn, Polymers Corporation of Gujarat etc. In recent times some of the Central public sector companies have gone in for public debentures through the stock exchanges. Also, there are some public sector companies which have made their share capital open for public subscription.

Another important function that the stock exchanges in India discharge is of providing a market for gilt-edged securities i.e. securities issued by the Central Government, State government, Municipalities, Improvement Trusts and other public bodies. These securities are automatically listed on the stock exchanges when they are issued and transactions in these take place regularly on the stock exchanges.

4.4.3 Membership, Organisation and Management

By virtue of the century-old tradition, stock exchanges is a highly organised and smooth functioning network in the world. The membership of stock exchanges initially comprised of individuals and partnership firms. Later on companies were also allowed to become members. A number of financial institutions are now members of Indian stock exchanges. Over the years, stock exchanges have been organised in various forms. For example, while the Bombay Stock Exchange, Ahmedabad Stock Exchange and M.P. (Indore) Stock Exchange were organised as voluntary non-profit making association of persons, the Calcutta Stock Exchange, Delhi Stock Exchange, U.P. (Kanpur) Stock Exchange, Ludhiana Stock Exchange, Cochin Stock Exchange, Gauhati

Stock Exchange, Jaipur Stock Exchange, and Kanara (Mangalore) Stock Exchange were organised as public limited companies. Quite a few others have been organised as company limited by guarantee. Table 4.3 shows the year of establishment, type of association, date of original permanent recognition, entrance fee/ par value of share, membership, security deposit, annual subscription and number of members of 19 stock exchanges working in India as at the end of the year 1990.

Table 4.3 (see next page) clearly shows that Indian stock exchanges have been organised in different forms. The size of membership ranges from 69 to 650. The entrance fee is different for different stock exchanges. Membership, security deposit and annual subscription have been different among various exchanges. The internal governance of every stock exchange rests in a governing board comprising members of the board and Executive Director/President. Members of the governing boards include brokers and non-brokers. Governing bodies of stock exchanges also have government nominees, whose number does not exceed three. The governing bodies of stock exchanges for the present are, however, dominated by stock brokers. The Executive Director/President is expected to ensure strict compliance by all members of the exchange of rules/by laws, margin regulations and trading restriction, etc. In reality, the position of Executive Director can't be expected to be very strong because if he really tries to be strict this may bring him into conflict with influential broker-members who may also be on the exchange's governing board which determines Executive Director's terms and conditions of service and his re-appointment on the expiry of his term. It is not human nature to displease one's appointing authorities and it may be too much to expect an Executive Director to be strict under the present scheme of things. Subject to the previous approval of SEBI, under the law, governing bodies of stock exchanges have wide powers to make bye-laws. Governing bodies can admit, punish, censure and also expel any member, any partner, any remisier, and authorised clerk and employee. It has the power to adjudicate disputes. Above all, it has the power to make, amend, suspend and enforce rules, bye-laws, regulations and supervise the entire functioning of a stock exchange.

4.4.4 Trading System

The Trading on stock exchanges is done through brokers and dealers. All members can act as brokers and / or dealers. For this purpose they have to maintain security deposits. Brokers act as agents buying and selling securities for others for which they receive brokerage commission at stipulated rates. Dealers act as principals buying and selling securities on their own accounts.

However, members cannot enter into contract with any person other than members without prior permission of the Governing Body.

The stock exchange rules, bye-laws and regulations have identified eight major functional specialisations for the members.

Commission Broker: The commission broker executes buying and selling on the floor of the Stock Exchange.

Floor Broker: Floor brokers are not many. They execute orders for fellow members and receive a share in brokerage commission charged by a commission broker to his/her constituent.

Taravaniwala: He/she is a jobber or specialist in selected shares. He/She 'makes the market' i.e., provides continuity to dealings. They specialise in stocks which are traded inactively.

Dealer in Non-cleared securities: He/She deals in securities which are not on the active list.

Odd-lot Dealer: He/She specialises in buying and selling in amounts which are less than the prescribed trading units. They buy and sell odd lots, make them up into marketable trading units. These dealers do not receive commission. Their earnings come from the difference between the prices at which they buy and sell. The odd-lot dealer has become an important operator since the growth of new issues. When the number of applicants for a new issue is large, shares may be allotted in lots which are smaller than prescribed lots. The Odd-Lot Dealer makes profit on the large number of odd lots by buying and selling at different prices.

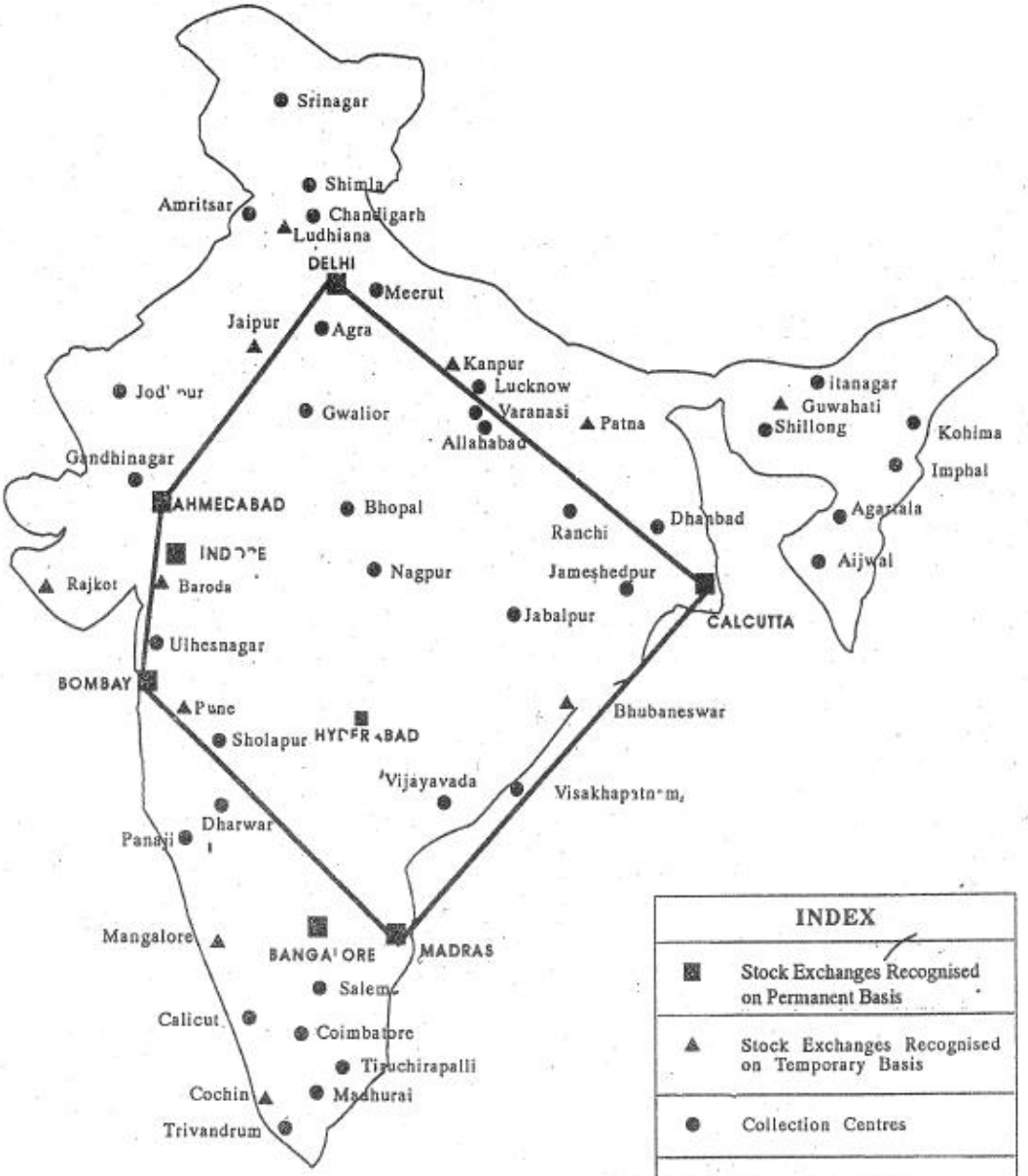
Table 4.3: ORGANISATION OF STOCK EXCHANGES

Name of Stock Exchange	Year of Estaolishment	Type of Association	Recognition			Entrance Fee/Par Value of Share Rs.	Membership Security Deposit Rs.	Annual Subscription Rs.	No. of Members
			Original		Permanent				
			Date	Period	Date				
Bombay	1875	Voluntary non-profitmaking association of persons	31-8-1957	Permanent	--	--	2,00,000	5,000	555
Calcutta	1908 (Incorporated in 1923)	Public Limited Company	10-10-1957	5 years @	14-4-1980	5,000	2,00,000	3,000	650
Madras	1937 (Recognised 29-4-1957)	Company Limited by Guarantee	15-10-1957	5 years @	15-10-1982	25,000	50,000	2,800	168
Ahmedabad	1894	Voluntary non-profitmaking association of persons	16-10-1957	5 years @	16-9-1982	--	75,000	2,000	299
Delhi	1947	Public Limited Company	9-12-1957	5 years @	9-12-1982	4,000	1,00,000	3,000	321
Hyderabad	1943	Company Limited by Guarantee	29-9-1958	5 years @	29-9-1983	25,000	50,000	2,000	111
M.P. (Indore)	1930	Voluntary non-profitmaking association of persons	24-12-1958	5 years @	24-12-1988	15,000	25,000	2,000	184
Bangalore	1957	Incorporated as a Pvt. Ltd. Company & converted into a Pub. Ltd. Co. on 3-4-1962.	16-2-1963	5 years @	16-2-1983	1,000	50,000	2,000	126
Cochin	1978	Public Limited Company	10-5-1979	5 years $	--	5,000	1,00,000	2,040	476
U.P. (Kanpur)	1982	Public Limited Company	3-6-1982	5 years	--	1,01,000	10,000	2,000	445
Pune	1982	Company Limited by Guarantee	2-9-1982	5 years	--	2,500	20,000*	2,000	69
Ludhiana	1983	Public Limited Company	29-4-1983	5 years	--	10,000	1,50,000	2,000	220
Gauhati	1984	Public Limited Company	1-5-1984	5 years	--	5,000	50,000	2,000	184
Kanara (Mangalore)	1985	Public Limited Company	9-9-1985	5 years	--	250	50,000	1,000	74
Magadh (Patna)	1986	Company Limited by Guarantee	11-12-1986	5 years	--	5,000	50,000	3,000	189
Jaipur	1983-84	Public Limited Company	9-1-1989	1 year	--	2,500	50,000	2,000	500
Bhubaneswar	1989	Company Limited by Guarantee	5-6-1989	5 years	--	--	50,000	2,000	87
Saurashtra Kutch	1989	Company Limited by Guarantee	10-7-1989	3 years	--	10,000	50,000	2,000	300
Vadodara (Baroda)	1990	N.A.	5-1-1990	5 years	--	25,000	50,000	N.A.	176

@ Renewed after every 5 years till grant of permanent recognition. $ Renewed for further 5 years form 8-5-1989. * Cash deposit as security and Rs.[illegible],000 Bank Guarantee or shares of the market value of Rs.75,000 of reputed listed companies. + Membership Security Deposit for cash shares participation is 1,10,000 and Rs.1,65,000 for hand delivery participation. N.A - Not Available

Source : The Official Stock Exchange Directory, Bombay Vol 2,9 (ii) p.6

RECOGNISED STOCK EXCAHANGES AND COLLECTION CENTRES IN INDIA



(Map not to scale)

Adapted from The Official Stock Exchange Directory, Bombay, 1991, Vol 2.

Figure : 4.1

Budliwalas: He/She executes what is known as carry-over business. He/She is a financier. The job is highly technical.

Arbritrageur: He/She specialises in buying and selling simultaneously in different markets. The difference between the buying price in one market and the selling price in another market constitutes his profit. However, he can transact such business only if a security is traded on more than one stock exchange and if the exchanges are telephonically or fax-linked. In India arbritaging has become a growing business. Arbritaging requires prior approval of the Governing Body "in order to avoid" the evil of "joint account" with members of other stock exchanges and the consequent involvement of one exchange in the difficulties of another.

Security Dealer: This dealer specialises in trading in government securities. He/She mainly acts as a jobber and takes the risk inherent in ready purchase and sale of securities. The government securities are traded over the counter and not on the floor. They maintain daily contacts with the Reserve Bank of India and commercial banks and other financial institutions. As a result of their activities, government securities are quoted finely.

Members are permitted to deal only in listed securities. However, with the approval of the Governing Body, they can deal in listed securities of other exchanges.

There are three types of contracts permitted by the stock exchanges. Members can transact for **Spot-Delivery**, i.e., for delivery as well as payment on the same day as the date of contract or at the most the next day; for Hand-Delivery, i.e., delivery and payment within the time and date stipulated at the time of entering into bargain, which time shall not exceed 14 days following the date of contract; for Special Delivery i.e., for delivery of the share and payment for it within anytime exceeding 14 days from the date of contract when entering into a bargain but permitted by the Governing Body or President.

Dealings in government securities are transacted between 12 noon and 3 p.m. on the Bombay Stock Exchange. The securities are largely transacted by institutional investors and also brokers and dealers. The business is settled largely through banks. The documents are delivered through banks against payment at the contract rate plus interest rate accrued to the date of delivery.

Dealings in shares are also transacted between 12 noon and 3 p.m. The bargains are entered into by word of mouth but seldom any serious mistakes occur; also, bargains are scrupulously honoured.

In the matter of delivery, equity share trades are classified into two groups-Delivery Orders and Receive Orders. For both groups there is now a computerised system of settlement. These orders are issued to the first and last party respectively. Delivery in respect of the first group passes through the Clearing House. In the case of the other group the delivering member hands over directly to the receiving member named in the Receive Order, the share certificates together with duly executed transfer deeds. Such deliveries should be effected before 2 p.m. on the prescribed day which is generally Thursday.

All bargains except in Equity Shares entered into from Thursday of any week upto the following Wednesday are required to be settled by delivery and payment on Wednesday in the week after. Many other procedures are involved for final settlement.

There is a Clearing House, established in Bombay in 1921, which receives delivery and payment on behalf of the customers. All the banks of the country are its members. The Clearing House guarantees that whenever shares are delivered payments would be duly made, or it returns the shares to the concerned bank if a member defaults,and per contra when payment is made the shares would be duly delivered, or return the money to the bank if a member defaults. Clearing operations cost huge sums of money to the Bombay Stock Exchange. The services are tendered in the interest of the investing public. The clearing operations were introduced in Calcutta in 1944 and in Madras and Delhi in 1957.

4.4 5 Stock Market Information System

Stock exchange quotations and indices published in daily newspapers are the main source of information on stock exchange trades and turnover. Dailies like Economic Times, Financial Express, Business Standard, Times of India and Hindustan Times publish daily quotations and indices. As for Bombay Stock Exchange quotations published in Economic Times, information on equity shares, starting from the first column, is presented in the following order: Company's name; previous day's closing price in brackets; all the daily traded prices as published by the BSE; key financial parameters such as earnings per share (EPS) on Tuesdays, cash earnings per share

(CPS) on Wednesdays, cash P/E (price to earnings ratio) on Thursdays, return on net worth (RNW) on Fridays and gross profit margin (GPM) on Saturdays; P/E; and the high and low prices in the preceding 52 weeks.

The first traded price is the day's opening price. If only one such price is recorded, it is also the day's closing price. If there are two prices recorded, then the first is the opening and the second the closing price. If there are three prices, then the middle quote is either the high or low price. If there are four prices, then one of the middle quotes is the day's high and the other, the low. If there are no transactions in a company's share on any day, the previous day's closing price is presented in brackets.

The EPS is the average net profit after tax per equity share and the CPS the average cash profit (after adding back depreciation) per share. The cash P/E is the ratio of the day's closing price to the cash earnings per share as distinct from the P/E ratio which relates price to the net profit per share. PE values are not printed when earnings are either nil or negative.

The RNW is the net profit as a percentage of the net worth and measures the return earned on the shareholders' funds i.e. equity capital plus reserves. The GPM is the gross profit margin (before depreciation and tax) as a percentage of gross sales and measures the company's profit margin which is available to absorb depreciation charges arising from capital expenditure, tax payments, dividend distribution and profit ploughback. All the figures are taken from the latest available results (audited/unaudited) of the company.

The 52-week high and low prices of each share are worked out anew every day on the basis of the highest and lowest points scaled during the immediately preceding 52 weeks. The highs and lows are adjusted for bonus and rights issue of equity shares.

If any of the day's traded price is a yearly high or low, the entire line, including the name of the company, is shown in bold types, with a 'H' attached to the high value or 'L' attached to the low value.

Whenever there is a significant change in the day's closing value as compared to the previous closing, it is shown in bold types with a 'plus' or 'minus' sign as the case may be, after the closing value. For specified shares, a three per cent change and for non-specified shares a 15 per cent change is treated as significant.

Whenever a share goes ex-dividend or ex-bonus or ex-rights, it is indicated by notation XD or XB or XR, as the case may be, placed next to its closing price.

Symbol of face values other than Rs 10, are indicated as follows:

• for Rs.100, ◆ for Rs.50, ◦ for Rs.25, ■ for Rs.250.

For debentures, the information starting from the first column, is presented in the following order: the nominal rate of interest on the face value: company's name: face value: previous day's closing-price: the day's opening price: yield to maturity (YTM) and yield (both annualised). The yield is nominal interest expressed in percentage terms of closing value. The YTM adjusts the nominal return for the maturity period, frequency of interest payments, manner of principal repayment, redemption premium, if any, and thereby enables investors to compare different investment options in debentures on a uniform scale. If there are no quotations for a company's debenture on a day, the opening price is shown as nil, and the closing price the same as the previous day's closing.

Besides these quotations share price indices are also published in different dailies. Bombay Stock Exchange's 30- share 'Sensex' and 100 - share 'National' indices are quite popular. Besides these , there are other indices also which include The Economic Times Index of Ordinary Share Price, Business Standard Index of Ordinary Shares Price and a few others. Reserve Bank of India also publishes Share Price Index. PTI Stock scan provides minute- to-minute share price information about Bombay, Delhi, Ahmedabad, Calcutta and Madras stock exchanges.

Activity 3

1) Please take a look at the Bombay Stock Exchange quotations published in Economic Times and write out hereunder price quotations for five Shares and five Debentures.

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2) Please take a look at Economic Times and compare and contrast 30-share Sensex and 100-share National Index of Bombay Stock Exchange.

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3) Write out two sources of stock market information other than a newspaper.

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4.4.6 Principal Weaknesses

While in terms of number of stock exchanges, listed companies, daily turnover, market capitalisation and investor population, the Indian stock market has witnessed impressive growth over the last four decades, it still suffers from serious weaknesses. We may point out principal weaknesses of the Indian stock market as follows:

a) Rampant speculation

Indian stock exchanges have been witnessing spells of unprecedented booms and crashes. While the country has been experiencing generally 4-5% rate of growth, the share prices have shown high volatility. This only means that the speculative activities have been rampant. This does not reflect a very healthy state of affairs. Over speculative character and high volatility have made the Indian stock market crises prone. The distinction that Keynes drew in 1929 in Wall Street Journal between 'Speculators' operating on the basis of forecasting the psychology of the market, and 'Investors' trying to forecast the prospective yield of the assets over the whole life has almost vanished in India's market conditions.

b) Insider Trading

Like speculation, insider trading is rampant on Indian stock exchanges. Insider trading means operating on information which is price sensitive and not available to the public. Insider trading is thus trading from a position of privilege in respect of price-sensitive information. Insider trading is decried because it violates, level Playing field', a state where equal opportunity, information is available to all the participants in the market.

c) Oligopolistic

The Indian stock market cannot be called truly competitive. It is highly dominated by large financial institutions, big brokers, and operators and is thus oligopolistic in structure.

d) Limited Forward Trading

As pointed out above, there can be three types of transactions undertaken at the stock exchanges namely, spot delivery, hand delivery and forward delivery. Trading in share, for clearing, or 'forward trading' was completely banned in India in 1969. It had a very adverse effect on share prices. The situation was further aggravated by the 1974 restriction put on dividend payments by companies as part of the anti-inflationary measures adopted by the government. From 1974 onwards, under a scheme first evolved by the Bombay Stock Exchange and thereafter accepted by Calcutta, Delhi and Ahmedabad, a certain informal type of forward trading was revived. This was done by carrying forward the delivery contract beyond 14 days in an informal manner, by concluding the earlier contract and entering into a new contract without any actual delivery, but merely by payment of the balance between the contracted price and market price, between the buyer and the seller. This system had been continued for selected scrips often called cleared securities, in an extra- legal manner without anyone questioning its legality. In 1983, the government at long last proceeded to permit the revival of a limited volume of forward trading. This was done not by reviving the previous

practice of trading in cleared securities , but by permitting carry forward of contracts beyond 14 days up to a total period of three months. The real problem, however, still persisted. While a certain volume of forward trading is useful for providing liquidity and avoiding payment crisis, when speculation runs riot and the actual physical transfer of securities lays far behind, there will inevitably be a payment crisis.

e) Outdated share Trading System

The share trading system followed in Indian stock exchanges, watched in an international perspective, is totally outdated and inefficient. Major problem areas include settlement periods, margin system and carry forward (badla) system. The settlement period is 14 days in most of the Indian stock exchanges whereas most of the countries are moving towards a rolling three days settlement period. Apart from encouraging the rise of share shops outside the stock exchange system, such a lengthy settlement period increases the risk exposure of market participants due to price movements. Avoidance of margin payment under the margin system is another problem area. Margin system is the deposit which the members have to maintain with the clearing house of the stock exchange. The deposit is a certain percentage of the value of the security which is being traded by members. Under the margin system , if a member buys or sells securities marked for margin above the free limit, a specified amount per share has to be deposited in the clearing house. Before we point out major weakneses of the Indian margin system, we may distinguish if from margin trading. Margin trading means a customer buys a share by paying a portion of the purchase price. The portion of the purchase price paid by the customer is called the margin. For example, if a customer purchases shares worth Rs.1 lakh market value by paying Rs.60,000, he is trading by paying a margin of 60%. In this case, the balance is being lent by the broker and the securities bought become collateral for the loan and have to be left with the broker.

Now, returning to the Indian margin system, its major weakness is that it is totally discretionary in character, the margin varying from zero to sometimes 40 per cent from share to share and from day to day. It has often failed to contain runaway booms. Further, under the present settlement and margin system, there is a strong incentive to collude for the buyer and seller brokers for the purpose of avoiding margin payments.

The carry forward (or badla) system is an Indian system evolved essentially to facilitate speculation in shares. It promotes a wholly spurious kind of share trading in which neither the buyer has the money to pay for the shares at the time of settlement nor the seller has the shares to deliver, or at least one of the two is spurious. According to one study, roughly around three- fourths of outstanding positions at the end of a settlement period get carried forward to the next settlement and one-fourth gets settled by actual delivery on the major Indian stock exchanges.

f) Lack of a single market

Due to the inability of various stock exchanges to function cohesively, the growth in business in any one exchange or region has not been transmitted to other exchanges. The limited inter-market operations have resulted in increased costs and risks of investors in smaller towns. This problem has been further aggravated by the lack of cohesion among exchanges in terms of legal structure, trading practices, settlement procedures and jobbing spreads.

g) Problem of interface between the primary and secondary markets

The recent upsurge of the primary market has created serious problems of interfacing with the secondary market, viz, the stock exchanges which still, by and large, continue with the same old infrastructure and ways of working which suited the very narrow base of the capital market in the yester-years but are totally out of time with the vast market and the desired tempo of work at present. Unless the secondary market is re-oriented so as to discharge the new responsibilities cast on it by the recent developments, this will act as a drag on the future growth of the primary market itself. Investors who are anxious to buy new securities are bound to get disenchanted if they face serious problems while trying to buy or sell scrips.

The existing Stock Exchange Regulations were essentially meant for times when buyers and sellers as also the stock brokers were small in number and mostly located in the same city or around the few stock exchange centres. These regulations have therefore little, relevance in today's context when the number of shareholders has gone up to around 15 million and they are dispersed over the entire length and breadth of the country. Restrictions imposed on share transfer under Section 108 (1)(b) requiring

transfer forms to be stamped by a prescribed government official, and the validity of such transfer deeds lasting only for about two months have outlived their utility. A shareholder located, say at Jabalpur, is first required to obtain the transfer deed from a stock exchange centre and thereafter send it to the stock broker, say, at Delhi or Bombay, for arranging the sale. More often than not, by the time the transfer deed is presented to the company, its validity period would have expired. Normally, all correspondence between the company and the shareholders, including the despatch of share certificates is required to be done by registered post. This coupled with an inefficient postal system, leads to delays and often loss of the share scrips in transit, causing immense harassment to both the buyer and the seller. The dilatory and inefficient working of the banking system under which outstation cheques take very long to be encashed, the difficulty in making necessary payments in reply to calls or in connection with the subscription for issues also affects the system. The F.E.R.A. restrictions on inflow and outflow of foreign exchange and the time consuming procedures are irritants not only to foreign but also to non-resident Indian investors, who have grown substantially in recent years. All this militates against the efficient functioning of the secondary market. The situation is very much like the problems faced by a small airstrip is accustomed to handling only Dakota planes being suddenly called upon to handle Jumbo Jets without any necessary change in its infrastructure.

h) **Inadequacy of investor service**

It is commonly felt that exchanges, particularly the smaller ones, have been unable to service their investor base adequately, and have been able to make a limited contribution to the spread of the equity cult in their region. The level of computerisation across stock exchanges has been inadequate, resulting in lower operational flexibility of stock exchanges and brokers to handle sudden surges in volumes. The absence of computer linkages between stock exchanges and its members has also hampered effective inter-market operations, monitoring of trading and post-trading operations, as well as the free flow of information on an intra-and inter-exchange basis. The inadequate infrastructure and ineffective trading practices/settlements have also resulted in a lack of NRI confidence in the Indian capital markets. Major Indian corporates today need to diversify their sources of capital and seek the direct participation of foreign investors. The areas of concern detailed above would effectively deter such direct foreign currency investments. The upgradation of existing stock exchanges thus has to be viewed as an integral component of the increasing globalisation of the Indian economy.

4.4.7 Directions of Reform

While the efforts to reform the functioning of stock exchanges in India has been as old as the stock exchanges themselves and we shall discuss history of regulations of the stock market in India in detail in the next Unit, we would like to briefly reproduce the main recommendations of an expert study of Trading in Shares in the Indian Stock Exchanges which was commissioned in 1991 by the Department of Economic Affairs, Ministry of Finance, Government of India with the following terms of reference.

a) to examine the trading system prevalent on the Indian stock exchanges with special reference to major stock exchanges such as Bombay, Calcutta, Delhi and Ahmedabad, covering both specified and non-specified shares, keeping in view the need to avoid unwarranted fluctuations in prices and crises in stock exchanges, as also the need for ensuring the market's liquidity and investor confidence;

b) to review the effectiveness of the system of regulation and market surveillance by stock exchanges over trading operations;

c) to look into the working of the 'badla' system in shares and its effects on trading;

d) to examine any other matter which is relevant to the smooth and orderly operation of the trading system in shares;

e) to make recommendations for improvement in the system of trading in shares and for maintaining investor confidence in the stock market.

Main recommendations made by the Expert study are as follows:

1) To introduce a uniform one-week settlement system in all stock exchanges and in all shares in order to unify the market on a national basis and, at the same time, to reduce the risk exposure of market participants due to long settlement periods and

also to counter the strong tendency towards excessive speculation and excessive concentration of trading activity in a few shares only.

2) To replace the present margin system, because of its failure to prevent many defaults on several stock exchanges, by a system of "marking to the market" on a daily basis (i.e., debiting the losses and crediting the gains daily to the members having outstanding positions).

3) To do away with the carry forward system which is incompatible with the recommendation of the group to shorten the settlement period and for which the whole rationale will disappear with the adoption of the system of "marking to the market" daily, as suggested above.

4) To insist on all the stock exchanges to introduce formal market-making arrangements in the best possible manner in order to prevent exploitation of investors by market malpractices, and promote more orderly markets in all securities.

5) To make the governing bodies of stock exchanges equally representative of the sharebroker interests on the one hand and the public and the users of stock market services on the other, and to strengthen stock exchange management generally.

6) To introduce in all stock exchanges a well-designed management information system (MIS), capable of producing relevant information which could be used by the authorities for restructuring and regulating the market on proper lines.

The high powered study group on Establishment of New Stock Exchanges, popularly known as Pherwani Committee, had in 1991 recommended the promotion of a new stock exchange at New Bombay as a 'Model Exchange, and to act as a 'National Stock Exchange'(NSE). The principal features of NSE would be that it could limit itself to listing only medium-sized companies, and focus on creating a market for debt instruments, which has been wholly neglected until now by the Bombay Stock Exchange as well as other existing stock exchanges. This exchange should be completely automated in terms of both trading and settlement procedures. Further, it was recommended that the concept of compulsory market makers/Jobbers should be introduced. Having many of the suggested features of NSE, Over the Counter Exchange of India (OTCEI)has been established in 1992. Let us briefly discuss the nature and unique features of OTC Exchange of India in the following sub section.

4.5 OVER THE COUNTER EXCHAN E OF INDIN (OTCEI)

Indeed in mid-eightees itself, the G.S.Patel Committee on Stock Exchange reforms and the Abid Hussain Committee on Capital Markets had recommended for the creation of a second tier stock market that will solve some of the problems of present Stock Exchanges. Over The Counter Exchange of India (OTCEI) has been promoted by UTI, IDBI, IFCI, LIC, GIC, SBI Capital Markets and Canbank Financial Services as a non-profit making company under Section 25 of the Companies Act, 1956. The OTCEI is a recognised Stock Exchange under section 4 of the Securities Contracts (Regulation) Act, 1956. Hence companies listed on the OTC Exchange enjoy the same status as companies listed on any other stock exchanges in the country as regards taxes, interest rates on borrowings, etc.

OTC Exchange of India has picked the model from the NASDAQ system (National Association of Securities Dealers-Automated Quotations) prevalent in the United States of America. Modifications suited to Indian conditions have been adopted. OTC in America was an offshoot of their government's efforts to regulate the unlisted securities market. The Indian version of NASD-National Association of Securities Dealers is what is called OTC Exchange of India. Unlike in the regular exchange, listing on OTCEI is a national listing from day one. Wherever and whenever the counters start operating in the country they can trade in all the scrips of OTCEI. Separate listing in those particular places is not needed at all.

The unique features of OTCEI are as under:

Ringless Trading

OTC Exchange has eliminated the traditional trading ring with a view to have greater accessibility to the investors. Trading will instead take place through a network of computers (screen based) of OTC dealers located at several places within the same city and even across

cities. These computers allow dealers to quote, query and transact through a central OTC computer using telecommunication links. Investors can walk into any of the counters of members and dealers and see the quote display on the screen, decide to deal and conclude the transaction.

National Network

Unlike other stock exchanges, the OTC Exchange will have a nationwide reach, enabling widely dispersed trading across the cities, resulting in greater liquidity. Companies thus have the unique benefit of nationwide listing and trading of their scrips by listing at one exchange, the OTC Exchange.

Computerised Totally

All the activities of the OTC trading process will be computerised, making for a more transparent, quick and disciplined market.

Exclusive list of Companies

The OTC Exchange will not list and trade in companies listed on any other stock exchange. It will therefore list an entirely new set of companies 'sponsored' by members of the OTC Exchange. However, it has recently allowed some 25 companies already listed on other exchanges to list on OTCEI.

Two Ways of Making a Public Offer

Another unique feature of OTCEI is its 'two ways' of making a public offer. Under 'direct offer', a company can offer its shares directly to the public after getting it sponsored by a sponsor but under 'indirect offer' the company may give its shares first to the sponsor who along with the company can at a later and convenient time make a public offer.

Faster Transfers and Trading Without Shares

OTC trading also provides for transfer of shares by Registrars, upto a certain percentage per folio. This results in faster transfers. The concept of immediate settlement makes it better for the investors. Investors will trade, not with share certificates but with a different tradeable document called counter receipt (CR). However, an investor can always exercise his right of having a share certificate by surrendering the CR and again exchanging the share certificate for CR when he wants to trade. There will be a custodian who will provide this facility along with a settler who will do the signature verification and CR validation.

Investor Registration

Yet another feature of OTCEI is investor registration, introduced for the first time in India. The investor registration is required to be done only once and is valid for trading on any OTC counter in the country in any scrip. The purpose of the investor registration is to facilitate computerised trading. It also provides greater safety of operations to the investors.

Trading Mechanism

An investor can buy any listed scrip at any OTC Exchange counter. Similarly he can sell any listed scrip at any OTC Exchange counter. The investor can also make an application for services like transfer of shares, splitting and consolidation of shares, nomination and revocation of nomination, registering power of attorney, transmission of shares and change of holder's name, etc. The parties involved in trading on OTC are Investor, Counter, Settler, Registrar/Custodian, Company and Bank.

The trading documents mainly involved in OTC Exchange transactions are Temporary Counter Receipt (TCR), Permanent Counter Receipt (PCR), Sales Confirmation Slip (SCS), Transfer Deed (TD), Services Application Form (SAF), Application Acknowledgment Slip (AAS) and Deal Form (DF).

Customer Purchase (at Market Makers Counter)

Each market maker will be displaying the quantum of stock he is holding, the market lots and bid and offer prices. Customers will place the order and deliver the cheque. Counter will prepare TD, obtain all details of the buyer including signature on the transfer deed and forward to registrars for updating. Simultaneously cheque received from the customer will be sent for collection.

After scrutiny and confirmation by the registrar the TCRs which will be substituted by PCRs will be issued and delivered to the buyer. Copies of such receipts will be distributed to the Counter, OTCEI and Registrar.

The counter receipts are tradeable and it contains all the information which appears in a share certificate.

Customer Purchase (At Dealers Counter)

If the dealer is not a market maker, he can act as an agent/broker to procure the scrip to the investor. Dealer will also have a PTI scan which shows the scrips traded by various market makers.

Against customers orders, he will make a deal with the market maker (over phone or otherwise) charge his commission and deliver a CR.

Customer Sales

When an investor comes to a customer to sell, he produces a CR and delivers to the counter along with the Transfer Deed duly signed. Before that he verifies the PTI scan and satisfies that the rate is acceptable.

Customer will accept CR and TD, verify the details and compare TD with its own details and issue sales confirmation slips (SCS) in quadruplicate, which will contain required details. One copy each of SCS will be distributed to the investor, the counter, the OTCEI and the custodian registrar.

TDS and SCS will be sent to Registrars for updation who will confirm back to the counter.

The Customer will deliver the cheque.

The Registrar appointed by the company would be given powers/authority to transfer the shares not exceeding 0.5% of the company's capital per folio, to maintain a register of members and to keep in custody the share certificates of the company to be exchanged with CRs when the investor requests. In case where the transfer exceeds 0.5% of the capital per folio, the Registrar refers such transfer to the company which in turn has to effect transfer within a specified time.

The benefits which OTC exchange will offer are:-

For Companies

It will provide a method of raising funds through capital market instruments which are priced fairly. In OTC the company will be able to negotiate the issue price with the sponsors who will market the issue.

It will help save unnecessary issue expenses on raising funds from capital markets. The method of sponsors placing the scrips with members of OTC who will in turn off-load the scrips to the public will obviate the need for a public issue. Therefore, almost all associated costs will be eliminated.

It will help achieve a greater degree of management stability. The OTC Exchange will list scrips even with 20% of the capital made available for public trading.

It will provide greater accessibility to a large pool of captive investor base, enhancing fund raising power substantially. OTC Exchange will create a nationwide network, where investors will be serviced who will form the captive investor base for companies.

For Investor

Investment in stocks will become easier. OTC Exchange's wide network will bring the stock exchange to the street corner.

It will provide greater confidence and fidelity of trade. The investor can look up the prices displayed at each OTC counter. He knows he is trading scrips at the right market price as there is a transparency of price.

It will enable transactions to be completed quickly. Investors can settle the deals across the counter and the money or scrip proceeds from the deal will be settled in a matter of days if not earlier.

It will provide definite liquidity to investors. The market making system in OTC will have two way prices which will be quoted regularly to provide sufficient opportunity for investors to exit.

Investors may get a greater sense of security because all scrips have been researched and members have been willing to invest themselves in these scrips.

In the case of public issue/offer for sale, the allotment will be done in 28 days and trading in 30 days. This will immensely benefit the investors.

For Financial Environment

OTC Exchange will help spread the stock exchange operation geographically and integrate capital market investment into a national forum.

It will encourage closely-held companies to go public and venture capital activities to boost entrepreneurship.

Activity 4

a) Write full form of the following:-

OTCEI

TCR

SCS

TD

DF

NASDAQ

b) Write three unique features of OTCEI

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4.6 SUMMARY

In this Unit, we have discussed two segments of Indian securities market namely primary market or new issues market and secondary market or stock market. We have highlighted recent trends in the primary market and discussed various types of securities traded, market players and trading arrangements which exist in the Indian stock market. Different aspects of the Indian stock market viz., origin and growth, role and functions, membership, organisation and management, trading systems, stock market information system, principal weakness and directions of reform have been explained so that you as a student of this course are able to clearly visualise the environment in which investment and portfolio management decisions are made. A major development of 1992 on the scene of Indian stock exchanges namely, the promotion of Over The Counter Exchange of India (OTCEI), its unique features, trading mechanism and expected benefits to companies, investors and general environment of finance is also discussed. In the following Unit we shall focus on the legal frame of Indian securities market.

4.7 SELF-ASSESSMENT QUESTIONS/EXERCISES

1. What are the basic constituents of the securities market?
2. What are the different types of securities markets? What are their role and functions ?
3. What are different categories of players operating in primary and secondary markets?
4. Write a brief note on the management of stock exchanges in India.
5. Briefly discuss recent trends in the development of the primary market in India.
6. What are the principal weakneses of Indian stock exchanges? How can they be overcome?
7. What is OTCEI? How is it different from other stock exchanges?
8. "Now that OTCEI is there, India needs no new stock exchange." Discuss.
9. Compare and contrast the trading system of OTCEI with other stock exchanges.
10. Compare and contrast the organisation of OTCEI and BSE. Which of the two do you think is better and why?
11. Critically evaluate stock market indices as indicators of the mood of the market and health of the economy.
12. "Speculation in stock exchanges is a necessary evil." Discuss.

4.8 FURTHER READINGS

Bombay Stock Exchange Official Directory, Bombay Stock Exchange, Bombay

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Gupta, L.C, 1992, Stock Exchange Trading in India-Agenda For Reform, Society For Capital Market Research and Development, New Delhi.

Saroja, S.(ed.), 1991, Emerging Trends in the Capital Market in India, Global Business Press, New Delhi.

UNIT 5 REGULATION

Objectives

The objectives of this unit are to :

- highlight history of securities market regulation in India
- discuss current status of regulation of primary and secondary market in India
- pin-point origin, functions, organisation and activities of Securities and Exchange Board of India (SEBI)
- indicate role of self-regulation vis - a - vis legislative regulation of securities market.

Structure

5.1 Introduction
5.2 History of Securities Market Regulation
5.3 Regulation of Secondary Market
5.4 Regulation of Primary Market
5.5 Regulation of OTCEI
5.6 Securities and Exchange Board of India (SEBI)
  5.6.1 Origin
  5.6.2 Functions
  5.6.3 Organisation
  5.6.4 Activities
5.7 Self-Regulation
5.8 Summary
5.9 Self-assessment Questions/Exercises
5.10 Further Readings

5.1 INTRODUCTION

In Unit 4, you have seen how from a scattered and small beginning in the 19th century, India's securities market has risen to great heights by the beginning of the decade of the 90s. The mobilisation from primary market has exceeded Rs. 27,000 crore in 1992. The market capitalisation of outstanding issues have exceeded Rs. 1,00,000 crore. Starting their operations from under a Banyan Tree and Neem Tree, the Bombay Stock Exchange in 1875 and Calcutta Stock Exchange in 1908 respectively, today have 19 more stock exchanges in their tribe. They don't operate any more from under trees. They operate from high rise modern offices located in the hearts of 21 major cities like Bombay, Delhi, Calcutta, Hyderabad, Bangalore and Madras. The history of growth of primary and secondary markets in India have witnessed spells of non-regulation, self-regulation, half-hearted government regulation and close-set regulation. In this Unit we shall discuss the legal frame of securities market in India. What has been the history of securities market regulation in India? What are different Acts, rules and regulations which affect securities market? What regulations apply to Over the Counter Exchange of India? What is the nature, role and functions of Securities and Exchange Board of India? What is the international perspective on securities market regulation? What promises does self-regulation hold in the present environment? These are some of the questions we shall address one by one in the following sub sections. Let us begin by discussing the history of securities market regulation in India.

5.2 HISTORY OF SECURITIES MARKET REGULATION

The first legislative measures providing for regulation of stock exchanges was enacted in 1925 namely, the Bombay Securities Contracts Control Act 1925. This Act was enacted to regulate and control certain contracts for the purchase and sale of securities

in the city of Bombay and elsewhere in the Bombay Presidency. Indeed till then there were no established trading rules. The public was not prohibited from entering the trading floor, where clients often transacted business among themselves. The need for regulation had arisen to check manipulation by brokers which had resulted in two severe market crashes between 1919 and 1925. In 1918-19 some brokers manipulated the price of two highly traded stocks Standard Mill and Madhavji Mill resulting in a crash. Fourteen brokers defaulted, forcing them to sell off their cards. The public criticism that followed the manipulative practices and the market slump of the early 1920s moved the Bombay Legislative Council to set up a committee to look into the activities of the Bombay Stock Exchange. Sir Wilfred Atlay, previous chairman of the London Stock Exchange,was chosen to head the committee. In its report the committee stated :

"The most sinister manifestation of speculation in Bombay is the recent occurrence of corners in the market and the policy and practice of the Association with regard to corners appears to us to constitute the head and front of their offending."

Even before the government of Bombay could consider action on the basis of the Atlay Committee Report, the exchange experienced another crash in 1925. Later that year, the Securities Contracts Control Act 1925 was passed by the government of Bombay. Under that Act, "securities" included stocks, shares, bonds, debentures, debenture stock and any other instrument of a like nature. The "stock exchange" was defined as "any association, organisation or body of individuals, whether incorporated or not, established for the purpose of assisting, regulating and controlling business in buying, selling and dealing in stocks, shares, bonds, debentures, debenture stock and any othe like securities". Section 4 of the Act required a stock exchange to be recognised by the Governor-in-Council and the stock exchange had to submit rules for the regulation and control of transactions in securities other than ready delivery contracts and furnish such information in regard to such recognition as the Governor-in-Council might require. Section 6 of the Act provided that every contract for the purchase or sale of securities, other than a ready delivery contract, entered into after a date to be notified in this behalf by the Governor-in-Council should be void unless the same was made subject to and in accordance with the rules duly sanctioned under section 4 and every such contract should be void unless the same was made between members or through a member of a recognised stock exchange; and no claim should be allowed in any civil court for the recovery of any commission, brokerage fee or reward in respect of any such contract. But this Act defined "ready delivery contract" to mean "a contract of the purchase or sale of securities for performance of which no time is specified and which is to be performed immediately or within a reasonable time". It was also stated therein by way of explanation that what was reasonable time was in each particular case a question of fact. This Act did not achieve its purpose, for under section 6 thereof contracts entered into in contravention of the provisions of that section were not made illegal but only void with the result that even members of a stock exchange not recognised under that Act were able to do business in that line. What is more, the explanation to the definition of "ready delivery contract" which was excluded from the operation of the Act was so elastic that in the name of ready delivery contracts unrecognised stock exchanges and individuals were able to carry on business in forward contracts. Gambling in shares went on unchecked in Bombay as elsewhere. It was, thus, found that the impact of this Act on the regulation of trading in securities was not significant.

Huge losses suffered by the investing public during 1928 to 1938 brought forth public criticism and the Government of Bombay appointed a committee called Morrison Committee in 1936. Recommendations made by this committee were not found to be useful. The Government of India appointed a committee in May, 1948, headed by Dr. P J Thomas, Economic Advisor to the Ministry of Finance, to submit a report on a suitable law to regulate the stock exchanges in India. Under the constitution of India 'Stock Exchanges' is a central subject vide entry 48 in list (union list) in the seventh schedule and therefore, the Union Government has exclusive authority to make laws on the subjects. In 1952, a draft Bill on stock exchange regulation was prepared by the Government and this Bill was referred to an expert committee under the chairmanship of A D Gorwala. A Bill called the Securities Contracts (Regulation) Bill, prepared on the lines of the draft recommended by the Gorwala Committee was introduced in Parliament in 1954 and with some amendments Securities Contracts (Regulation) Act 1956 was passed. The Securities Contracts (Regulation) Act 1956 along with the Securities Contracts (Regulation) Rules of 1957 have been the main laws regulating

securities market in India. We shall discuss the detailed provisions of this Act in subsection 5.3. Before that, let us mention some other legislative enactments which deal with regulation of securities in India. Two other legislative enactments also deal with the regulation of securities in India in a major way. The Companies Act of 1956 regulates the incorporation of companies and their periodic financial and other reporting requirements. The Capital Issues (Control) Act of 1947, since repealed, strictly controlled the issue of securities. To a lesser extent, several other laws also affect the regulation of securities viz., the Foreign Exchange Regulation Act of 1949; the Unit Trust of India Act of 1963; Indian Trusts Act of 1882; Reserve Bank of India Act of 1934; the Income Tax Act of 1961; the Estate Duty Act of 1953; Wealth Tax Act of 1957; Gift Tax Act of 1958; Public Debt Act of 1942; and the Indian Stamp Act of 1899.

Let us acquaint ourselves with some of the major provisions of Securities Contracts (Regulation) Act 1956 as amended upto date which is the main law regulating the secondary market in India.

Activity I

a) Fill in the blanks :

   i) The first legislative measure providing for regulation of stock exchanges in India was enacted in the year .....

   ii) Atlay committee was constituted in the year.....

   iii) Securities Contracts (Regulation) Bill was introduced in Parliament in the year.....

   iv) Capital issues (Control) Act was enacted in the year.....

b) List out five Acts which regulate securities market in India

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5.3 REGULATION OF SECONDARY MARKET

As noted above Securities Contracts (Regulation) Act 1956 and the rules made there under, namely the Securities Contracts (Regulation) Rules, 1957 are the main laws governing stock exchanges in India.

The preamble to the Securities Regulation Act states that it is "an act to prevent undesirable transactions in securities by regulating the business of dealing therein, by prohibiting options and by providing certain other matters connected therewith". This Act provides for the direct and indirect control of virtually all aspects of securities trading and the running of the stock exchanges. The Act makes every transaction in securities in any notified State or area illegal and punishable by fine and/or imprisonment if it is not entered into between or with members of a recognised stock exchange in the state or area. It also makes every such securities contracts void. Appendix 5.1 gives some definitions under the Act which would be useful to know.

The Act thus prohibits the existence of other than recognised stock exchanges and provides the mechanism of recognising stock exchanges. Appendix 5.2 gives the list of recognised stock exchanges as of 1992. Application to the Central Government for recognition must include a copy of the rules relating in general to the constitution of the stock exchange and in particular to, among other things, the admission into the stock exchange of various classes of members, the exclusion, suspension, expulsion and readmission of members, and the procedure for registration of partnership as members. Appendix 5.3 gives Form A required to be submitted for recognition or renewal of recognition of a stock exchange. In determining whether to grant recognition, the

Central Government may make whatever inquiry is necessary and impose in the rules and bye-laws of the stock exchanges whatever conditions are required to ensure "fair dealing" and to "protect investors". These conditions concern, inter alia, the qualifications for members, the manner in which contracts are to be entered into and enforced, the representation of not more than three Central Government nominees on the board of the stock exchange, and the maintenance of books and record by members and their audit by chartered accountants. The Central Government has the power to impose further conditions, other than in the rules and bye-laws, such as limiting the number of members. Finally, the Central Government has the power unilaterally to withdraw recognition.

After it recognises a stock exchange, the Central Government exerts regulatory control over it. Periodic reports are furnished to the Central Government. Certain books and records are maintained for a period of five years. The Central Government can make an inquiry itself, or through an appointed third party, into the affairs of a stock exchange or any of its members. All officers, directors, members, and others who have had dealings in the matter under inquiry are required to produce requested documents, statements, or information.

The Central Government retains control over the stock exchange's bye-laws and its rule amendments. A stock exchange, subject to previous Central Government approval, has the authority to make bye-laws for the regulation and control of contracts and the regulation of trading. Similarly, no rule amendments have effect until they are approved by the Central Government. The Central Government, furthermore, has the power to direct stock exchange to amend its rules; and if it fails to do so, the Government may directly amend the such rules. The Securities Regulation Act grants the Central Government power to supersede governing body of a recognized exchange. The suspension of business may be complete or subject to conditions. Suspensions may not last more than seven days initially but may be extended from time to time. The Central Government may supersede the governing body of any exchange by declaration an then appoint any person or group of persons to exercise and perform all the powers and duties of the governing body.

Other powers granted to the Central Government include the ability to stop further trading in specified securities for the purpose of preventing undesirable speculation, and the power to compel a public company "in the interest of the trade or in the public interest" to list its securities on any of the recognised exchanges.

The Securities Regulation Rules specifically provide for membership of an exchange. No person can be eligible for membership if he is less than twenty-one years of age, is not a citizen of India, has been adjudicated bankrupt, or has been convicted of an offence involving fraud or dishonesty. Under section 8, rules relating to membership of stock exchanges are given which are reproduced belows:

The rules relating to admission of members of a stock exchange seeking recognition shall inter alia provide that :

1) No person shall be eligible to be elected as member if:
   a) he is less than 21 years of age;
   b) he is not a citizen of India:

      Provided that the governing body may in suitable cases relax this condition with the prior approval of the Central Government;

   c) he has been adjudged bankrupt or a receiving order in bankruptcy has been made against him or he has been proved to be insolvent even though he has obtained his final discharge;
   d) he has compounded with his creditors unless he has paid 16 annas in the rupee;
   e) he has been convicted of an offence involving fraud or dishonesty;
   f) he is engaged as principal or employee in any business other than that of securities except as a broker or agent not involving any personal financial liability unless he undertakes on admission to sever his connection with such business:

      Provided that the Central Government may, for reasons sufficient in the opinion of the said government, permit a recognised stock exchange to suspend the enforcement of this clause for a specified period on condition that the applicant is not associated with or is a member of or subscriber to or shareholder or debenture holder in or connected through a partner or

employee with any other organisation, institution, association, company or corporation in India where forward business of any kind whether in goods or commodities or otherwise is carried on or is not engaged as a principal or employee in any such business;

g) ... Omitted by G.S.R. 1070 (E), dated 15-11-1988.

h) he has been at any time expelled or declared a defaulter by any other stock exchange;

i) he has been previously refused admission to membership unless a period of one year has elapsed since the date of such rejection.

2) No person eligible for admission as a member under sub-rule (1) shall be admitted as a member unless :

a) he has worked for not less than two years as a partner with, or an authorised assistant or authorised clerk or remisier or apprentice to a member; or

b) he agrees to work for a minimum period of two years as a partner or representative member with another member and to enter into bargains on the floor of the stock exchange and not in his own name but in the name of such other member; or

c) he succeeds to the established business of a deceased or retiring member who is his father, uncle, brother or any other person who is, in the opinion of the governing body, a close relative:

Provided that the rules of the stock exchange may authorise the governing body to waive compliance with any of the foregoing conditions if the person seeking admission is in respect of means, position, integrity, knowledge and experience of business in securities considered by the governing body to be otherwise qualified for membership.

3) No person who is a member at the time of application for recognition or subsequently admitted as a member shall continue as such if:

a) he ceases to be a citizen of India:

Provided that nothing herein shall affect those who are not citizens of India but who were members at the time of such application or were admitted subsequently under the provisions of clause (b) of sub-rule (1) of this rule, subject to their complying with all other requirements of this rule;

b) he is adjudged bankrupt or a receiving order in bankruptcy is made against him or he is proved to be insolvent;

c) he is convicted of an offence, fraud or dishonesty;

d) ...Omitted by G.S.R. 1070(E), dated 15-11-1988.

e) . . –do–

f) he engages either as principal or employee in any business other than that of securities except as a broker or agent not involving any personal financial liability, provided that -

i) the governing body may, for reasons, to be recorded in writing, permit a member to engage himself as principal or employee in any such business if the member in question ceased to carry on business on the stock exchange whether as an individual or as a partner in a firm;

ii) in the case of those members who were under the rules in force at the time of such application permitted to engage in any such business and were actually so engaged on the date of such application, a period of three years from the date of the grant of recognition shall be allowed for severing their connection with any such business;

iii) nothing herein shall affect members of a recognised stock exchange, permitted under the proviso to clause (f) of sub-rule (1) to suspend the enforcement of the aforesaid clause for so long as such suspension is effective, except that no member of such exchange shall engage in forward business of any kind whether in goods or commodities or otherwise and, if actually so engaged on the date of such application, he shall sever his connection with any such business within a period of

three years from the date of the grant of recognition.

4) A company as defined in the Companies Act, 1956 (1 of 1956), shall be eligible to be elected as a member of a stock exchange if:

i) such company is formed in compliance with the provisions of section 322 of the said Act;

ii) a majority of the directors of such co pany are shareholders of such company and also members of that stock exchange; and

iii) the directors of such company, who are members of that stock exchange have ultimate liability in such company:

Provided that where the Central Government makes a recommendation in this regard, the governing body of a stock exchange shall, in relaxation of the requirements of this clause, admit as member the following corporations, companies or institutions, namely:

a) the Industrial Finance Corporation, established under the Industrial Finance Corporation Act, 1948 (15 to 1948);

b) the Industrial Development Bank of India, established under the Industrial Development Bank Act, 1964 (18 to 1964);

c) the Life Insurance Corporation of India, established under the life Insurance Corporation Act, 1956 (31 of 1956);

d) the General Insurance Corporation of India constituted under the General Insurance Corporation (Nationalisation) Act, 1972 (57 of 1972);

e) the Unit Trust of India, established under the Unit Trust of India Act, 1963 (52 to 1963);

f) the Industrial Credit and Investment Corporation of India, a company registered under the Companies Act, 1956 (1 to 1956);

g) the subsidiaries of any of the corporations or companies specified in (a) to (f) and any subsidiary of the State Bank of India or any nationalised bank set up for providing merchant banking services, buying and selling securities and other similar activities.

The following is proposed to be substituted for matter given under (4) (i), (ii), (iii) above vide F. No. 1/81/SE/90, dated 2- 6-1992 with effect from date of publication in the Gazette:

A company as defined in the Companies Act, 1956 (1 to 1956), shall be eligible to be elected as a member of a Stock Exchange if :

i) such company is formed in compliance with the provisions of section 12 of the said Act;

ii) such company undertakes to comply with such financial requirements and norms as may be specified by the Securities and Exchange Board of India for the registration of such company under sub-section (1) of section 12 of the Securities and Exchange Board of India Act, 1992 (15 to 1992);

iii) majority of the directors of such company are shareholders of the company and not less than 40 percent of the paid-up equity capital of the company is held by them;

iv) the directors of the company are not disqualified for being members of a stock exchange under clause (1) [except sub-clause (f) thereof] or clause (3) [except sub-clause (f) thereof];

v) not less than two directors of the company are persons who possess a minimum two year's experience -

in dealing in securities; or

portfolio managers; or

as investment consultants.

5) Where any member of a stock exchange is a firm , the provision of sub-rule (1), (3) and (4), shall, so far as they can, apply to the admission or continuation of any

partner in such firm.

The Securities Regulations Rules further prescribe the requirements with respect to listing securities on a recognised exchange. These requirements are quite stringent. Besides requiring copies of memoranda and articles of association, prospectuses, offering literature, etc., the rules compel such detailed production to the exchange that every letter or other document which has been part of or referred to in any securities in the last five years must be supplied in certified copy form.

The Rules require a company, as a condition precedent to listing its securities, to forward to the stock exchange copies of statutory annual reports, annual returns and audited accounts as soon as issued, and to notify the exchange of a number of important events including a change in the general character or nature of the company's business, or any alteration of capital.

A stock exchange has the power to suspend or permanently revoke listing privilege based on breach or non-compliance with any of the conditions of admission, or any other reason to be recorded in writing. A company may appeal against such action to the Central Government.

On the whole the Indian experience has been an amalgam of the U.K. practice of self-regulation by the securities industry and the U.S. model of legislative regulation. But neither was the industry prepared or enthusiastic about self-regulation, nor was the Central Government fully equipped for effective implementation of whatever controls were available. Thus desired results were seldom achieved. There was only an appearance of government control. The office of the Controller of Capital Issues lacked the necessary staff to do very much with them except monitoring self-regulation by the various exchanges and issuing directives occasionally. This was largely ineffective in controlling reckless overtrading, and manipulative and similar trading practices.

The central government had devoted very little manpower to implementation of the Act. The office of the Controller of Capital Issues (CCI) within the Ministry of Finance had been delegated the authority to administer and enforce the Securities Contracts (Regulation) Act. Aside from clerical help, it had only five employees, namely, a joint director, two deputy directors, an assistant director, and a section officer. In practice , the actual administration of the provision of the Securities Contracts (Regulation) Act and of its Rules was thus left to the exchanges themselves.

Activity 2

i) What is a recognised stock exchnage ?

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ii) How many recognised stock exchanges are there as of 1993 in India?

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iii) Which form is required to be submitted for recognition of a stock exchange ?

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5.4 REGULATION OF PRIMARY MARKET

Capital Issues (Control) Act, 1947 has been the main law regulating the primary market in India till 1992 when it was repealed. Under the Act, issue and pricing of the new issues was regulated. The CCI formula for pricing the new issues was based on fair value, which in turn was based on the following values : Net Asset Value, Price Earnings Capitalisation Value and Market value. Broadly, the procedure followed to establish the Fair Value involved the following steps:

Step 1

Calculation of the 'Net Asset Value' (NAV) as at the Latest Audited Balance Sheet date

The NAV was defined as:

$$\frac{\text{Net worth} + \text{Fresh capital issue}}{\text{Number of shares outstanding including the fresh capital issue}}$$

In arriving at the net worth figure to be used in the above ratio, the following points were kept in view:

Intangible assets are not considered.

Revaluation of fixed assets will ordinarily not be taken into account.

A reserve not created out of genuine profits or out of cash will not be considered.

Proper provision is made for gratuity and other terminal benefits to the employees.

Adequate provision is made for liabilities like arrears of preference dividends, unclaimed dividends, and bad debts.

The debit balance in profit and loss and the arrears of depreciation are deducted.

Contingent liabilities which are likely to impair the net worth are properly considered.

Deprecation is calculated as per a consistent basis.

Step 2

Determination of the 'Profit Earnings Capitalisation Value' (PECV)

The PECV was set equal to :

$$\frac{\left[\text{Average profit after tax} + \frac{\text{Fresh capital issue}}{\text{Existing net worth}} \times \text{Existing profit after tax}\right] \text{Capitalisation rate}}{\text{Number of shares outstanding including the fresh capital issue}}$$

In arriving at the average profit after tax in the above expression the following considerations were taken into account:

Provisions for taxation should be made at the current statutory rate under the Income Tax Act.

The profits shown in the audited accounts are adjusted so as to exclude non-recurring miscellaneous income of an abnormal nature and write back of provisions.

Normally the averaging of profits is done for the latest three years. However, in industries subject to cyclical ups and downs, it is advisable to consider the profits of the latest five years.

If profit variation in the last three years is regarded as normal, a simple arithmetic average is calculated, in which the latest year is assigned a weightage of three, the middle year a weightage of two, and the first year a weightage of one. If profit shows a tendency to decline then the profit of the last year only is considered.

The capitalisation rate in the above expression is chosen as follows:

1. Fifteen per cent in the case of manufacturing companies,
2. Twenty per cent in the case of trading companies, and
3. Seventeen and half per cent in the case of 'Intermediate' companies.

Step 3

Calculation of the 'Market Value' (MV)

The MV which serves as a guiding factor for valuation where shares being valued are listed on the stock exchange(s) was calculated as the average of:

the high and low of the preceeding two years, and

the high and low of each month in the preceeding 12 months (in this calculation, appropriate adjustments are made for bonus issues and dividend payments).

Step 4

Determination of the 'Fair Value' (FV)

For determining the FV, the starting point was the average of the NAV and PECV based on a 15 percent capitalisation rate. If this average was less than the MV by about 20 percent only, it is regarded as the FV. If, however, the average of the NAV and PECV was less than the MV by a margin of over 20 percent, the PECV might be reworked by lowering the capitalisation rate. (In no case, however, can it be lower than eight percent.)

The FV was then determined as the average of the NAV and PECV (based on a lower capitalisation rate.) For reasons of prudence, a further deduction equal to one year's dividend per share may be made. It may be noted that the procedure employed for determining the FV was not mechanistic and fully structured. It involved some exercise of discretion and judgment based on an assessment of the facts and circumstances of each case.

Since 1992 the regulation of the new issue market has come under the Securities and Exchange Board of India. In exercise of its power, under the SEBI Act, the board has issued Guidelines on Capital Issues or what are also known as Guidelines for Disclousure and Investor Protection. These guidelines will be applied to all issues to be made after the promulgation of the ordinance No 9 of 1992 by which the Capital Issues (Control) Act has been repealed. All those holding CCI consents prior to the promulgation of the ordinance may proceed with the issues on the terms and conditions laid down therein, provided however that these guidelines are also followed where they are not inconsistent with the terms and conditions of the CCI consent. It may be added here that since CCI consents are valid for 12 months, this transitory arrangement will be valid for 12 months from the date of the promulgation of the Capital Issues (Repeal) Ordnance, 1992 i.e. May 29, 1992. Appendix 5.4 presents SEBI Guideline on Capital Issues. It may be pointed out that a number of clarifications have been issued in regard to these guideline by SEBI. In addition to these guidelines and relevant clarifications, SEBI has issued a number of other guidelines which regulate the primary market in India. These guidelines include :

a) Guidelines on issue of securities by development financial institutions

b) Guidelines for merchant bankers

c) Code of conduct for merchant bankers

d) Guidelines regarding purchase of non convertible part (Khokhas) of debentures from the subscribers

In addition to these and other guidelines and clarifications affecting the primary market, SEBI's consultative paper on free market pricing of capital issues, which was issued on March 3, 1992 has been a highly important contribution. An annexure to clarification II to the Guidelines for Disclosure and Investor Protection provided a simplified version of this paper in a tabular form which is reproduced below:

Class of Companies	Pricing Public Issue	Promoters Contribution	Lock-in period
1	2	3	4
Section A —			
(i) New Companies established by individual promoters and entrepreneurs	At par	25% or 20% of the total issued capital, as the case may be, with a minimum subscription of Rs. 50, 000 by each of the friends, relatives and associates	5 years from the date of allotment in pub ic issue or the date of commencement of commercial production (in case of a manufacturing company), * whichever is later

				Regulation
(ii) New companies set up by existing companies with a 5 year track record of consistent profitability	At premium	0% of total issued capital	5 Years from date of allotment in public issue or the date of commencement of commercial production (in case of a manufacturing company), * which ever is later.	
Section B				
(i) Existing private/closely-held and other unlisted companies without three year track record of consistent profitability	At par	25% or 20% of the total issued capital, as the case may be, with a minimum subscription of Rs. 1 lakh from each of the relatives, friends and associates	(a) Subject to clause (b) below, 5 years from the date of allotment in the public issue or from the date of commencement of commercial production (in case of a manufacturing company)* which ever is later. (b) where minimum specified percentage includes shareholdings held prior to the public issue, the lock-in period referred to in clause (a) shall in respect of such prior shareholdings stand reduced by the period of such holding except that the aggregate of minimum, percentage holdings shall remain locked in for a minimum period of 2 years from the date of allotment in the public issue.	
ii) Existing private/closely-held and other unlisted companies with three years track record of consistent profitability	At premium	(same as (i) above)	(same as (i) above)	
iii) A company which does not have three-year track record but had been promoted by existing companies with a five-year track record of consistent profitability	At premium	50% of the total issued capital	(same as (i) above)	
(iv) Existing private/closely-held and other unlisted companies without three year track record of consistent profitability seeking disinvestment by offer to public without issuing fresh capital.	At par	Minimum stake of 25% of the total issued capital to be maintained after the public offer.	5 years from the date of allotment in public offer.	
(v) Existing private/closely-held and other unlisted companies with three year track record of consistent profitability seeking disinvestment.	At premium	(same as (iv) above)	(same as (iv) above)	

Section C

(i) Existing listed companies making public issue	At par or premium	(a) 25% or 20% of the proposed issue, as the case may be, with a minimum subscription of Rs. 1 lakh from each of the relatives, friends and associates;	(a) 5 years from the date of allotment in the public issue or from the date of commencement of commercial production in case of a manufacturing company), which ever is later.
		OR (b) 25% or 20% of the total issued capital, (expanded capital), as the case may be, with a minimum subscription of Rs. 1 lakh from each of the relatives, friends and associates.	OR (b) the lock-in period shall, subject to clause (c) below, apply to the aggregate of the contribution made in the public issue and so much of the prior share-holdings as is necessary to constitute 25% of the total issued capital. (c) the lock-in period in respect of the contributions made in the public issue shall by 5 years from the date of allotment in such issue or from the date of commencement of commercial production (in case of a manufacturing company)*, whichever is later and in respect of the holdings prior to the date of the public issue shall be 5 years as reduced by the period of such prior holding except that such prior holdings shall remain locked in at least for a minimum period of 2 years from the date of the allotment in the public issue.

*Note - "Date of commencement of commercial production" means the last date of the month in which commercial production in a manufacturing company is expected to commence as declared in the offer documents.

Activity 3

i) What is 'khokha' ?

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ii) SEBI's Guidelines on capital issues are also known as (Pl. fill in)

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iii) What is the lock-in period of promoters contribution in case of new companies established by individual promoters and entrepreneur?

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iv) What is the promoter contribution required in case of public issue by a company which does not have three-year track record but had been promoted by existing companies with a five year track record of consistent profitability?

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5.5 REGULATION OF OTCEI

The functioning and operations of the OTCEI is subject to the provisions of the Securities Contracts (Regulation) Act, 1956, the Companies Act, 1956 and other relevant laws which are applicable to Indian stock exchanges. OTC operations are supervised by SEBI and Government of India.

The criteria for admission of members, licensed dealers and Companies on the OTCEI is prescribed as follows:

Criteria for admission of members

The members would be Public Financial Institutions, Scheduled Banks, Mutual Funds, Banking Subsidiaries, SEBI-registered Merchant Banks, Venture Capital Funds and Venture Capital Companies, Non-banking Financial companies having a minimum financial net worth as specified by OTCEI. The applicant should satisfy the eligibility requirements of the Securities Contracts (Regulation) Rules, 1957.

The members should possess necessary skills, resources and capabilities to appraise project/company, establish its viability, analyse company's financial worth, evaluate company's management and determine market for company's products.

The member should have the necessary status and standing to be able to carry the confidence of other members and licensed dealers while recommending scrip to the market for investment.

The member should have sufficient financial reserves to 'sponsor' and trade in the scrip.

The member should be authorised by SEBI for carrying out merchant banking activities.

The member should have adequate organisational infrastructure to establish and manage the OTC counter. (That is office space,computers, PTI scan, telephones, telex, fax and any other data communication equipment specified).

The net worth of the member should be minimum Rs. 2.50 crores.

Criteria for admission of licensed dealers

The licensed dealers would be a corporate body, partnership firms and individuals having minimum tangible net worth of an amount to be decided by the OTCEI governing board from time to time. The corporate bodies should satisfy the eligibility requirements of the Securities Contracts (Regulation) Rules, 1957.

The licensed dealers should have minimum tangible liquid net worth which would be sufficient to carry on investment, trading and market making in the scrips listed on the OTC Exchange.

The licensed dealers should have adequate organisational infrastructure such as office space, computers, PTI scan, telephones (minimum two), telex, fax and other data communications equipment specified.

Licensed dealers should at least be graduates. Additional weightage will be given for additional related professional qualifications.

Licensed dealers should have adequate knowledge of trading , stock valuation, share transfer rules and related laws.

Apart from the above, the licensed dealers will be required to comply with the following terms and conditions:

a) If the applicant is a corporate body, the promoters should hold at least 40% of the equity capital.

b) In case of change in dealership from individual/partnership firm to corporate body - original individual dealer/partners of the partnership firm should hold at least 40% of the capital of the new corporate body.

c) Partnership firms and corporate applicants must nominate one of the authorised signatories whose qualifications will be considered for eligibility and the same person will be required to take a written test and appear for an interview.

d) Dealership is not transferable.

e) If there is a change in shareholding of a body corporate who is a dealer, resulting in change in ownership/management, OTC Exchange of India reserves the right to review the status of dealership of that dealer.

Criteria for admission (for listing) of companies

The company should be sponsored by a member of the OTCEI.

The sponsor should certify to OTCEI that it has appraised the company and its project and has found the scrips proposed to be listed on OTC Exchange to be investment-worthy.

The sponsor to certify that all the scrips proposed to be offered for trading on OTC Exchange have already been subscribed to by members and licensed dealers of OTCEI.

The company to agree to abide by all statutory and OTCEI's provisions for listing.

The company agrees to enter into an agreement with the OTCEI in a prescribed format.

The company will comply with the provisions laid down in the Notification to be issued by the Government of India for listing on the OTC Exchange of India.

The issues of securities by companies and their listing on the OTCEI will be governed by the following guidelines :

i) the minimum issued equity share of a company for eligibility for listing on the OTCEI will be Rs. 30 lakh, subject to a minimum public offer of equity shares worth Rs. 20 lakhs in face value;

ii) for companies with an issued equity capital of more than Rs. 30 lakhs but less than Rs 300 lakhs, the minimum public offer should be 40% of the issued capital or Rs. 20 lakh worth of shares in face value, whichever is higher, in relaxation of rule 19(2)(b) of the Securities Contracts (Regulation) Rules, 1957;

iii) companies with an issued equity capital of more than Rs. 300 lakhs seeking listing on the OTCEI will have to comply with the listing requirements and guidelines as are applicable to such companies for enlistment on other recognised stock exchanges; for venture capital companies 20% of capital should be minimum issued to the public for listing in OTCEI;

iv) companies covered under the MRTP Act/FERA may be listed on the OTCEI only if they satisfy the guideline for listing on other recognised stock exchanges, such as minimum issued equity capital of Rs. 300 lakhs or such other limit as may be prescribed from time to time;

v) a company with an issued equity share capital of more than Rs. 25 crore will not be eligible for listing on the OTCEI;

vi) companies which are engaged in investments, leasing, finance, hire-purchase, amusement parks, etc. shall not be eligible for listing on the OTCEI;

vii) a company which is listed on any other recognised stock exchange in India would not simultaneously be eligible for listing on the OTCEI;

viii) the minimum number of centers for collection of application forms in respect of issue of securities by companies under the OTCEI shall be four, one each from the Northern, Western, Southern and Eastern regions of the country. However, OTCEI shall have power to increase the number of centers depending upon the size and nature of the issue of securities made by a company;

Securities and Exchange Board of India (SEBI) vide it's letter dated July 16, 1992 has inter alia clarified as regards issue of shares through OTC Exchange of India as follows:

a) Where a direct public issue is made through OTC without the sponsor taking any shares the normal guidelines for disclosures and investor protection shall apply.

b) Where the shares of a company have been taken by the sponsor, such shares may be offered to the public at a later date at such price as the sponsor may deem fit in accordance with the regulations of OTC subject to the following conditions:

i) the promoters after such offer retain at least 25% of the total issued capital with lock-in-period of five years from the date of the sponsor taking up the shares;

ii) the sponsor agrees to act as market maker for the shares at least for a period of three years on a compulsory basis and also finds an additional market maker for such compulsory market making; and

iii) the sponsor compulsorily gives two way quotes based on minimum or maximum trading prices as may be stipulated by OTC in respect of the scrip.

5.6 SECURITIES AND EXCHANGE BOARD OF INDIA (SEBI),

U.K. and U.S.A. had long back created separate boards for the regulation of the securities market. U.K. has the Securities and Investment Board (SIB) and U.S. has the Securities and Exchange Commission (SEC). The Indian Government's intention to set up a separate Board for the regulation and orderly functioning of the capital market was first declared in the Budget Speech by Shri Rajiv Gandhi, the then Prime Minister and Minister of Finance, while presenting the Budget for the year 1987-88. He stated:

"The capital markets in India have shown tremendous growth in the last few years. Approvals for capital issues have exceeded Rs. 5,000 crores in 1986-87. They were only about Rs. 500 crores in 1980-81. For a healthy growth of capital markets, investors must be fully protected. Trading malpractices must be prevented. Government have decided to set up a separate board for the regulation and orderly functioning of Stock Exchange and the securities industry."

5.6.1 Origin

By a Notification issued on 12th April, 1988, Securities and Exchange Board of India (SEBI), was constituted as an interim administrative body to function under the over all administrative control of the Ministry of Finance of the Central Government.

In July 1988, the SEBI, constituted as aforesaid, published an approach paper on comprehensive legislation for securities market.

In the Budget Speech for the year 1990-91, the then Finance Minister stated:

> "The previous Government had announced the formation of the Securities and Exchange Board of India (SEBI) in 1988. Three years have passed and the legislation for giving statutory authority to SEBI has not been introduced. We will ensure that this is done in this budget session."

In the Budget Speech for 1991-92, the Finance Minister said:

> "While presenting the budget for 1987-88, our former Prime Minister the late Shri Rajiv Gandhi had assured this House that for a healthy growth of capital markets, for protecting the rights of investors and for preventing trading malpractices the Government would set up a separate Board for the regulation and orderly functioning of the stock exchanges and the securities industry. Although the Board was set up, legislation to give the Board adequate powers was unfortunately not enacted. This shall now be done forthwith and full statutory powers will be given to the Securities and Exchange Board of India for administrating the relevant provisions of the Securities contracts (Regulation) Act and the Companies Act. Transferring these powers from the Controller of Capital Issues and the Government to an independent body would enable it to effectively regulate, promote and monitor the working of the stock exchanges in the country. A comprehensive package of reforms relating to trading on the stock exchange, including a system of national clearing and settlement and setting up of a central depository, is also under active consideration."

Finally, in the budget Speech for 1992-93, the Finance Minister said:

> "Financial sector reform also includes reform of the capital markets, which will increasingly play a vital role in mobilising and allocating resources from the public. Several initiatives announced in my Budget speech last year have since been implemented. The Securities and Exchange Board of India (SEBI), has now been established on a statutory basis. As we gain experience, additional powers will be given to SEBI to strengthen its capability."

The SEBI was given a statutory status on 30th January, 1992 by an Ordinance to provide for the establishment of SEBI. A Bill to replace the Ordinance was introduced in Parliament on 3rd March, 1992 and was passed by both houses of Parliament on 1st April, 1992. The Bill became an Act on 4th April, 1992 the date on which it received the President's assent. However, as provided for in section 1(3), this Act is to be deemed to have come into force on 30th January, 1992, i.e. the date on which the SEBI Ordinance was promulgated.

5.6.2 Functions

Under Section 11 of the SEBI Act it is provided that subject to the provisions of this Act, it shall be the duty of the Board to protect the interests of investors in securities and to promote the development of and to regulate the securities market, by such measures as it thinks fit. It is further provided that without prejudice to the generality of the foregoing provisions, the measures referred to therein may provide for :

a) regulating the business in stock exchanges and any other securities markets;

b) registering and regulating the working of stock brokers, sub-brokers, share transfer agents, bankers to an issue, trustees of trust deeds, registrars to an issue, merchant bankers, underwriters, portfolio managers, investment advisers and such other intermediaries who may be associated with securities markets in any manner ;

c) registering and regulating the working of collective investment schemes, including mutual funds;

d) promoting and regulating self-regulatory organisations;

e) prohibiting fraudulent and unfair trade practice relating to securities markets;

f) promoting investors education and training of intermediaries of securities markets;

g) prohibiting insider trading in securities;

h) regulating substantial acquisition of shares and take-over of companies;

i) calling for information from, undertaking inspection, conducting inquiries and audit of the stock exchanges and intermediaries and self-regulatory organisations in the securities market;

j) performing such functions and exercising such powers under the provisions of the Capital Issue (Control) Act, 1947 (29 of 1947) and the Securities Contracts (Regulation) Act, 1956 (42 of 1956), as may be delegated to it by the Central Government;

k) levying fees or other charges for carrying out the purpose of this section;

l) conducting research for the above purpose;

m) performing such other functions as may be prescribed.

In sum and substance, Securities and Exchange Board of India has been constituted to promote orderly and healthy development of the securities market and to provide adequate investor protection. It aims to remove the unhealthy practices prevalent in the Indian capital market and create an environment to facilitate mobilisation of resources through the securities market. Thus the board plays a dual role by adopting regulatory functions as well as playing an important developmental role. Its functions include :-

1) to deal with all matters relating to development and regulations of the securities market.

2) to administer various legislation affecting securities market.

3) regulation of the market intermediaries viz. stock exchanges, stock brokers, merchant bankers, mutual funds etc.

4) to provide adequate investors protection.

5.6.3 Organisation

The management of SEBI vests in the board which consists of the following members, namely :-

a) a chairman;

b) two members from amongst the officials of the Ministeries of the Central Government dealing with Finance and Law;

c) one member from amongst the officials of the Reserve Bank of India

d) two other members, to be appointed by the Central Government.

The general superintendence, direction and management of the affairs of the SEBI vests in a Board of members, which may exercise all powers and do all acts and things which may be exercised or done by the Board. Save as otherwise determined by regulations, the chairman shall also have powers of general superintendence and direction of the affairs of the Board and may also exercise all powers and do all acts and things which may be exercised or done by the board.

The chairman and members referred to at (a) and (d) above shall be appointed by the Central Government and the members referred to at (b) and (c) above shall be nominated by the Central Government and the Reserve Bank of India respectively.

For day to day functions the activities of SEBI have been divided into five operational departments viz.

Primary markets-policy, intermediaries, investor grievances and guidance, etc.

Issue Management & Intermediary department.

Secondary market-policy, operations and exchange administration, new investment products and insider trading etc.

Secondary market-exchange administration, inspection and non- member intermediaries, etc.

Institutional investment-Mutual funds and FIIs, mergers and acquisitions, research & publications and internal regulation.

Each department is headed by an Executive Director. Besides these five departments, there are legal and investigation departments.

5.6.4 Activities

The first major activity undertaken by SEBI was the preparation of an Approach paper on comprehensive legislation for Securities markets. Since inception, SEBI has issued a number of guidelines, rules, draft regulations, consultative papers etc. in order to regulate and develop the securities market and protect investors interest. Some important guidelines etc. issued by SEBI include:

a) Rules regarding registration of intermediaries such as share transfer agents, bankers to the issue, debenture trustees to the trust deeds, registrars to an issue, underwriters, portfolio managers and investment advisors, stock brokers and sub-brokers associated with the securities market.

b) Guidelines for merchant bankers stating authorised activities of merchant bankers, the authorisation criteria and the terms of authorisation.

c) Code of conduct for merchant bankers, the violation, intentional or otherwise, of which will make the merchant banker guilty of misconduct or unprofessional conduct.

d) Categorisation of merchant bankers, under which merchant bankers have been categorised into three categories. Category I merchant bankers are authorised to act in the capacity of lead manager/co-manager/advisor or consultant to an issue, portfolio manager and underwriter to an issue as mandatorily required. Category II merchant bankers are authorised to act in the capacity of co-manager/advisor or consultant to an issue or portfolio manager. Category III merchant bankers are authorised to act only in the capacity of advisor or consultant to an issue.

It is also prescribed that Category I merchant bankers must have a minimum net worth of Rs. 1 crore, the Category II merchant banker a minimum networth of Rs. 50 lakh, and the Category III merchant banker a minimum net worth of Rs. 20 lakh. Initial authorisation fee for categories I, II and III will be Rs. 5 lakh, 3 lakh and Rs. 1 lakh respectively.

e) Circular regarding monitoring of merchant bankers whereunder penalty points for non-compliance or defaults by merchant bankers would be assigned which in turn would form the basis for suspension/cancellation of authorisation of merchant bankers.

f) Guidelines on portfolio management services which cover such aspects as portfolio management activities, client relationship, investment tenure, fees to be paid to the portfolio manager, client's money account, investment of client fund, periodical reports to clients and administrative powers of the SEBI in this regard.

g) Guidelines for lead managers for *inter se* allocation of responsibilities which require that wherever there are more than one lead manager to the issue *inter se* allocation of the pre-issue and post-issue activities/sub-activities will be properly made and information in this regard sent to SEBI.

Regarding number of lead managers in an issue, SEBI has prescribed that for a total issue aggregating less than Rs. 50 crore the number of lead managers will not exceed two; for a total issue of Rs. 50 crore and above but less than Rs. 100 crore the number of lead managers may go upto a maximum of three and for issues aggregating Rs. 100 crore and above but less than Rs. 200 crores the number may go upto a maximum of four; in case the total amount of the issue aggregating Rs. 200 crore and above but upto Rs. 400 crore, the number of lead managers may go upto a maximum of five. For issues aggregating above Rs. 400 crore, the number of lead managers in excess of five will be prescribed by SEBI on the merits of each case.

h) Guidelines regarding purchase of non-convertible part of debentures (khokhas) from the subscribers

i) Regulation for registrars and share transfer agents

j) Regulation on insider trading

k) Guidelines for mutual funds and asset management companies

l) Draft regulation for substantial acquisition of shares in listed companies

m) Consultative paper on free market pricing of capital issue

n) Guidelines on capital issues/Guidelines for Disclosure and Investor Protection along with six clarifications as of March, 1993.

o) Guidelines on issue of securities by Development Financial Institutions

p) Formation of two advisory committees; one on primary market and the other on secondary market comprising members from profession, academic and investing public.

Business India (March 1-14, 1993) noted what SEBI has done so far and what it still needs to do as follows :

WHAT IT HAS DONE SO FAR	WHAT IT STILL NEEDS TO DO
Registration of brokers	Appointment of nominees on exchange boards
Inspection of stock exchanges	Code of conduct for merchant banks
Investor protection rules	Penalising erring companies
Protection for debenture holders	Bringing UTI under mutual fund rules
Stopping misuse of promoters' quota	Rules for new instruments
Better disclosure norms	Corporate membership in stock exchanges
SRO status for merchant bankers	Postal ballot for company AGMs
Free pricing for public issues	Code for takeovers
Insider trading norms	Norms for custodial, depository services
Norms for portfolio managers	Comprehensive legislation
Capital adequacy norms for brokers	Penal powers over companies
Ban on kerb trading	Uniform accounting standards
Tighter controls over mutual funds	Capital market development fund
Comprehensive norms for underwriters	Investor protection funds
Entry rules for foreign institutional investors	
Permission for private mutual funds	
Guidelines for asset management firms	
Rules for securities of development financial firms	

Rules for lead managers

Rules for bankers to the issue

Norms for issue of stockinvests

Guidelines for bonus share issues

Rules for underwriters

Advisory panels for primary, secondary markets

Investor education campaign

In one word, SEBI in its short span of existence, has performed excellently as far as its developmental and educational role is concerned. How far it would be able to carry out its enforcement role is yet to be seen.

5.7 SELF - REGULATION

In the foregone sections, we have discussed the regulatory framework applicable to primary and secondary markets in India. The focus of discussion has been on what may be called legislative regulation of securities market. In addition to legislative regulation, self-regulation is equally important. Indeed in developed securities markets like U.K. self-regulation plays an important role. There exist a number of self-regulatory oraganisations (SROs) which really complement legislative regulation.

The spirit of self-regulation had been prevalent in the Indian securities market as well. If one looks at the powers given to recognised stock exchanges in India to make and enforce bye-laws under the Securities Contracts (Regulation) Act, 1956, one tends to conclude that Indian stock exchanges have been envisaged as self-regulatory organisations. Just to elaborate the point let us look at section 9 of the Securities Contracts (Regulation) Act, 1956 which states as follows :

Any recognised stock exchange may, subject to the previous approval of the Central Government (till 1991) and Securities and Exchange Board of India (since 1992) make bye-laws for the regulation and control of contracts.

In particular, without prejudice to the generality of the foregoing power, such bye-laws may provide for :

a) the opening and closing of markets and the regulation of the hours of trade;

b) a clearing house for the periodical settlement of contracts and difference thereunder, the delivery of the payment for securities, the passing on of delivery orders and the regulation and maintenance of such a clearing house;

c) the submission to the Central Government (till 1991) and Securities and Exchange Board of India (since 1992) by the clearing house as soon as may be after each periodical settlement of all or any of the following particulars as the Central Government (till 1991) and Securities and Exchange Board of India (since 1992) may, from time to time, require, namely :

   i) the total number of each category of security carried over from one settlement period to another;

   ii) the total number of each category of security contracts which have been squared up during the course of each settlement period;

   iii) the total number of each category of security actually delivered at each clearing;

d) the publication by the clearing house of all or any of the particulars submitted to the Central Government (till 1991) and Securities and Exchange Board of India (since 1992) under clause (c) subject to the directions, if any, issued by the Central Government (till 1991). Securities and Exchange Board of India (since 1992) in this behalf;

e) the regulation or prohibition of blank transfers;

f) the number and classes of contracts in respect of which settlements shall be made or difference paid through the clearing house;

g) the regulation, or prohibition of badlas or carry-over facilities;

h) the fixing, altering or postponing of days for settlements;

i) the determination and declaration of market rates, including the opening, closing, highest and lowest rates for securities;

j) the terms, conditions and incidents of contracts, including the prescription of margin requirements, if any, and conditions relating thereto, and the forms of contracts in writing;

k) the regulation of the entering into, making, performance, recession and termination, of contracts, including contracts between members or between a member and his constituent or between a member and a person who is not a member, and the consequences of default or insolvency on the part of a seller or buyer or intermediary, the consequences of a breach by a seller or buyer, and the responsibility of members who are not parties to such contracts;

l) the regulation of **taravani** business including the placing of limitations thereon;

m) the listing of securities on the stock exchange, the inclusion of any security for the purpose of dealings and the suspension or withdrawal of any such securities, and the suspension or prohibition of trading in any specified securities;

n) the method and procedure for the settlement of claims or disputes, including settlement by arbitration;

o) the levy and recovery of fees, fines and penalties;

p) the regulation of the course of business between parties to contracts in any capacity;

q) the fixing of a scale of brokerage and other charges;

r) the making, comparing, settling and closing of bargains;

s) the emergencies in trade which may arise, whether as a result of pool or syndicated operations or cornering or otherwise, and the exercise of powers in such emergencies including the power to fix maximum and minimum prices for securities;

t) the regulation of dealings by members for their own account;

u) the separation of the functions of jobbers and brokers;

v) the limitations on the volume of trade done by any individual member in exceptional circumstances;

w) the obligation of members to supply such information or explanation and to produce such documents relating to the business as the governing body may require.

3) The bye-laws made under this section may:

a) specify the bye-laws, the contravention of which shall make a contract entered into otherwise than in accordance with the bye- laws void under sub-section (1) of section (14);

(b) provide that the contravention of any of the bye-laws shall render the member concerned liable to one or more of the following: punishments, namely:

i) fine,

ii) expulsion from membership,

iii) suspension from membership for a specified period,

iv) any other penalty of a like nature not involving the payment of money.

4) Any bye-laws made under this section shall be subject to such conditions in regard to previous publications as may be prescribed, and, when approved by the Central Government (till 1991) and Securities and Exchange Board of India (since 1992) shall be published in the Gazette of India and also in the Official Gazette of the State in which the principal office of the recognised stock exchange is situated and shall have effect as from the date of its publication in the Gazette of India :

Provided that if the Central Government (till 1991) and Securities and Exchange Board of India (since 1992) is satisfied in any case that in the interest of the trade or in the public interest any bye-laws should be made immediately, it may, by ordering in

writing, specifying the reasons thereof, dispense with the condition of previous publication.

The foregone discussion clearly shows that Indian stock exchanges have been envisaged as self-regulatory bodies. Of late, merchant banks have also been envisaged as SROs. Unfortunately, the record of Indian stock exchanges as SROs has been dismal. Despite various malpractices prevalent in stock exchanges hardly any disciplinary action had been initiated against any member of the stock exchange. Recent inspection by SEBI of some of the stock exchanges have clearly brought out that their bye-laws relating to margins, etc. have been observed more in breach. Nevertheless it can't be denied that self-regulation is a necessary complement to legislative regulation of securities market in any country.

Activity 4

i) What do the following stand for :

SEBI

SIB

SEC

ii) How many clarification relatings to Guidelines on Capital Issues had been issued by SEBI by March 1993 ? Please give the number.

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.....

5.8 SUMMARY

In this Unit, we have discussed the legal frame or regulatory framework applicable to the securities market in India. We have observed that while there are a host of Acts which affect and regulate the securities market in India, the two most important were Capital issues (Control) Act, 1947 and Securities Contracts (Regulation) Act 1956. In 1992, the Capital Issues (Control) Act, 1947 has been repealed and the Securities and Exchange Board of India Act, 1992 passed, to create Securities and Exchange Board of India (SEBI) as a statutory body to act as a nodel regulatory body for the regulation and development of securities market in India and protect and promote investors interest. This unit has discussed the origin, functions. organisation and activities of SEBI at some length. After discussing the current status of regulation of the primary and secondary markets in India, this unit has also highlighted the role of self-regulation vis-a vis legislative regulation.

5.9 SELF-ASSESSMENT QUESTIONS/EXERCISES

1. Efective regulation is an essential condition for orderly growth of securities market.' Discuss.
2. Write a brief note on the history of gulation of securities market in India.
3. Between self-regulation and legislative regualtion, which is more relevant for India and why?
4. Write a brief note on the regulation of OTCEI.
5. Discuss the objectives and functions of Securities and Exchange Board of India.
6. 'SEBI is an independent board.' Do you agree ? Why ?
7. Who can be a member of a Stock Exchange in India ?
8. In a short span of its existence, SEBI has been able to fully meet its objectives. Critically comment.
9. What measures have been adopted in India to protect investors interest in the securities market ?

10. Write short notes on the following :
    a) Insider Trading
    b) Speculation in shares
    c) Stock Indices
    d) Controller of Capital Issues Formula of Pricing Issues
    e) Free pricing of shares

5.10 FURTHER READINGS

Chandratre K.R., et al (ed.) 1992 Bharat's Compendium on Capital issues SEBI and listing with Guidelines, Clarifications, circulars, Rules, etc., Bharat Publishing House, New Delhi.

Gupta L.C. 1992 Stock Exchange Trading in India: Agenda for Reform, Society for Capital Market Research and Development, New Delhi.

Prasanna Chandra 1992 Financial Management-Theory and Practice, Tata McGraw, New Delhi.

Saroja S.(ed) 1991, Emerging Trends in the Capital Market in India, Global Business press, near Delhi.

Apper lix 5.1 :

Definitions under the Securities Contracts (Regulation) Act, 1956 as amended upto date. In this Act, unless the context otherwise requires,

"**contract**" means a contract for or relating to the purchase or sale of securities;

"**Government security**" means a security created and issued, whether before or after the commencement of this Act, by the Central Government or a State Government for the purpose of raising public loan and having one of the forms specified in clause (2) of section 2 of the public Debt Act, 1944 (18 of 1944);

"**member**" means a member of a recognised stock exchange;

"**option in securities**" means a contract for the purchase or sale of a right to buy or sell, or right to buy and sell, securities in future, and includes a teji, a mandi, a galli, a put, a call or a put and call in securities;

"**prescribed**" means prescribed by rules made under this Act;

"**recognised stock exchange**" means a stock exchange which is for the time being recognised by the Central Government under section 4;

"**rules**", with reference to the rules relating in general to the constitution and management of a stock exchange, includes, in the case of a stock exchange which is an incorporated association, its memorandum and articles of association;

"**Securities**" include -

i) shares, scrips, stocks, bonds, debentures, debenture stock or other marketable securities of like nature in or any incorporated company or other body corporate;

ii) Government securities;

iia) such other instrument as may be declared by the Central Government to be securities; and

(iii) rights or interests in securities;

"**spot delivery contract**" means a contract which provides for the actual delivery of securities and the payment of price there of either on the same day as the date of the contract or on the next day, the actual period taken in the dispatch of the securities or the remittance of money there of through the post being excluded from the computation of the period aforesaid if the parties to the aforesaid contract do not reside in the same town or locality;

"**stock exchange**" means any body of individuals, whether incorporated or not, *constituted for the purpose of assisting, regulating or controlling the business of buying,* selling or dealing in securities.

Appendix 5.2
List of recognised stock exchanges

	Name	Address
1.	The Stock Exchange, Bombay	Phiroze Jeejeebhoy Towers, Dalal Street, Bombay - 400 001.
2.	The Ahmedabad Stock Exchange Assn. Ltd.	Manek Chowk, Ahmedabad - 380 001.
3.	Banglore Stock Exchange Ltd.	'M' Block, First floor, Unity Building, J.C. road, Banglore - 560 002.
4.	Bhubaneswar Stock Exchange Assn. Ltd.	217, Budharaja Building, Jharpada Cuttack Road, Bhubaneshwar - 751 006.
5.	The Calcutta Stock Exchange Ltd.	7, Lyons Range, Calcutta - 700 001.

6.	Cochin Stock Exchange Ltd.	Exchange House,38/1431, Kaloor Road Extn. Ernakulam, Cochin - 682 035. Kerala
7.	The Coimbatore Stock Exchange Ltd.	
8.	The Delhi Stock Exchange Assn. ltd.	3 & 4/4B, Asaf Ali Road, New Delhi - 110 002.
9.	The Gauhati Stock Exchange Ltd.	Saraf Building Annexe, AT Road, Gauhati - 781 001.
10.	The Hyderabad Stock Exchange Ltd.	Bank Street Hyderabad - 500 001.
11.	Jaipur stock Exchange Ltd.	Rajasthan Chamber Bhawan, M J Road Jaipur - 302 003.
12.	Kanara Stock Exchange Ltd.	4th floor, Rambhavan complex, Kodialbail, Mangalore - 575 003.
13.	The Ludhiana Stock Exchange Assn. Ltd.	Lajpat Rai Market, Clock Tower, Ludhiana - 141 008.
14.	Madras Stock Exchange Ltd.	Exchange Building Post Box No. 183 11, Second Line Beach, Madras - 600 001.
15.	Madhya Pradesh Stock exchange Ltd.	67, Bada Sarafa Indore - 452 002.
16.	The Magdha Stock Exchange Ltd.	Bihar industries Assn. Premises, Sinha Library Rd., Patna - 800 001.
17.	The Meerut Stock Exchange Ltd.	
18.	Pune Stock Exchange Ltd.	1177, Budhwar Peth, Bank of Maharashtra Bldg., 2nd Floor, Bajirao Road, Pune - 411 002.
19.	Saurashtra Kutch Stock Exchange Ltd.	4, Swaminarayan Gurukul Bldg, Dhebarbhai Road, Rajkot - 380 002.
20.	The Uttar Pradesh Stock Exchange Assn. Ltd.	Padam Towers, 14/113, Civil Lines, Kanpur 208 001.
21.	The Vadodara Stock Exchange Ltd.	Paradise Complex, Opp. Commercial College, Tilak Road, Sayajiganj, Baroda 390 005.

Appendix 5.3

FOI M A

Application for recognition/renewal of recognition of a stock exchange under section 3 of the Securities Contracts (Regulation) Act, 1956

To

_____

_____

Subject:- Application for recognition/renewal of recognition of a stock exchange under section 3 of the Securities Contracts (Regulation) Act, 1956.

Sir,

Pursuant to the Central government Notification No..... dated...../Certificate of recognition dated ..... We/I on behalf of ..... being a stock exchange as

(name and address of stock exchange)

1. defined in section 2 of the Securities Contracts (Regulation) Act, 1956 hereby apply for recognition/renewal of recognition for the purpose of the said Act in respect of contracts in securities.
2. four copies of the rules, memorandum and articles of association relating in general to the constitution and management of the stock exchange and four copies of the bye-laws for the regulation and control of contracts in securities are enclosed.
3. All the necessary information required in the Annexure to this Form is enclosed. Any additional information will be furnished as and when called for by the Central Government.
4. We/I on behalf of the said stock exchange hereby undertake to comply with the requirements of section 4 of the said Act and such other conditions and terms as may be contained in the Certificate of Recognition or be prescribed or imposed subsequently.
5. Treasury Receipt No ..... dated ..... . for Rs ..... is attached.

Yours faithfully
Signature of applicant

ANNEXURE TO FORM 'A'

PART I
General

1. Name of the applicant stock exchange.
2. Address
3. Date of establishment.
4. Is your exchange a joint stock company (state whether public or private) registered under the Indian Companies Act or an association for profit or otherwise? If it is organised on some other basis, this may be stated.
5. Give details of your capital structure and attach three copies of the audited balance sheets and profit and loss account of the Exchange for the preceeding three years.

PART II
Membership

6. State the number at the time of application, also specify how many are inactive.
7. State whether there is any provision, resolution or convention for limiting the number of members and whether in pursuance thereof you have fixed a ceiling on the number of members that you would take.
8. Do you insist on any minimum qualification and experience before enrolling a new member? If so, give details.

9. State the different classes of members, if any, the number thereof and the privilege enjoyed by each class. What is the procedure followed by your exchange for the admission of different classes of new members?
10. What are the rates of your annual subscription in respect of the different classes of members?
11. Do you collect any security deposit from your members? If so, give details and also state the manner in which deposits are utilised and the rate of interest allowed, if any.
12. Do you collect any admission or entrance fees from your members or from partners of firms who are members? if so, how much?
13. Do you insist on your members and partners of firm who are members divesting themselves of other activities either as principal or as employee?
14. Do your rules permit firms to become members? If so, is it incumbent on members to seek the approval of the governing body before admitting new partners? State the conditions, if any, laid down in your rules for the admission of such partners.
15. If your rules do not permit of firms being enrolled as members, do you permit individuals members to form a partnership? State the procedure followed for the recognition of such partnership.
16. Do you permit members to work in partnership with non-members? If so, how are such non-members subject to the control of the stock exchange?

PART III
Governing Body

17. What is the present strength of your governing body? Give details of the constitution, powers of management, election and tenure of office of members of the governing body, and the manner in which its business is transacted.
18. Are any trade or commercial interests represented on your governing body? If so, give details of the interests represented.
19. Do you associate shareholders of investors associations with the management of your exchange? If so, state the manner in which this is done.
20. Are there any government representative on your governing body? If so, furnish their names.
21. Do your rules provide for the direct election by members of any other bodies or committees, apart form the governing body? If so, give details of their constitution, tenure, powers and functions.
22. Do you have any provisions for the appointment of standing or ad hoc sub-committees of the growing body? If so, furnish details of the method of their appointment, terms of office, powers and functions.
23. Give the designations, powers and duties of principal office-bearers of your exchange. Are any of these office-bearers in the pay of the stock exchange? If so, give details as to the mode of their appointment, tenure of office and remuneration.

PART IV
Trading

24. Do you have a trading ring? If not, how do you carry on the business? Give details.
25. State the different kinds of contracts in use in your exchange e.g. spot, ready and forward. State the period of delivery and payment in each case.
26. Give details of business hours for each type of contract.
27. Give details of the scale of brokerage and other charges, if any,prescribed by your exchange.
28. Do you prescribe standard forms of contract for the use of your members? Attach three copies of each such contract form.
29. Do you classify your members into brokers and jobbers? If so, specify the bye-law under which this is done.
30. Do you have a system of registration of remisiers and/or authorised clerks? If so, give details as to their qualifications, obligations and rights, etc.

31. Do you have any regulations regarding dealings by members on their own account whether in the nature of Taravani (day-to-day) or otherwise?

32. Do you have any provisions for regulating the volume of business done by any individual member other than through a system of margins? If so, give details.

33. What provisions have you made for periodical settlement of contracts and differences thereunder, the delivery of, and payment for securities and the passing of delivery orders?

34. Do you have a clearing house for the settlement of contracts? If so, give details of its organisation and management.

35. If you have clearing house, what returns do the members of your exchange submit regarding the transactions cleared through such clearing house? Does the exchange ask for any regular returns in respect of transactions settled outside the clearing house? submit three copies of forms used in this connection.

36. How do you fix, alter or postpone the dates of settlement?

37. How do you determine and declare making-up prices?

38. Do you have any arrangements for making or recording of bargains?

39. Have you any arrangements for recording and publishing market rates including opening, closing, highest and lowest rates?

40. What provisions have you made for regulating - (a) the entering into contracts, their performance and rescission, including contracts: (i) between members, (ii) between a members and his constituent and (iii) between a member and a non-member; (b) the consequences of breach, default or insolvency on the part of members whether acting as buyers, sellers or intermediaries; and (c) 'havalas' and other matters relating to conduct of business of members in the exchange?

41. Do you prescribe margin requirements? If yes, give details.

42. Do you prescribe maximum and minimum prices for securities? If so, how and under what conditions.

43. Do you provide any safeguards for the prevention of 'bull- squeezes' and 'bear-raids' and for meeting emergencies in trade? Give details.

44. What are the measures adopted by you to regulate or prohibit advertising or issue of circulars by your members?

45. What are disciplinary powers with the governing body to enforce due compliance by members of the rules and bye-laws of the exchange and generally to ensure proper standard of business conduct?

46. Do you require members to supply such information or explanation and to produce such books relating to their business as your governing body may require?

47. Do you publish any statistics in regard to business done on the exchange including the transactions settled through the clearing house, if maintained? In particular, have you any machinery for computing the volume of transactions in the different kinds of contracts permitted on your exchange? Give details.

48. Do you have any bye-laws contravention of which makes a contract void?

P RT V
Miscellaneous

49. Do you have any machinery of arbitration of disputes between members and/or between members and their constituents? Give details.

50. What are the conditions subject to which securities are listed for dealings on your exchange?

51. What are your requirements for admitting securities to forward trading?

52. Do you have the right to prohibit, withdraw or suspend dealings in a listed security? If so, under what circumstances is this right exercised?

53. What provisions have you made for the levy and recovery of fees, fines and penalties?

Appendix 5.4

SEBI's guidelines on capital issues

Guidelines for disclosure and investors protection

These guidelines will be applied to all issues to be made after the promulgation of the Ordinance No. 9 of 1992 by which the Capital issues (Control) Act has been repealed. All those holding CCI consents prior to the promulgation of the Ordinance may proceed with the issue on the terms and conditions laid down therein, provided however that these guidelines are also followed where they are not inconsistent with the terms and conditions of the CCI consent.

A. First issue of companies

a) A new company will be defined as one which has not completed 12 months of commercial operations and its audited operative results are not available and where it is set up by entrepreneurs without a track record. They will be permitted to issue capital to public at par. Where a new company is being set up by existing companies with a five-year track record of consistent profitability, it will be free to price its issue provided the participation of the promoting company and the issue price is made applicable to all new investors uniformly, provided that the prospectus or offer documents shall contain justification for issue price.

A draft prospectus containing the disclosure will be vetted by Securities and Exchange Board of India (SEBI) before a public issue is made.

No private placement of the promoters share shall be made by solicitation of share contribution from unrelated investors through any kind of market intermediaries. The shares of the above companies can be listed on either the Over the Counter Exchange of India or any other stock exchange.

B. First issue by existing private/closely-held companies

i) Such companies with a three-year track record of consistent profitability shall be permitted to freely price the issue and list their securities on the stock exchanges.

ii) Not less than 20 percent of the equity should be offered.

iii) The draft prospectus will be vetted by SEBI to ensure adequacy of disclosures.

iv) The pricing would be determined by the issuer and lead managers to the issue and would be subject to specific disclosure requirements including:

a) disclosures of the net asset value of the company as per the last audited balance sheet.

b) justification for the issue price.

C Public issue by existing listed companies

a) These companies will be allowed to raise fresh capital by freely pricing their further issues.

b) Pricing - The issue price will be determined by the issuer in consultation with the lead manager(s) to the issue.

c) Disclosures - (i) The draft prospectus will be vetted by SEBI to ensure adequacy of disclosures.

ii) the prospectus or offer documents shall contain the net asset value of the company and a justification for the price of the issue.

iii) high and low price of the shares for the last two years.

D. Underwriting

a) Underwriting is mandatory for the full issue and minimum requirement of 90 per cent subscription is also mandatory for each issue of capital to the public. Number of underwriters would be decided by the issuers.

b) If the company does not receive 90 per cent of issued amount from public subscription plus accepted devolvement from underwriters, within 120 days from the date of opening of the issue, the company shall refund the amount of subscription. In case of disputed devolvement, the company should refund the subscription if the above conditions are not met.

c) The lead manager(s) must satisfy themselves about the net worth of the underwriters and outstanding commitments and disclose the same to SEBI.

d) The underwriting agreements may be filed with the stock exchanges.

E. Composite issues

Issue to the public by existing company can be priced differentially as compared to the issues to the rights shareholders.

F. Fully convertible debentures/partially convertible debentures/non-convertible debentures

a) issue of FCDs having conversion period more than 36 months will not be permissible, unless conversion is made optional with "put" and "call" options.

b) Compulsory credit rating will be required if conversion is made for FCDs after 18 months.

c) Premium amount on conversion, time of conversion, in stage, if any, shall be pre-determined and stated in the prospectus. The interest rates for above debentures will be freely determined by the issuer.

d) Issue of debentures with maturity of 18 months or less are exempt from the requirement of appointment of Debenture Trustee or creating a Debenture Redemption Reserves (DRR). In other cases, the names of the debentures trustees must be stated in the prospectus and the prospectus and DRR will be created in accordance with section (N 1). The trust deed shall be executed within six months of the closure of the issue.

e) Any conversion in part or whole of the debentures will be optional at the hands of the debenture holder, if the conversion takes place at or after 18 months from the date of allotment, but before 36 months.

f) In case of NCDs/PCDs credit rating is compulsory when maturity exceeds 18 months.

g) Premium amount at the time of conversion for the PCD shall be pre-determind and stated in the prospectus. Redemption amount, period of maturity, yield on redemption for the PCDs/NCDs shall be indicated in the prospectus.

h) The discount on the non-convertible portion of the PCD in case they are traded and procedure for their purchase on spot trading basis must be disclosed in the prospectus.

i) In case, the non-convertible portions of PCD/NCD are to be rolled over with or without change in the interest rate, a compulsory option should be given to those debenture holdres who want to withdraw and encash from the debenture programme. Roll over shall be done only in cases where debenture holders have sent their positive consent and not on the basis of their negative replies.

j) Before roll over of any NCD or non-convertible portion of the PCDs, fresh credit rating shall be obtained within a period of six months prior to the due date of redemption and communicated to debenture holders before roll over and fresh trust deed shall be made.

k) Letter of information regarding roll over shall be vetted by SEBI with regard to the credit rating, debenture holder resolution, option for conversion and such other items which SEBI may prescribe from time to time.

l) The disclosure relating to raising of debentures will contain amongst other things, the existing and future equity and long- term debt ratio, servicing behaviour on existing debentures, certificate from a financial institution or bankers about their no-objection for a second or **Pari Passu** charge being created in favour of the trustees to the proposed debenture issue.

m) SEBI may prescribe additional disclosure requirement from time to time, after due notice.

G. New financial instruments

Issuer of capital shall make adequate disclosures regarding the terms and conditions of redemption, security, conversion and any other relevant features of instruments such as Deep Discount Bonds, Debentures with Warrants, Secured Premium Notes, etc. so that

an investor can make reasonable determination of the risks, returns, safety and liquidity of the instruments. The disclosures shall be vetted by SEBI in this regard.

H. Reservation in issues

a) Unreserved offer of equity or instruments convertible into equity shall not be less than the minimum required for listing purposes in case of new issues made either by the new company or by the existing closely held/private companies going public.

b) In case of issues of capital by new companies, reservations for employees of new companies, promoting companies, associate companies, working directors on a suitable percentage is permissible.

c) Shareholders of group companies in case of existing companies can be offered capital on a preferential basis.

d) Shareholders of promoters' companies shall also be eligible for preferential allotment.

e) Reservations for NRIs shall be according to the schemes prescribed by the Reserve Bank of India from time to time.

I. Deployment of issue proceeds

a) In case of issues, where on application and on allotment an amount together exceeding Rs. 250 crores is raised, the issuer will voluntarily disclose and make arrangements for the use of proceeds of the issue as per disclosure to be monitored by one of the financial institutions. A copy of their monitoring report shall be filed with the SEBI by the instutions and by the company for purposes of record.

b) In issue of the above size and beyond, the amount to be called up on application/allotment and on various calls should not exceed 25 per cent of the total quantum of issue.

J. Minimum interval time between two issues

a) No bonus issue shall be made within 12 months of any public/rights issue.

b) The promoters shall bring in capital in full before public issue.

c) The capital issue should be made fully paid-up within 12 months from the date of issue.

K. Employee stock option scheme

This is a voluntary scheme on the part of the company to encourage employees to have higher participation in the company. Suitable percentage of reservation can be made by the issuer for the employees of his company or the promoters of the company as the need may arise. Reservation should not be more than five per cent. Equitable distribution of shares among the employees will contribute to the smooth working of the scheme. The issuer may like to have non-transferability at his discretion in new issues. In other cases, employees' participation upto five per cent (maximum 200 shares) shall be non-transferable for a period of three years.

L. Promoters' contribution and lock-in-period

a) Equity capital to be subscribed in any issue to the public by the promoters i.e. those described in the prospectus as promoters, directors, friends, relatives and associates should not be less than 25 per cent of the total issue of equity capital upto Rs. 100 crores and 20 per cent of the issues above Rs. 100 crores. In the case of FCDs, one third of the issue amount should be contributed by promoters, directors, friends, relatives and associates by way of equity before issue is made. In case of PCDs, one third of the convertible portion should be brought in as contribution of promoters, directors, friends and relatives and associates before issue is made. Minimum subscription by each of the friends/relatives and associates under promoters quota should not be less than Rs. 1 lakh.

b) This promoters' contribution shall not be diluted for a lock-in- period of five years from the date of commencement of the production or date of allotment whichever is later. Promoters must bring in their full subscription to issues in advance before public issue.

c) All firm allotments, preferential allotments to collaborators, shareholders of promoter companies whether corporate or individual shall not be transferable for three years from the date of commencement of production or date of allotment whichever is later.

d) The share certificate issued to promoters, friends, relatives and associates etc. should carry the inscription "not transferable" for a period three to five years as may be applicable from the date of commencement of production or date of allotment whichever is later.

M. Bonus shares

Subject to the provision under section J(a) above, the company shall, while issuing bonus shares, ensure the following:

a) the bonus issue is made out of free reserves built out of the genuine profits or share premium collected in cash only;

b) reserves created by revaluation of fixed assets are not capitalised;

c) the development rebate reserve or the investment allowance reserve is considered as free reserve for the purpose of calculation of residual reserves test only;

d) all contingent liabilities disclosed in the audited accounts which have bearing on the net profits, shall be taken into account in the calculation of the residual reserves;

e) the residual reserves after the proposed capitalisation shall be at least 40 per cent of the increased paid-up capital;

f) 30 percent of the average profits before tax of the company for the previous three years should yield a rate of dividend on the expanded capital issue base of the company at 10 per cent;

g) the capital reserves appearing in the balance sheet of the company as a result of revaluation of assets or without accrual of cash resources are neither capitalised nor taken into account in the computation of the residual reserves of 40 per cent for the purpose of bonus issues;

h) the declaration of bonus issue, in lieu of dividend, is not made;

i) the bonus issue is not made unless the partly paid shares, if any existing, are made fully paid-up;

j) the company: (1) has not defaulted in payment of interest or principal in respect of fixed deposits and interest on existing debentures or principal in respect of fixed deposits and interest on existing debentures or principal on redemption thereof; and (2) has sufficient reason to believe that it has not defaulted in respect of the payment of statutory dues of the employees such as contribution to provided fund, gratuity, bonus. etc.;

k) a company which announces its bonus issue after the approval for the Board of Directors must implement the proposals within a period of six months from the date of such approval and shall not have the option of changing the decision;

l) there should be provision in the articles of association of the company for capitalisation of reserves, etc. and if not, the company shall pass a resolution at its general body meeting making provisions in the Articles of Association for Capitalisation;

m) Consequent to the issue of bonus shares if the subscribed and paid-up capital exceed the authorised share capital, a resolution shall be passed by the company at its general body meeting for increasing the authorised capital;

n) the company shall get a resolution passed at its general body meeting for bonus issue. In the said resolution the management's intention regarding the rate of dividend to be declared in the year immediately after the bonus issue should be indicated;

o) no bonus shall be made which will dilute the value or rights of the holders of debentures convertible fully or partly.

N. Guidelines for the protection of the interest of debenture holders

1. Servicing of debentures

Subject to provisions of section F above, a debenture redemption reserve (DRR) shall be created by all the companies raising debentures on the following basis:

a) a moratorium upto the date of commercial production can be provided for creation of the debenture redemption reserve in respect of debentures raised for project finance;

b) the debentures redemption reserve may be created either in equal instalments for the remaining period or higher period or higher amounts if profits permit;

c) in the case of partly convertible debentures, DRR should be created in respect of non-convertible portion of debentures issue on the same lines as applicable for fully non-convertible debenture issue. In respect of convertible issues by new companies, the creation of DRR should commence from the year the company earns profits for the remaining life of debentures.

d) companies may distribute dividends out of general reserves in certain years if residual profits after transfer to DRR are inadequate to distribute reasonable dividends;

e) DRR will be treated as a part of General Reserve for contribution of bonus issue proposals and for price fixation related to post-tax return;

g) company should create DRR equivalent to 50 per cent of the amount of debenture issue before debenture redemption commences. Drawl from DRR is permissible only after 10 per cent of the debenture liability has been actually redeemed by the company;

h) in the case of existing companies prior permission of the lead institution for declaring dividend exceeding 20 per cent or as per the loan convents is necessary if the company does not comply with institutional condition regarding interest and debt service coverage ratio;

i) company may redeem debentures in greater number of instalments. The first instalment may start from 5th instead of 7th year.

O. Protection of debenture holders' interest

a) Trustees to the debenture issue shall be vested with the requisite powers for protecting the interest of debenture holders including a right to appoint a nominee director on the Board of the company in consultation with institutional debenture holders.

b) Lead institution/investment institution will monitor the progress in respect of debentures for project finance/modernisation/expansion/diversification/normal capital expenditure. The lead bank for the company will monitor debentures raised for working capital funds.

c) Institutional debenture holders and trustee should obtain a certificate from the company's auditors in respect of utilisation of funds during the implementation period of projects. In case of debentures for working capital, certificate should be obtained at the end of each accounting year.

d) Debentures issues by companies belonging to the groups for financing replenishing funds or acquiring shareholdings in other companies will not be permitted.

e) The companies shall, along with their application, file with SEBI, certificate from their bankers that the assets on which security is to be created are free from any encumbrances and the necessary permissions to mortgage the assets have been obtained or a No Objection Certificate from the financial institutions or banks for a second or **pari passu** charge in cases where assets are encumbered. The security should be created with in 12 months from the date of issue of debentures. If for any reasons the companies are not in a position to create security in this 12 months the company shall be liable to pay two per cent penal interest to debenture holders. If security is not created even after 18 months, a meeting of the debenture holders should be called within 21 days to explain the reasons thereof and the date by which the security would be created.

The trustees to the debenture holders will supervise the implementation of the conditions regarding creation of security of the debentures and regarding the debentures redemption reserve.

P. General

a) subscription list for public issues should be kept open for at least three working days and disclosed in the prospectus.

b) Rights issues should not be kept open for more than 60 days.

c) The quantum of issue, whether through a right or public issue, shall not exceed the amount specified in the prospectus/letter of offer No retention of over subscription is permissible under any circumstances.

d) Within 45 days of the closure of an issue a report in a prescribed form with a compliance certificate from the chartered accountants should be forwarded to SEBI by the lead managers.

e) The gap between the closure dates of various issue e.g. rights and Indian public should not exceed 30 days.

f) In case of issues of debentures fully or partly made in the past, when the conversion was to be made at a price to be determined by the Controller of Capital Issues at a later date, the price of conversion and time of conversion shall be determined by the company in a duly organised meeting of the debenture holders and shareholders. The decision in the above meeting may be ratified by the shareholders in their meeting. Such conversions will be optional for acceptance on the part of individual debenture holders. The dissenting debenture holders shall have the right to continue as debenture holders if the terms of conversion are not acceptable to them. The letter of option to debenture holders should be vetted by SEBI.

) SEBI will have the right to prescribe further guidelines for modifying the existing ones to bring about adequate investors protection, enhance the quality of disclosures and to bring about transparency in the primary market.

h) SEBI shall have the right to issue necessary clarification to these guidelines to remove any difficulty in its implementation.

i) Any violation of the guidelines by the issues intermediaries will be punishable by prosecution by SEBI under the Act.

j) The provisions in the Companies Act, 1956 and other applicable laws shall be complied with in connection with issue of shares and debentures.

NOTES

Utter Pradesh
Rajarshi Tandon Open University

Security Analysis and Portfolio Management

Block

3

ANALYSIS FOR EQUITY INVESTMENT

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BLOCK 3 ANALYSIS FOR EQUITY INVESTMENT

This block comprises of four Units and one case. Unit 6 titled 'Economy and Industry Analyses' defines fundamental analysis and introduces Economy-Industry-Company (EIC) framework of analyses. It then explains the nature and techniques of economy and industry analyses and points out their relevance for equity investment decision. Unit 7: Company Level Analysis, begins by stating the need for and importance of company analysis for equity investment decision. If then explains and illustrates the techniques of quantitative and qualitative analysis including dividend-discounted method, price - earnings approach, and methods of forecsting earnings per share (EPS), which is the most critical variable of equity valuation. How to evaluate company management? It has also been covered in this Unit. Unit 8 is devoted to technical analysis. It explains and compares and contrasts it with fundamental analysis. It discusses the origin and development of technical analysis. It describes Dow Theory and its basic tenets and explains the techniques of classical and Modern technical analysis which include point and figure charts, bar charts, moving averages, exponential moving average, rate of change or momentum, relative strength index and moving average convergence divergence signal. It also describes and illustrates some popular market indicators viz. breadth of the market, short interest, odd lot trading, mutual fund cash ratio, etc. This unit concludes by pinpointing limitations of technical analysis in Indian conditions. Unit 9: Efficient Market Hypothesis, highlights various aspects of the hypothesis that markets are efficient. It describes various forms of market efficiency. It also highlights the implications of EMH for security analysis and portfolio management.

UNIT 6 ECONOMY AND INDUSTRY ANALYSES

Objectives

The objectives of this unit are to :

- explain the relevance of economy and industry analyses for equity investment decision
- discuss the usefulness of this analysis in an efficient market setup
- highlight a framework of analysis of economy-industry-company
- suggest steps that could form part of the economy and industry analyses
- discuss various techniques to evaluate different economy and industry related factors

Structure

6.1 Security Analysis and Investment Decision
6.2 Fundamental Analysis
6.3 Fundamental Analysis and Efficient Market
6.4 Fundamental Analysis and Chemistry of Earnings
6.5 Economy-Industry-Company Analyses: A framework
6.6 Economy Analysis
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  6.7.2 Barometric or Indicator Approach
  6.7.3 Econometric Model Building Approach
6.8 Industry Analysis
  6.8.1 Techniques of Industry Analysis
6.9 Summary
6.10 Self-assessment Questions/Exercises
6.11 Further Readings

6.1 SECURITY ANALYSIS AND INVESTMENT DECISION

Investment decision is a part of our economic life. Everybody takes such decisions in different contexts and at different times. Some are able to reap more profits through them; while others simply lose their money. Attempts should, therefore, be made to understand and know the way sound investment decisions can be taken in order to improve the chances of making profits through them. Thus, investment decision making is an important area worth probing further.

Unfortunately, for long, investment decision making was regarded only as an art. As art is personal and subjective, it was difficult to provide a general framework within which one could operate. Only, recently it has been considered as a science with the result that a body of literature has been developed which helps us to understand and know the way investment decisions can be attempted. Recognising its art contents, this body of literature works on the thinking that a systematic, general framework can be suggested for those involved in investment decisions who can then modify that according to their requirements. It has, therefore, been recognised that investment decision making is both an art as well as science. This is indeed an on-going process in which decision maker attempts to update himself regarding the risk return characteristic of securities. These characteristic keep-on changing and investor go on attempting to understand their impact on his

decisions.The conceivable investment opportunities were discussed and explained in detail in Block I. The investment decision maker takes them into account in order to decide which securities should be bought or held or sold by him. A very simple decision rule is here applicable: Buy a security that has highest return per unit of risk or lowest risk per unit of return. And, sell the security which does not satisfy the above requirements.

The above decision rule to buy/sell securities is highly simple but it is very difficult to apply in straight forward fashion in actual practice. This is because there are a large number of factors which affects both risk and return in the real world situation. Thus, security which had highest return per unit of risk at one point of time and was considered to be a good buy might turn into a less attractive proposition and could be considered later on as a possible candidate for disinvestment. Such a situation might arise due to change in the management of the concerned company or changes in the Government policy at economy level making it less attractive. The opposite might also be possible. For example, before 1992-93, the shares of sugar industry in India were not catching the attention of investing public. But due to changes in the government policy towards this industry around 1992-93, its shares became quite attractive. Policy changes made by the government related to hike in the sugar prices sold both in open market as well as through public distribution system, increase in the quantity of sugar available for sale in the free market etc. Such factors played a very important role in making the shares of the sugar companies attractive. In addition to the above, there may be other factors too, that are more specific to a particular company.

Investment decision making being continuous in nature should be attempted systematically. Broadly, two approaches are suggested in the literature. These are: Fundamental Analysis and Technical Analysis. In the first approach, the investor attempts to look at fundamental factors that affect risk return characteristic of the security. While, in the second approach, the investor tries to identify the price trends which reflect these characteristic. The technical analysis concentrates on demand and supply of securities and prevalent trend in share prices measured by various market indices in the stock market.

6.2 FUNDAMENTAL ANALYSIS

As has been mentioned earlier, in the fundamental approach, attempt is made to analyse various fundamental or basic factors that affect the risk-return of the securities. Effort, here, is to identify those securities which are perceived to be mispriced in the stock market. The assumption in this case is that the 'market price' of the security and the price as justified by its fundamental factors called 'intrinsic value' are different and the market place provides an opportunity for a discerning investor to detect such discrepancy. The moment such a discrepancy is identified, the decision to invest or disinvest is taken. The decision rule under this approach is like this.

If the price of a security at the market place is higher than the one which is justified by the security's fundamentals, sell that security. This is because, it is expected that the market will sooner or later realise its mistake and reduce its price. Therefore, before the market realise its mistake and price the security properly, a deal to sell this security should be struck in order to reap the profits. But, if the price of that security is lower than what it should be based on its **fundamentals, it should be bought** before the market corrects its mistake by **increasing the price of security** in question. The price prevailing in the market is **called 'market price' (MP)** and the one justified by its fundamentals is called **intrinsic value (IV).**

Decision rules/Recommendations

(1) If IV >MP, buy the security
(2) If IV < MP, sell the security
(3) If IV = MP, No action

The fundamental factors mentioned above may relate to the economy or industry or company or all/some of them. Thus, economy fundamentals, industry fundamentals and company fundamentals are considered while analysing the security for taking investment decision. In fact the economy-industry-company framework forms an integral part of this approach. This framework can be properly utilised by making suitable adjustments in a particular context. A word of caution! Please remember, the use of an analytical framework does not guarantee a correct decision. However, it does guarantee an informed and considered investment decision which would hopefully be better as it is based on relevant and crucial information.

6.3 FUNDAMENTAL ANALYSIS AND EFFICIENT MARKET

Before elaborating in detail on the economy-industry-company framework, it is pertinent to mention that doubts are expressed about the utility of this approach in the context of efficient stock market set up. Briefly, stock market efficiency relates to the speed with which stock market incorporates the information about the economy, industry and company in the share prices. It is claimed that stock market incorporates such information in the share prices rather instantaneously. The result of this assumption is that price prevailing at the market place can be taken to represent the price of the share justified by its fundamental i.e., intrinsic value (IV). This equality of MP and IV makes the fundamental analysis or any other analysis useless or redundant.

The above given view about share market efficiency implies that no one would be able to make abnormal profits given such a set up. Some research studies in the literature also support the above view. Practitioners, however, do not agree to such conclusions of empirical nature. You will read more about efficient markets in Unit 9.

Once again let us be clear at this stage that the truth lies in between these two extreme positions-denouncing security analysis as totally redundant to the one that would bring us profits. In fact, stock market is not efficient to the extent the researchers proclaim. Many operational inefficiencies and structural deficiencies prevalent in stock market have been noted in Block 2. Secondly, analysis still has an important role to play. It is paradoxical but correct to say that one has to assume that stock market is inefficient to make it efficient. It is only then the processing of information relating to economy-industry-company would take place that would allow the stock market to reflect the information in the prices quickly if not instantaneously. Thirdly, it is fact of life that earning abnormal profits is not the only and final goal for most of the investors. Rather, it has been observed that earning the normal returns, (i.e., the return commensurate with risk prevalent in the market) is a worthwhile objective to pursue which most of the investors are not even able to achieve. In nutshell, security analysis has an important role to play for investment decision made in an efficient set up, too.

6.4 FUNDAMENTAL ANALYSIS AND CHEMISTRY OF EARNINGS

The logic for fundamental analysis becomes crystle clear once we understand the 'chemistry of earnings' and the macro and micro factors which influence the figure of earnings. Exhibit 6.1 indicates some of the major factors which affect earnings distributable among equity shareholders.

Exhibit 6.1

Factors affecting distributable earnings

Broad Source/form of Earnings	Company specific Factors		Industry Factors	Macro-Economic Factors
Sales	Competitive Strength	M	Industry Demand/ Supply	National income, spending, savings; Monetary, Fiscal Credit, Export-Import Policies; Population, Price level.
Less Costs of Sales	Operating Efficiency	A N	Industry Wage Levels; Industrial Infrastructure	National Wage Policy, Price levels, Economic Infrastructure, Raw Material Production, Import-Export Policy.
Earnings Before Interest, Depreciation & Taxes (EBIDT)		A		
Less Interest	Capital Structure/Financial Leverage Policy	G	Industry cost of capital	Interest Rates in the Economy; Capital Market Conditions
Less Depreciation	Operational Leverage Policy	A	Industry Practices	Capital Goods Import Policy
Less Tax	Tax Planning and Management		Industry Lobby	Fiscal Policy
Net Earnings After Tax (NEAT)		M		
Less Preference Dividend	Capital Structure Policy	E	Industry Practices	Interest Rate Structure, Capital Market Conditions
Distributable Earnings		N		
Less Equity Dividend	Dividend Policy		Industry Practices	Fiscal Policy, Credit Policy, Capital Market Conditions
Retained Earnings		T		

You would notice from Exhibit 6.1 that while distributable earnings is the difference between sales revenue and the costs of sales, interest, depreciation, taxes and preference dividend, these items of revenue and expense are influenced by company specific, industry level and macro-economic factors. This would mean that the intrinsic value of a stream of distributable earnings per share, is in effect influenced by diverse company specific, industry level and macro-economic factors. There is, therefore, a strong case for analysis of company specific, industry level and economy level factors, which in one word is called fundamental analysis.

Activity 1

A) What do the following stand for :

MP.....

IV.....

EBIDT.....

NEAT.....

B) Define the following terms:

a) Fundamental Analysis

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b) Intrinsic Value

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c) List out the investment decision rules as per fundamental analysis approach:

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6.5 ECONOMY-INDUSTRY-COMPANY ANALYSES: A FRAMEWORK

The analysis of economy, industry and company fundamentals as mentioned above is the main ingredient of fundamental approach. The analyst should take into account all the three constituents which form different but crucial steps in making investment decision. Theses can be looked at as different stages in the investment decision making process and are depicted graphically with three concentric circles as shown in Fig 6.1 below:

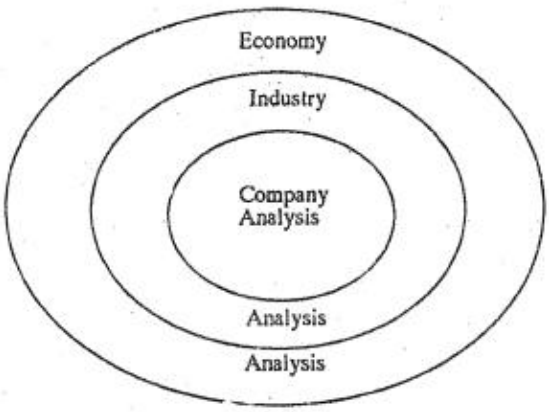


Fig 6.1 Investment Decision making Process

Operationally, to base the investment decision on various fundamentals, all the three stages must be taken into account. In this Unit, we will concentrate on economy and industry analyses while in the next Unit, we will focus on company level analysis.

6.6 ECONOMY ANALYSIS

In actual practice, you must have noticed that investment decisions of individuals and the institutions are made in the economic set up of a particular country. It becomes essential, therefore, to understand the state of the economy of that country at macro level. The analysis of the state of the economy at macro level incorporates

how the economy has performed in the past, how it is performing in the present and how it is expected to perform in the future. Also relevant in this context is to know how various sectors of the economy are going to grow in the future and which of its sectors are showing signs of stagnation and degradation in the economy. This, we can begin by analysing historical performance of various sectors of the economy in the past, their performance at present and then forming opinion/expectations about its performance in the future.It is through this systematic process, one would be able to identify various relevant investment opportunities whenever these arise. Sectoral analysis, therefore, is very essential along with overall economy analysis as the rate of growth in overall economy often differs from the rates of growth in various segments/sectors.

Rationale of the above type of analysis depends on economic considerations too. The way people in general earn their income and the way they spend these earnings would in ultimate analysis decide which industry or company would grow in the future. Their spending affect corporate profits, dividends and prices of the shares at the market place. Research study conducted by King(1966) reinforced the need of economic and industry analyses in this context. According to him on an average, over half the variation in stock returns are attributed to a market influence that affect all the market indices. Over and above this, industry specific factors account for approximately 13 per cent of the variation of stock returns. Thus, taken together two-third of the variation of stock prices/returns are attributed to market and industry related factors. King's study, despite the limitations in terms of its period of study and use of U.S. data etc., highlight the importance of economic and industry analyses in making investment decisions. To neglect this analysis while deciding where to invest would be at one's peril.

It must be clear by this now that analysis of historical performance of the economy is a starting point; albeit, an important step. But, for the analyst to decide where to invest or not, expected future performance of the overall economy along with its various segments is most relevant. Thus, all efforts should be made to forecast the direction of the economy so that the decision to invest or to disinvest the securities can be made in the most informed manner. Interestingly, this calls for using some of the indicators that describe how the economy has shaped up in the past and how it is likely to take shape in the future from the current state of affairs. A healthy and positive outlook about the economy goes a long way to boost the investment climate in general and investment in financial securities in particular.

6.7 ECONOMIC FORECASTING

Let it be properly understood at this stage that economic forecasting is a must for making investment decision. As it has been mentioned earlier too, the fortunes of specific industry and the firm depends upon how the economic outlook looks like in the future - short term and long term. Accordingly, forecasting techniques can also be divided into two categories: Short term and long term forecasting techniques. Time horizon in investment decision is a critical variable that plays a crucial role. Depending upon the duration, forecasting can be made for short term, intermediate and long term . Before discussing the techniques in detail, these terms should be clearly understood in our context. Short term refers to a period up to three years. Sometimes, it can also refer to much shorter period, such as a quarter or a few quarters. Intermediate period refers to a period of three to five years period. Long term forecast refers to the forecast made for more than five years. This may mean a period of ten years or more. In this Unit and the next one, these terms would be used as described above.

We shall discuss some short term forecasting techniques in the following:

At the very outset, let it be mentioned that the central theme of economic

forecasting is to forecast national income with its various components This is because it summarizes the receipts and expenditures of all segments of the economy, be the government, business or household. These macro economic accounts describe the level of economic activities over a period of time. Not surprisingly, therefore, all the techniques focus on forecasting the national income and its various components; particularly, those components that have bearing on a particular industry and the particular industry and the company to be analysed.

GNP is a measure to quantify national income and is the total value of the final output of goods and services produced in the economy. It is an important indicator of the level and the rate of growth in economic activities and is of central concern to analysts for forecasting overall as well as various components during a certain period. Following are some of the techniques of short term economic forecasting:

6.7.1 Anticipatory Surveys

This is very simple method through which investors can form their opinions/expectations with respect to the future state of the economy. As is generally understood, this is the survey of expert opinions of those who are prominent in the government, business, trade and industry. Generally, it incorporates expert opinion with regard to construction activities, plant and machinery expenditures, level of inventory etc. which have important bearing on the economic activities. Anticipatory surveys can also incorporate the opinion or future plan of consumers with regard to their spendings. So long as people plan and budget their expenditures and implement their plans accordingly, such surveys should provide valuable input as a starting point.

Despite the valuable inputs provided by this method, care must be exercised in using the information generated through this method. Precautions are needed because:

1) Survey results can not be regarded as forecasts *per se*. A consensus of opinion may be used by the investor in forming his own forecasts.

2) There is no guarantee that the intentions surveyed would certainly materialise. To this extent, the investors can not rely solely on these.

Despite the above limitations, surveys are very popular in practice and used for short term forecasting which, of course, requires continuous monitoring.

6.7.2 Barometric or Indicator Approach

In this approach, various types of indicators are studied to find out how the economy is likely to perform in the future. For meaningful interpretations, these indicators are classified into: leading, roughly coincidental, and lagging indicators.

Leading Indicators: As the name suggests, these are indicators that lead the economic activity in terms of their outcome. That is, these are those time series data of the variables that reach their high points as well as their low points in advance of the economic activity.

Roughly Coincidental Indicators: These are the indicators that reach their peaks and the troughs at approximately the same time as the economy.

Lagging Indicators: These are time series data of variables that lag behind in their consequences vis-a-vis the economy. That is, these reach their turning points after economy has already reached its own.

Indicators approach is quite useful in suggesting the direction of a change in the aggregate economic activity. However, it tells nothing about the magnitude of change.

In developed countries, data relating to various indicators are published at short

intervals. For example, U.S. Department of Commerce publishes data regarding various indicators in each of the following categories:

Leading Indicators

- Average weekly hours of manufacturing production workers
- Average weekly initial unemployment claims
- Contracts and orders for plant and machinery
- Index of S&P 500 stock prices
- Money supply (M2)
- Change in sensitive material prices
- Change in manufactures's unfilled orders (durable goods industries)
- Index of consumer expectations

Coincidental Indicators:

- Index of industrial production
- Manufacturing and trade sales
- Employee on non-agricultural payrolls
- Personal income less transfer payments

Lagging indicators:

- Average duration of unemployment
- Ratio of manufacturing and trade inventories to sales
- Average prime rate
- Commercial and industrial loans outstanding
- Change in consumer price index for services

The above list is not exhaustive. It is only illustrative of various indicators used by investors. A word of caution would not be out of place here as forecasting based solely on leading indicators is a hazardous business. One should be quite careful in using them. In any case, there are practical difficulties in operationalising it as data collection is not done well in advance. There is always a delay in it with the result that interpretation even if correctly performed cannot be fruitfully utilised. Further problems with regard to their interpretations as well exist. Various indicators under broad category of leading indicators, its various measures may give conflicting signals in terms of future direction of the economy. It would thus not be of much use to the investors.

To overcome this limitation, the use of diffusion index or composite index has been suggested. This takes care of the problem by combining several indicators into one index in order to measure the strength or weaknesses in the movement of a particular kind of indicators. Care has to be exercised even in this case as diffusion indices are not without problems either. Apart from the fact that its computations are difficult, it does not eliminate the irregular movements in the series. Despite these limitations, indicator approach/diffusion index can be useful tool in the hand of a skillful forecaster.

Money and Stock prices

It is widely recognised that money supply in the economy plays a crucial part in the investment decision making. The rate of change in the money supply in the economy affects the GNP, corporate profits, interest rates and stock prices. Accordingly, monetarists argue that total money supply in the economy and its rate of change play an important part in influencing the stock prices. Too much money in the economy, it is argued, fuels the inflation. And as investment in the stocks is

considered as a hedge against inflation, stock prices increases during inflationary times. The relevance of economy analysis and some economic indicators is well illustrated in a news paper report as reproduced in the Box on page 14.

6.7.3 Econometric Model Building Approach

This is another approach in determining the precise relationship between the dependent and the independent variables. In fact, econometrics is a discipline where in application of mathematics and statistical techniques is made to economic theory. It presupposes the precise and clear relationship between the dependent and independent variables. The onus of such well defined relationship with its attendant assumptions rest with the analyst. Thus by using econometrics, the analyst is able to forecast a variable more precisely than by any other approach. But forecasts thus derived would be as good as the data inputs used and assumptions made.

Opportunistic Model Building or GNP Model Building or Sectoral Analysis is frequently used in practice and is most eclectic method. It borrows from the methods discussed earlier. It uses national accounting framework in order to achieve short term forecasts. Various steps while using this approach are:

1) Hypothesize the total demand in the economy as measured by its total income (GNP) based on likely scenarios in the country like war, peace, political instability, economic changes level and rate of inflation etc.

2) Forecast the GNP figure by estimating the levels of its various components like

   - Consumption expenditure
   - Gross private domestic investment
   - Government purchases of goods and services.
   - Net exports

3) After forecasting the individual components of GNP, the analyst then adds them up and get a figure of the forecasted GNP

4) The analyst compares total of GNP so arrived with an independently arrived at, a priori, forecast of GNP and test, the overall forecast for internal consistency. This is done to ensure that both his total forecast and subcomponents' forecast make sense and fit together in a reasonable manner.

   Thus opportunistic model building involves all the details described above with a vast amount of judgment and ineguity.

Activity 2

a) Distinguish between leading and lagging indicators.

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b) List out six indicators which you consider useful to know the future direction of Indian economy. Also classify them into leading, Coincidental and lagging indicators.

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Economy Witnesses Bullish Trends

By MUDAR PATHERYA

After having been a devout pessimist for the last two years, I must confess that I am shedding my ideology. I am turning a bull. The reasons for this metamorphosis are to be found more in the fundamental of the economy than in the stock market. Take the sales of automobiles in the first quarter of the current financial year as a yardstick. Maruti Udyog has reported sales of 33680 vehicles in the domestic market in the first three months of 1993-94 when compared with 21717 vehicle sales in the corresponding period of 1992-93. "We are going at full stretch now," says R.C. Bahargava, managing director of Maruti Udyog. "We sold around 1.28 lakh vehicles in the last financial year and our target of the current year is in excess of 1.50 lakh vehicles. After years of plateauing out, there is going to be s substantial jump in sales for the current financial year. The demand for cars is a good indicator of the economy and by this index, I can say that the economy has turned around. In fact, Maruti hardly has any inventory and even if the company has an additional in built capacity of 20 per cent, we would have been able to clean out our inventory without a problem. In fact, today we do not even need to push sales of the vehicles. The vehicles are moving by themselves".

Maruti's turnaround is not an isolated instance. Hindustan Motors is also talking in terms of a negligible inventory. A Calcutta based dealer said recently: "When the company announced that it would be raising its monthly target to 1900 vehicles in March, no one took the company seriously. When the company announced that it would be raising its output to 2100 for April, a number of people took them sceptically. Today, Hind Motors has a monthly output of 2600 vehicles, there is no inventory with the company or the dealers, there is a premium on the cars and there is two-month waiting list. In fact, we are having to go to the company with requests for an additional five cars per month".

BULLISH: If the turnaround was only in automobiles, the theory of the country's economic turnaround could still have been debated. However, what is happening is that a number of unrelated industries are also turning strongly bullish. Take polyester yarn for example. Over the last few months there has been a strong increase in the off take of fabric which, in turn, has resulted in demand overtaking supply of yarn. As a result of this imbalance, yarn prices have been strengthening consistently over the last few months, the latest being a Rs 4 per kilo increase in early August. Not surprisingly. companies like Sanghi Polyesters, DCL Polyesters and Haryana Petro have become the fancied darlings of the stock market.

Or take the case of fibres for example. For long written off as a leper industry due to the mounting losses sustained by it as well as the poor capacity utilization levels, negligible additional capacity was created in the country for manufacturing polyester staple fibres. Because of the increase in the domestic consumption and export of blended fabrics and blended yarn (poly viscose and poly cotton) fibre demand has ballooned and even reached a stage when users are being told that there will be no supplies for the next couple of months. Suddenly, the cash turnaround of companies like Orissa Synthetics and India Polyfibres has become a reality.

Or lastly come to colour picture tubes. Samtel colour reported a loss of Rs. 8.91 Crore in 1992-93 (8 months) but faces the prospects of sharply revived 1993-94. The basis is a projected increase in the consumption of colour picture tubes from 8.3 lakh numbers in 1992-93 to around 11 lakh numbers in the current financial year. What is interesting is that this is indicative of the turnaround in the electronics industry as a whole, leading to improved prospects for a number of related companies.

What has accounted for this suddenly-revived economy? One of the answers is definitely the cut in customs duties and a corresponding reduction in excise which has helped to reduce the cost structure of a number of products. This has made a number of products cheaper in the domestic market and expanded the demand base for them in the process.

FUTURE SCENARIO: What of the future? The scenario could emerge strongly bullish if the cut in import duty in the finished product is accompanied by a cut in the import tariff for the raw materials as well. Besides,the excise component would have to be lowered as well, resulting in an expansion of demand with in the country. Once this transpires, more goods will be sold, the recession will be history and if installed capacities fall short of meeting the demand, we could even have a temporary shortage in certain areas on our hands.

Given this scenario, only the stubborn would continue to be bearish. It is the times perhaps to cover our shorts on the sensex and place all our big chips on the shares of polyester companies. Stock of DCL polyester, Sanghi Polyester and Haryana Petro look cheap when viewed against projected 1993-94 earnings. With the festive season round the bend, the buoyancy in yarn prices is expected to continue, giving investors a sharp turn around for the first half of the current financial year.

Source: TOI, August 9 , 1993.

6.8 INDUSTRY ANALYSIS

After conducting analysis of the economy and identifying the direction it is likely to take in the short, intermediate and long term, the analyst must look into various sectors of the economy in terms of various industries. An industry is a homogenous group of companies. That is, companies with the similar characteristic can be grouped into one industrial group. There are many-a-basis on which grouping of companies can be done. For example, traditional classification is generally done product wise like pharmaceutical, cotton textile, synthetic fibre industry, etc. Such a classification though useful does not help much in investment decision making. Some of the more useful basis for classifying industries from the investment decision point of view are as follows:

Growth industry: This is the industry which is expected to grow persistently and its growth is likely to exceed the average growth of the economy.

Cyclical industry: In this category of the industry, the firms included are those that move closely with the rate of industrial growth of the economy and fluctuate cyclically as the economy fluctuates.

Defensive industry: It is a grouping that includes firms which move steadily with the economy and decline less than the average decline of the economy in a cyclical downturn.

Declining industry: This is that category of firms which either generally decline absolutely or grow less than the average growth of the economy.

Another useful criterion to classify industries is the various stages of their development. Industries with different stages of their life cycle development exhibit different characteristic. In fact, each development stage is quite unique. Grouping firms with similar characteristic of development helps investors to properly evaluate different investment opportunities in the companies. Based on the stage in the life cycle, industries may be classified as follows:

Pioneering Stage: This is the first stage in industrial life cycle of a new industry. Being the first stage, the technology and its products are relatively new and have not reached a stage of perfection. Experimentation is the order both in product and technology. However, there is a demand for its products in the market, thereby, the profits opportunities are in plenty. This is a stage where the venture capitalists take a lot of interest and enter the industry and sometimes organise the business. At this stage the risk of many firms being out of the industry is also more; hence, mortality rate is very high in the industry, with the result that if an industry withstands the risk of being out of the market, the investors would reap the rewards substantially or else substantial risk of loss of investment exists. A very pertinent example of this stage of industry in India was leasing industry which was trying to come-up during mid eighties. There was a mushroom growth of companies in this period. Hundreds of companies came into existence. Initially, lease rental charged by them were very high. But as the competition grew among firms, lease rentals reduced and came down to a level where it became difficult for a number of companies to survive. This period saw many companies that could not survive the onslaught of competition. Only those which could tolerate this onslaught of price war could remain in the industry. Leasing industry today in India is much pruned compared to mid-eighties.

Fast growing stage: This is the second stage when the chaotic competition and growth that were the hallmark of the first stage is more or less over. Firms that could not survive this onslaught have already died down. The surviving large firms now dominate the industry. The demand of its product still grow faster in the market leading to increasing amount of profits companies could reap. This is stage

where companies grow orderly and rapidly. These companies provide a good investment opportunity to the investors. In fact, as the firms during this stage of development grow faster, they sometimes break the records in various areas like payments of dividends etc., thus becoming more and more attractive for investment.

Maturity and stabilisation stage: The third stage where industries grow roughly at the rate of the economy and are fully developed reach a stage of stabilisation. Looked at differently, this is a stage where the ability of the industry to grow appears to have more or less lost. As compared to the competitive industries, rate of growth in the industry is slower. Sales may still be rising, but at a lower rate. It is at this stage that the industry is facing the problem of what Grodinsky called "latent obsolescence" a term used to describe a situation where earliest signs of decline have emerged. Investors have to be very cautious to examine and interpret these signs before it is too late.

Relative Decline stage: The fourth stage of industrial life cycle development is the relative decline stage. Industry at this stage has grown old. New products, new technology have come in the market. Customers have changed their habits, styles, likings etc. Its products are not much in demand as was in the earlier stages. Still, the industry can continue to exist for some more time. Consequently, the industry would grow less than the average growth of the economy during the best of the times of the economy. But as is expected, the industry would decline much faster than the decline of the economy in the worst of times.

The peculiar characteristic of different stages of life cycle development of industries has a number of implications for investment decision. For example, Pioneering stage is very risky stage. And as you know that risk and returns are positively correlated, investment at this stage is quite rewarding. However, for an investor looking for steady long term returns with risk aversion, it is suggested that he should in general avoid investing at this stage. These are good for venture capitalists. But if he is still keen to invest, he should try to diversify or disperse his investment in order to reduce the risk. It would be quite prudent on his part to look for companies that are in the second stage of development i.e., fast growth. This probably explains the prevalent higher stock prices of the companies of this industry.

From the investment point of view, selection of the industries at the third stage of development is quite crucial as it is the future growth of the industry that is relevant and not its past performance. There are a number of examples wl ere the share prices of a company in declining industry have been artificially hiked up in the market. This is justified on the basis of good record of its performance. But the fact of the matter is that a company in a declining industry would sooner or later feel the pinch of its features and an investor investing in companies at this stage would experience reduction in the value of his investment in due course.

Having discussed various investment implications, it may be pointed out that one should be careful while using this calssification. This is because the above discussion assumes that the investor would be able to identify various stages in the industrial life cycle. In practice, it is a very difficult proposition to detect which stage of development an industry is at. Needless to say, it is only a general framework that is presented above and he can use it for meaningful analysis with suitable modifications. In order to strenghten the analysis further, it is essential to study the unique features of the industry in detail. Due to its unique charactristic, unless the specific industry is studied properly and in depth with regard to these, it will be very difficult to form an opinion for profitable investment opportunities. Given below are some of the features that could be considered for a detailed investigation while selecting an industry for investment. These features broadly relate to the operational and structural aspects of the industry.

1) State of Competition in the industry

Competition is a way of life that increases as barriers to enter the industry are loosened/removed. It is an important input in investment decision making. Knowledge about the state of competition in a particular industry, therefore, is a must. Questions most often asked in this context are:

- Which firm in the industry play a leadership role and how firms compete among themselves?
- How is the competition among domestic and foreign firms both in the domestic and the foreign markets? How do the domestic firms perform there?
- Which type of products are manufactured in this industry? Are these homogenous in nature or highly differentiated?
- What is the nature and prospect of demand for the industry? This may also incorporate the analysis of classifying major markets of its products: customer-wise and geographical area-wise, identifying various determinants of the demand of its products, and assessing the likely demand scenarios in the short, intermediate and long run.
- Which type of industry is it : growth, cyclical, defensive or relative decline industry?

2) Cost conditions and profitablity

The worth of a share depends on its return which in turn depends on profitability of the company. Interesting part here is that growth is an essential variable but its mere presence does not guarantee profitability. Profitablity depends upon the state of competition prevalent in the industry, cost control measures adopted by its constituent units and the growth in demand for its products. While conducting an analysis from the point of view of cost and profitability, some relevant aspects to be investigated are :

- How is the cost allocation done among various heads like raw materials, wages and overheads?

  Knowledge about the distribution of costs under various heads is very essential as this gives an idea to the investors about the controllability of costs. Some industries have overhead costs much higher than others. Likewise, labour cost is another area that requires close scrutiny. This is because finally whether labour is cheap or expansive depends on the wage level and labour productivity. Labour that apparently look cheaper may turn out to be costlier when its productivity is taken into account.

- Price of the product of the industry
- Capacity of production - installed, used, unused etc.
- Level of capital expenditure required to maintain or increase the productive efficiency of the industry.

Profitblity is another area that calls for a thorough analysis on the part of investors. This requires a thorough analysis on the part of investors. No industry can survive in the long run if it is not making profits. This requires a thorough investigation into various aspects of profitability. However, such an analysis can begin by having a bird's eye view of the situtaion. In this context ratio analysis has been found quite useful. Some of the important ratios often used are:

- Gross Profit Margin ratio
- Operating Profit Margin ratio
- Rate of Return on Equity
- Rate of Return on Total Capital

Ratios are not an end in themselves. But they do indicate possible areas for further investigation.

3) Technology and Research

Due to increasing competition in general, technology and research play a crucial part in the growth and survival of a particualr industry. However, technology itself is subject to change; sometimes, very fast, leading to obsolesence. Thus only those industries which are updating themselves in the field of technology could have a competitive advantage over others in terms of the quality, pricing of products etc.

The relevant questions to be probed further by the analyst in this respect could include the following:

- What is the nature and type of technology used in the industry?
- Are there any expected changes in the technology in terms of offering new products in the market leading to increase in sales?
- What has been the relationship of capital expenditure and the sales over time? Whether more capital expenditure has led to increase in sales or not?
- What has been the amount of money spent in the research and development activities of the firm? Does the amount on the research and development in the industry relate to its redundancy or otherwise?
- What is the assessment of this industry in terms of its sales and profitability in the short, intermediate and long run?

The impact of all these factors have to be finally translated in terms of two most crucial numbers i.e., sales and profitability - their level and expected rate of change during short, intermediate and long run.

6.8.1 Techniques of industry analysis

Up till now, we have discussed about various factors that are to be taken into account while conducting industry analysis. Now we turn our attention to various techniques that help us evaluate the factors mentioned above:

End Use and Regression Analysis: It is the process whereby the analyst or investor attempts to diagnose the factor that determine the demand for the output of the industry. This is also known as end-use or product- demand analysis. In this process, the investor hopes to uncover the factors that explain the demand. Some of the factors found to be powerful in explaining the demand for the industry are: GNP, disposable income, per capita consumption, price elasticity of demand, per capita income. In order to identify the factors which affect demand, statistical techniques like regression analysis and correlation have been often used. These help identify the important factors/variables. However, one should be aware of their limitations.

Input Output Analysis: This analysis helps us understand demand analysis in greater detail. Input output analysis is very useful technique that reflects the flow of goods and services through the economy, including intermediate steps in the production process as the goods proceed from the raw material stage through final consumption. This information is reflected in the input-output table that reflects the pattern of consumption at all stages - not just at the final stage of consumption of final goods. This is done to detect any changing patterns or trends that might indicate the growth or decline of industries.

Activity 3

Tick the right answer:

1) **Cyclical industry is cylical in dividend payout.** **True/False**

2) **Defensive industry is like automobile industry.** **True/False**

3) **A profiable investment opportunity lies in a matured and stable industry.** **True/False**

4) **Competition exists in all walks of life.** Investment is no exception, so why bother about it.

True/False

5) Anticipatory surveys being simple technique can be relied solely for forecasting industry variables.

True/False

6.9 SUMMARY

In this Unit, we have discussed the relevance of economy and industry analyses for equity investment decision and introduced the economy-industry-company framework of fundamental analysis. We have also noted the usefulness of fundamental analysis in efficient market set up. The logic for fundamental analysis, however, becomes crystle clear once we understand the chemistry of earnings. It is highlighted in this Unit that distributable earnings which is the difference between the sales and the cost of sales and interest, depreciation, taxes and preference dividend, is influenced by diverse company specific, industry level and macro-economic factors. Fundamental analysis is thus useful for equity investment decision. This Unit also explains the nature of economy analysis and discusses economic forecasting techniques viz. anticipatory surveys, barometric or indicator approach and the econometric model building approach. As part of industry analysis, it is pointed out that more than product wise classification, life-cycle stage-wise classification of industries is more useful for equity investment decision making. This Unit concludes by introducing techniques of industry analysis viz. end use or regression analysis and input-output analysis. How to analyse company specific factors? That will be the focus of the next Unit.

6.10 SELF-ASSESSMENT QUESTIONS/EXERCISES

1) Define 'Fundamental Analysis'. Bring out its relevance for equity investment decision.

2) 'Chemistry of earnings provides ready made logic for fundamental analysis'. Comment.

3) Briefly discuss the relevance of fundamentals analysis in efficient market set up.

4) 'Economy-Industry-Company (EIC) framework provides a useful approach to equity investment decision'. Explain and illustrate.

5) 'Economic forecasting is the heart of economy analysis'. Comment and briefly explain various techniques of economic forecasting.

6) Define 'industry analysis' and bring out its relevance for selecting equity shares for investment.

7) 'Fundamental analysis is applicable only in the hands of institutional investors. Individual investors would find it too time taking and costly to adopt'. Comment.

8) Please read 'Economy witnesses bullish trends' as given in this Unit and answer the following questions:

   a) What are the indicators of bullish trends?

   b) How would you classify these indicators?

   c) Do you agree with the recommendations made by the author of this piece?

9) Write short notes on the following:

   a) Economy Analysis

   b) Industry Analysis

   c) Techniques of Economic Forecasting

   d) Anticipatory Surveys

c) Econometric Model Building Approach

6.11 FURTHER READINGS

Amling, F., 1984, *Investment - An Introduction to Analysis and Management*, 5th ed. PHI. New Delhi

Fischer, D. E. and R.J. Jordan, 1991, *Security Analysis and Portfolio Management*, 5th ed. PHI, New Delhi.

UNIT 7 : COMPANY LEVEL ANALYSIS

Objectives

The objectives of this unit are to:

- high light the need for and importance of company analysis
- explain the process of estimation of equity price
- discuss and illustrate quantitative and qualitative methods to value equity
- discuss methods of forecasting earnings per share

Structure

7.1 Need For Company Analysis
7.2 Estimation of Future Price
7.3 Quantitative Analysis
  7.3.1 Dividend Discounted Method
  7.3.2 Price-Earnings Approach
7.4 Forecasting Earnings Per Share
7.5 Traditional Methods of Forecasting EPS
  7.5.1 ROI Approach
  7.5.2 Market Share Approach
  7.5.3 Independent Estimates Approach
7.6 Modern Methods of Forecasting EPS
  7.6.1 Regression and Correlation Analyses
  7.6.2 Trend Analysis
  7.6.3 Decision Tree Analysis
7.7 Qualitative Analysis
7.8 Summary
7.9 Self-assessment Questions/Exercises
7.10 Further Readings
  Appendix-7.1

7.1 NEED FOR COMPANY ANALYSIS

In the previous unit, we have discussed the relevance of economy and industry analyses and how it can be conducted. In this unit, we will discuss the company level analysis. In order to provide a proper perspective of this analysis, let us begin by discussing the way investor takes the investment decision given his goal of return maximisation. For earning profits, investors apply a simple and common sense decision rule. That is,

- Buy the share at a low price
- Sell the share at a high price

The above decision rule is very simple to understand but difficult to apply in actual practice. Despite this, efforts are generally made to operationalise it by using proper formal and analytical framework. To begin with, the problems faced by the investor are: how to find out whether the price of a company's share is high or low? Which benchmark to use to compare the price of the share? The first question becomes easier if some benchmark is agreed upon with which the prevailing market price can be compared. Fundamental analysis in fact helps the investor in this respect by providing a benchmark in terms of intrinsic value. This value is dependent upon economy, industry and company fundamentals. Out of these three, company level analysis provide a direct link between investor's action and his investment goal in operational terms. This is because an investor buys the equity share of company and

not that of industry and economy. Industry and economy framework indeed provide him with proper background against which he buys the shares of a particular company. This setting is nevertheless very important, but for action to take place it is the company that provides him actual key setting. A careful examination of the company with its quantitative and qualitative fundamentals is, therefore, very essential. As Fischer and Jordan have aptly put it, "A good economic analysis inform the investor about the propriety of a current stock purchase, regardless of the industry in which he might invest. If the economic outlook suggests purchase at this time, the economic analysis along with the industry analysis will aid the investor in selecting their proper industry in which to invest. Nonetheless, knowing when to invest and in which industry is not enough. It is also necessary to know which companies in which industries should be selected".

7.2 ESTIMATION OF FUTURE PRICE

Before attempting to discuss the approach that can be adopted for company level analysis, let us be clear about the objective of investor and how it can be quantified?

It is to reiterate the proposition that an investor looks for increasing his returns from the investment . These returns are composed of capital gains and a stream of income in the form of dividends. Assuming he wants to hold equity shares for a period of one year only (known as holding period), i.e. he sells it at the end of the year, he total returns received by him would be equal to capital gains plus dividends received at the end of the year, i.e.

$$R_t = (P_t - P_{t-1}) + D_t$$

Where P_t = Price of the share at the end of the year

P_{t-1} = Price of the share at the beginning of the year

D_t = Dividend received at the end of the year

R_t = Return for the holding period, t.

In order to calculate the return received by him on his original investment (i.e. purchase price), total returns should be divided by P_{t-1}. These are expressed in percentage terms and known as holding period yield (HPY). Thus,

$$\text{HPY}\ (\%) = \frac{(P_t - P_{t-1}) + D_t}{P_{t-1}} \times 100$$

The above computation is quite simple so long as the value of the variables is available. In actual practice, however, investor would know the beginning price of the share (called purchase price) as this is the price he has paid to buy the shares but the price at the end of the year (i.e. selling price) as well as dividend income to be received would have to be estimated. This is where the problem lies. How to estimate the future price of the share as well as dividends? becomes the main challenge. Time series data relating to dividends paid by companies provide us useful clues in estimating the dividends likely to be declared by companies. There is, it seems, a stable dividend policy followed by most firms in general. Thus, an investor would be able to estimate dividend receipts at the end of the year with reasonable degree of accuracy under normal circumstances. It has been found that company management is very conservative in increasing the amount of dividend paid to shareholders. Management does not increase the dividend unless this increase is sustainable in the long run. But the opposite is true in case of a dividend cut. They seem to be liberal in case dividend cut is to be made. This is to avoid further cuts if need arises. Amount of dividend, in actual practice, does not form a large part of the total returns of the investor. Nevertheless, it is an important constituent, as indicated above.

Estimation of future price of the share that contributes a major portion in the total returns of the investor is much more problematic and is discussed in detail in the following section.

In order to estimate future price of share, you may adopt two approaches, namely, Quantitative analysis and Qualitative analysis. Let us elaborate each of the two approaches.

7.3 QUANTITATIVE ANALYSIS

This approach helps us to provide a measure of future value of equity share based on quantitative factors. The two method commonly used under this approach are:

- Dividend discounted method, and
- Price-earnings ratio method

7.3.1 Dividend Discounted Method

The dividend discounted method is based on the premise that the value of an investment is the present value of its future returns. The present value (PV) is calculated by discounting the future returns which are dividend receipts. The formula, thus, is

$$PV = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + - - - - + \frac{D_n}{(1+k)^n}$$

Under the constant growth assumption, this boils down to

$$PV = \frac{D_1}{K-g}$$

K = Discount rate

g = Growth rate

Further $DPS = EPS \times (1-b)$

Where DPS = Dividend Per Share

b = proportion of earnings retained such that $(1-b)$ is the dividend payout

Substituting the above in the formula, it becomes

$$PV = \frac{EPS\,(1-b)}{K-g}$$

On the basis of the above model, the following inferences can be drawn:

1) Higher the EPS, other things like b,k,g remaining the same, higher would be the value of the share.

2) Higher the b, retention rate, or lower the $1-b$ i.e. dividend payout, higher would be the value of share.

3) Higher the k, i.e. discount rate, other things like EPS, b,g remaining the same, lower would be the value of the equity.

4) Higher the growth rate, g, other things like EPS,b,k remaining constant, higher would be the value of the equity.

These inferences clearly highlight the effect of various variables on the future price of equity share.

While applying this approach, one has to be careful about using the discount rate, k. A higher value of discount rate would unnecessarily reduce the value of an equity while a lower value would unreasonably increase it, that will have implications to

invest/disinvest the shares. A discount rate is based on the risk free rate and risk premium. That is,

$$\text{Discount rate} = \text{risk free rate} + \text{risk premium}$$

$$K = r_f + r_p$$

where

r_f = risk free rate of return

r_p = risk premium

Thus, higher the risk free interest rate with r_p remaining the same would increase the discount rate, which in turn would decrease the value of the equity. In the same way, higher risk premium with r_f remaining the same would increase the overall discount rate and thus decrease the value of the equity. Like discount rate, growth rate is equally critical variable in this method of share valuation. It may be pointed out that growth from internal sources depends on the amount of earnings retained and return on equity. Thus, higher is the retention rate, higher would be the value of the firm, other things remaining constant. Likewise, higher return on equity would lead to higher value of equity with other things remaining constant.

7.3.2 Price-Earnings Approach

According to this method the future price of an equity is calculated by multiplying the P/E ratio by the EPS. Thus,

$$P = EPS \times P/E \text{ ratio}$$

The P/E ratio or multiple is an important ratio frequently used by analyst in determining the value of a share. It is frequently reported in the financial press and widely quoted in the investmer t community. In India too, you could verify its popularity by looking at various financial magazines/newspapers.

This approach seems quite straight and simple. There are, however, important problems with respect to the calculation of both P/E ratio and EPS. Pertinent questions often asked are:

- How to calculate the P/E ratio?
- What is the normal P/E ratio?
- What determines P/E ratio?
- How to relate company P/E ratio to market P/E ratio?

The problems often confronted in calculating this ratio are: which of the earnings-past, present or future are to be taken into account in the denominator of this ratio? Like wise, which price should be put in the numerator of this ratio? These questions need to be answered while using this method.

Indeed, both these methods are inter-related. In fact, if we divide the equation of dividend discounted method under constant growth assumption by E_0 (Earnings pe shares), we get

$$P_0/E_0 = \frac{D_0/E_0\,(1+g)}{K-g}$$

Here

$$D_0\,(1+g) = D_1$$

Based on the above model, decision rules become:

DECISION RULES

- Higher the P/E ratio, other things remaining the same, higher would be the value of an equity.
- Lower the P/E ratio, other things remaining the same, lower would be the value of an equity.

Looking at the above decision rules, it is not uncommon to find that investors prefer shares of companies with higher P/E multiple.

You will appreciate that the usefulness of the above model lies in understanding the various factors that determine P/E ratio. P/E ratio is broadly determined by :-

- Dividend payout
- Growth
- Risk free rate
- Business risk
- Financial risk

Thus, other things remaining the same,

1) Higher would be the P/E ratio, if higher is the growth rate or dividend payout or both.
2) Lower would be P/E ratio, if higher is
   a) Risk free rate,
   b) Business risk,
   c) Financial risk.

The foregoing presentation helps us provide a quantitative measure of the value of an equity share. However, there still remains the problem of estimating earning per share which has been used in both the methods discussed above. This is a key number which is being quoted, reported and used most often by company management, investors, analysts, financial press etc. It is this number every body is attempting to forecast. The starting point to forecast earnings per share, however, is to understand the chemistry of earnings as described in the previous unit. We shall describe various approach to forecast earnings per share in the following section :

Activity I

A) Define 'Company Analysis'.

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B) Compare and contrast 'Dividend Discounted Method' and the 'P/E Ratio method ' of estimating price of an equity share.

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7.4 FORECASTING EARNINGS PER SHARE

Earnings is the most important number in the arsenal of the investor. The most important and the principle source of getting information about the earnings of the company is its financial statements. Analyst must be aware of the fact that there is more to the financial statements than what meets his eyes. Out of the two

statements, namely, Balance Sheet and Income Statement, it is the income statement that is more often used in order to assess the future state of the firm. Research studies have indicated the significance of this number in influencing the share prices and dividends. The research study conducted by Niederhoffer and Regan for example found that the share prices are strongly dependent on the changes in the earnings, both absolute and relative to the analysts' estimates. The above study and some others indicate the importance of the forecast of earnings as the most important variable to work on in the investment decision making process. The critical aspect of the earnings relate to its level, trend and stability.

There are various methods employed to assess the future outlook of the revenue, expenses and the earnings of the firm given the economic and industry outlook. These methods can be broadly classified into two categories, namely, traditional and modern. Under the traditional approach, the forecaster obtains the estimate of single value of the variable. While in the case of modern approach, he gets the range of values with the probability of each occurrence. Let us discuss these two approaches in detail.

7.5 TRADITIONAL METHODS OF FORECASTING EPS

Under the traditional approach the following methods of forecasting are adopted:

- ROI approach
- Market share approach
- Independent estimates approach

Before starting the discussion on the forecasting techniques, it will not be out of place to briefly mention the way the earnings per share is measured from the financial statements. This will provide us an understanding of its changes. Broadly, changes in earnings are affected by operating and financing decisions.

Both these decisions are, however, interdependent. But attempts are generally made to separate the two decisions so that the effect of each is studied separately. This is done by various companies by presenting the information in the income statement reflecting both types of decisions. Given below is the format which analysts use to calculate the earnings per share.

Income Statement for the year ended . . .

1) *Sales Revenue*
2) *Less Operating Expenses*
3) *Earnings before interest and tax (EBIT)*
4) *Less Interest expenses*
5) *Earnings before tax (EBT)*
6) *Less Taxes*
7) *Earnings after tax (EAT)*
8) *Number of shares outstanding*
9) *EPS = EAT/ number of shares outstanding*

Let us now explain the ROI approach to forecast earnings per share.

7.5.1 ROI Approach

Under this approach, attempts are made to relate the productivity of assets with the earnings. That is, returns earned on the total investment (assets) are calculated and estimates regarding earnings per share are made. Simply stated,

Return on Assets = EBIT/Assets

Return on assets is a function of the two important variables viz. turnover of assets, and margin of profit.

Return on Assets = Assets Turnover * Profit Margin

ROA = (Sales/Assets) * (EBIT/Sales), where

Asset Turnover = Sales/Assets

Profit Margin = EBIT/Sales

ROA is thus a function of (1) number of times the asset base is utilised and converted into sales (asset turnover) and (2) profits earned on the sales (profit margin).

This is a simple but crucial relationship. The two ratios mentioned above can be used by the management in order to achieve a certain targeted ROA. It is possible that two firms may earn the same ROA but have different strategies in terms of assets utilisation and productivity of sales. To illustrate, suppose two firms, A and B, have the following data :-

	A (Rs.)	B (Rs.)
Net Sales	1000	1000
Profit (EBIT)	20	100
Assets	100	500

$$\text{Productivity of Sales} = \frac{\text{EBIT}}{\text{Sales}} = \frac{20}{1000} \times 100 = 2\%\ ;\ \frac{100}{1000} \times 100 = 10\%$$

$$\text{Assets Turnover} = \frac{\text{Sales}}{\text{Assets}} = \frac{1000}{100} = 10 \text{ times}\ ;\ \frac{1000}{500} = 2 \text{ times}$$

Return on Assets = 20% = 20%

The above analysis indicates that two firms with the same ROA may adopt different strategies in terms of assets turnover and profit margin and still be equally successful in terms of ROA. Such differences may depend upon the nature of market segment served at different times. For, a high profile, rich market segment, the asset turnover may be lower but profit margin can be higher. But the same may not be true for a low income market segment.

Leverage is the use of borrowed funds in the enterprise with a fixed cost. More is the use of such funds, higher is said to be the leverage. As borrowed funds are of a fixed rate/cost and if the firm is earning profits, it is profitable to use more of borrowed funds. However, there is limit beyond which use of borrowed funds can increase the earnings per share. It is often said that as borrowed funds increase in relation to equity funds in the total financing mix, borrowing costs (1) increase, and (2) increase more rapidly than the amounts borrowed. This happens because the suppliers of funds now perceive the business more risky when borrowed funds are utilised beyond a certain point. Interesting part of the increase in the cost of debt financing is its impact on the increase in the cost of equity financing. This happens because the earnings available to equity shareholders go down as more leverage is used beyond a certain point.

Thus

$$\text{Rate of Return on Equity} = R + (R - I)L/E$$

where, R = Return on Assets

I = Effective interest rate

L/E = Total outside liabilities/equity

If we multiply the above equation with equity capital, we can find out the earnings before taxes.

Thus

$$EBT = (R + (R - I)\,L/E)\,E \text{, and}$$

$$\text{Growth in EBIT} = \text{Retention rate (b)} \times ROA$$

As forecasting of earnings is the central theme/focus in the company level analysis, it requires an understanding of the earnings formation process. The ROI approach provides a framework for analysing the effects and interaction between the return a firm earns on its assets and the manner it is financed. Once this return generating power is understood by the analyst, he can forecast the key variables in the model and substitute the forecasted values into the model and forecast EAT.

Based on the chemistry of earnings, the analyst can further use the following equations to calculate the earnings per share:

$$EPS = [(1-T)\{R + (R-I)\,L/E\}\,E] \div [\text{Number of shares outstanding}]$$

likewise, the DPS can be calculated as

$$DPS = (1-b)(EPS)$$

The above model is quite simple but its importance will be realised if we keep the variables in the functional forms as shown below:

Earnings per share and its changes are a function of :

1) Utilisation of asset base
2) Productivity of sales (Profit Margin)
3) Effective cost of borrowed funds (I) (effective rate of interest) $= \dfrac{\text{Interest expenses}}{\text{Total outside liabilities}}$
4) Debt equity ratio (L/E) = Total outside liabilitie /equity
5) Equity base (E)
6) Effective tax rate (T) = Tax expenses/EBT
7) Return on assets i.e. EBIT/Assets

The model can be used to forecast earnings in the future holding period. For this purpose, the analyst has to collect the information relating to the following variables:

- Net sales
- Other Incomes
- Cost of Sales
- EBIT
- INT exp
- Taxes
- EAT
- Average share outstanding
- EPS
- DPS

Other relevant information with regard to the financial position is as follows:

- Total Assets
- Current Debt
- Long term Debt
- Equity shares
- Total Debt and Equity

After collecting the above information, it can be summarised and the following key variables can be calculated and arranged in the tabular form for the purpose of analysis. The following table gives the picture relating to the information as required for the application of this model:

Summary Table

Earning per Share	:
Return on Assets	:
Profit Margin	:
Asset Turnover	:
Effective Interest Rate	:
Total Equity / Outside Liabilities	:
Number of Shares Outstanding	:
Effective Rate of Interest	:
Retention Rate (1 – DPS)	:

7.5.2 Market Share Approach

This approach emanates from the industry analysis. Once the estimate about the future prospects of the industry is completed, the analyst would then look into the firms which are the leaders and pacesetters in the industry and would then find out the market share of the firm to be analysed. The following steps can be adopted to implement this method.

1) Estimate the industry's total sales
2) Estimate the firm's share in the total sales in the industry i.e. market share
3) Estimate the profit margin
4) Multiply sales by profit margin to get total earnings
5) Divide earnings by number of shares outstanding to get EPS.
6) Multiply EPS by P/E ratio.
7) Holding period yield (HPY) $= \dfrac{(P_1 - P_0) + D_1}{P_0}$

In order to estimate the profit margin under this approach, the analyst has to understand the mark up and behaviour of cost and prices during the relevant range of activity. This calls for having an understanding of profit-volume relationship of the firm. The analyst should look into various component of costs like:

1) Fixed and variable cost, and
2) The level of sales volume the firm is likely to attain during the forecast period.

7.5.3 Independent Estimates Approach

Under this approach, each and every item of revenue and expense is estimated separately and summed up to arrive at the future EPS.

All the three approaches are traditionally utilised by security analysts. However, these are not mutually exclusive approaches. But one important and common limitation of these approaches is that they indicate point estimate of EPS and HPY and therefore, attach 100% probability of outcome.

7.6 MODERN METHODS OF FORECASTING EPS

Under modern approaches to forecasting earnings of a company, statistical techniques are used. The following techniques are generally included in this category:

- Use of regression and correlation analyses
- Use of trend analysis
- Decision tree analysis

Let us briefly discuss each of these.

7.6.1 Regression and Correlation Analyses

In order to find out the interrelationships of relevant variables, the techniques of regression and correlation analyses are used. When the interrelationship covers two variables, simple regression is used and for more than two variables, multiple regression technique is used. Using this approach, security analysts may find out the interrelationship between the variables belonging to the economy, industry and the company.

Major advantages in its application relate to deriving the forecasted value as well as testing the reliability of the estimates.

7.6.2 Trend Analysis

While using this technique, the relationship of only one variable is tested over time using the regression technique. In a way, it is the simple regression technique where the interrelationship of a particular variable is tested vis a vis time. That is why the name trend analysis. It is quite useful to understand the historical behaviour of the variable for the purpose of the security analysis.

7.6.3 Decision Tree Analysis

The above two methods are considered superior to the traditional methods employed to forecast the value of earnings per share. However, an important limitation remains. Both these methods provide only point estimate of the forecast value. In order to improve decision making process, information relating to the probability of occurrence of the forecast value is quite useful. Thus a range of values of the variable with the probabilities of occurrence of each value will go a long way to improve decision by the investor. To overcome these limitations, decision tree and simulation techniques are used.

Under the decision tree analysis the decision is assumed to be taken sequentially with probability of each sequence. Thus, in order to find out the probability of the final outcome, given various sequential decisions along with probabilities, the probabilities of each sequence is to be multiplied and summed up. In practice, whenever security analyst attempts to use decision tree analysis in conducting analysis of the securities, he starts with estimating the sales. The application of the decision tree analysis is illustrated below by taking a simple example:

1) Sales (Rs. lakhs) | Probability

10.0	.3
12.0	.5
11.0	.2

2) Expenses | Probability

6.0	.6
8.0	.4

3) P/E ratio | Probability

10	.4
20	.3
25	.3

4) Number of shares outstanding is one lakh.

A. Estimation of EPS by Decision Tree Approach

Probability	Sales (lakh)	Proba-bility	Expenses (lakh)		Estimated Earnings (lakh)	Shares–outstanding (lakh)	Estimated EPS (Rs)
		.6	6	3.0 – 3.6 =	– 0.6 +	1 =	– .6
	10						
		.4	8	3.0 – 3.2 =	– 0.2 +	1 =	– .2
.3		.6	6	6.0 – 3.6 =	+ 2.4 +	1 =	+ 2.4
.5	12						
		.4	8	6.0 – 3.2 =	+ 2.8 +	1 =	+ 2.8
.2		.6	6	2.2 – 3.6 =	– 1.4 +	1 =	– 1.4
	11						
		.4	8	2.2 – 3.2 =	– 1.0 +	1 =	–1.0
							2.0

B) Estimation of Share Price

Estimated EPS (Rs)	P/E Ratio	Probability	Eastimated share price (Rs)	
	10	.4	2 × 10 × .4 =	8
2	20	.3	2 × 20 × .3 =	12
	25	.3	2 × 25 × .3 =	15
				35

The above approach provide us the information with a range of values with the probabilities of their occurrence instead of a point estimate. This is quite helpful in forming expectations with regard to the likelihood of the events in order to better the decision making process.

Activity 2

A) List out traditional methods of forecasting EPS.

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B) Compare and Contrast traditional methods of forecasting EPS with modern methods.

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7.7 QUALITATIVE ANALYSIS

As mentioned earlier, the quantitative approach helps us to provide a quantitative measure of the value of an equity. Various methods/models discussed above are quite useful. But caution is required to base one's decision only on the figure derived by such analysis. Analyst is required to bear in mind qualitative/subjective factors. An alert analyst would be able to gather such information from the following sources:

- Company's financial statements
- Financial Press, magazines etc.
- Company's officials
  This information may relate to the following factors:

- Availability of infrastructure
- Inventory-size, value, risk
- Order book position
- Product risk
- Marketing & distribution
- Components of cost-fixed and variable
- Availability of raw material inputs
- Cost of inputs
- Quality of personnel
- Quality of management
- Future plans

With the qualitative factors in mind, an investor/analyst can judge whether the quantitatively derived measure of value of an equity is reasonable or not and accordingly take informed risk while taking the decision to invest or disinvest shares of a company.Of all the qualitative factors, quality of management is most important. As one successful investor quipped 'I don't invest in products; I invest in management'; What he meant was that more than considering product, he analyses management of the company. Needless to say, the assessment of quality and competence of management is perhaps most difficult. J.C. Francis (1983) suggested a list of forty four questions to be probed and answered in order to assess management of a company. These questions have been given as appendix 7.1.

On going through these questions, you will notice that finding good answers to many of these questions is not easy. The security analyst who tries to find good answers to these questions must do some ingenuous detective work, possess a high degree of sensitivity and spend hours of hard research. We may however point out here some critical aspects of company management which every investor must carefully probe. These are commitment and competence, future orientation, image building, investor friendliness and government relation building.

As far as commitment is concerned, the investors must look up the past record of management to particularly see that it did not indulge in premature diversion of funds from one company to another. The competence of the management may be viewed in terms of the composition of the board, professional qualifications and experience of the members of board and the chief executive.

The future orientation of a company management can be gauged through research and development expenditure, managerial development and training expenses and unexhausted fund-raising capacity of the company.

Does it undertake sufficient image building activities? This is important to watch. The image building activities of a management will reflect in its community development activities and management of relations with the press and media.

The investor friendliness of the management can be assessed from its dividend policies i.e., payment of dividend in cash or kind and issue of bonus shares. Management of shareholder grievances can give fair idea about the investor friendliness of company management.

Another aspect of company management, which is particularly important in a country like India, characterised by high degree of government regulation, is its track record of managing relations with the government. How many capacity renewals/expansions could it win from the government? And in how much time? The answers to these questions can be fairly insightful about the capability of the company management to manage government relations which holds very high significance particularly in an economy characterised by wide-spread government regulation of business and industry.

We may conclude by stating that management, though most difficult to evaluate, holds the real key to the quality of equity investment decision. As part of fundamental analysis, company management must be evaluated for its commitment, competence and capacity to manage operations of the company and shareholder, community and government relations. Past track record of the management in this regard can come handy. The problem is particularly challenging where it is a new management, without having past track record. Such a situation would perhaps demand venture capitalist skills.

Activity 3

A) Take recent financial statements of any company and calculate the value of its equity share using the dividend discounted method and P/E ratio approach.

B) Compare the values calculated by the above methods with the market price of its share? Are these the same ? If there is any difference, give possible reasons.

7.8 SUMMARY

The analysis of a company is important as it is in the shares of a company that an investor invests. This requires forecasting both future price of the share as well as dividends. Future price of the share can be calculated using two approaches: discounted dividend model and P/E ratio approach. Earnings per share is the most important and widely used variable in valuing equity share. Forecasting EPS is very crucial for investment decision making. There are traditional as well as modern

methods of forecasting EPS. Traditional methods are ROI approach, Market share approach, and independent estimation approach. These methods provide a point estimate of the forecasted variable. Modern forecasting methods are: regression and correlation analysis, trend analysis, decision tree analysis and simulation. Decision tree and simulation methods provide a range of values with probability of their outcomes. Such informations are quite useful in making investment decisions. However this calls for generating information regarding probabilities of occurrence of various outcomes. The common limitation of these approaches is that these are quantitative in nature . Investor must try to find the reasonableness of the value of the share by taking into account the qualitative factors. Company management constitutes most difficult, yet most critical, qualitative factor to be analysed by the investor or investment analyst. Past track record of the company management would come handy here. However to analyse a new management, without having past track record, perhaps the skills of the venture capitalist are needed.

7.9 SELF-ASSESSMENT QUESTIONS/EXERCISES

1) Why do you think company analysis is important for equity investment decision?

2) 'Estimation of equity price is the main challenge in the entire process of equity investment decision'. Comment.

3) What are different methods of quantitative analysis used for equity investment decision? How do they differ from qualitative analysis?

4) What are different methods of forecasting EPS? which one do you consider the best and why?

5) Using imaginary date explain and illustrate decision tree analysis for forecasting EPS.

6) 'Evaluation of management is the main challenge in company analysis. Comment, and explain how would you go about it.

7) Write short notes on the following?

   a) Dividend Discounted Method

   b) Price-Earnings Approach

   c) ROI Approach

   d) Market Share Approach

   e) Independent Estimates Approach

8) Three months after learning of the death of his uncle, Mahesh got letter from Digpaul & Associates, attornies at law, that read in part:

   ... and therefore, you will receive from your uncle's estate the following securities:

   200 shipping Industry Debentures

   Par value: Rs 100

   Coupon: 11.5 percent, compounded semiannually

   Maturity: December 31, 1997

   Current yield: 13:8

   250 Ferros metal Industry bonds

   Par value Rs 100

   Coupon: 12 percent, compounded semiannually

   Maturity: June 30, 1996

   Current yield: 13 percen.

3000 Shares, Ferros metal Preferred stock

Par value: Rs 10

Indicated dividend: 11 percent

Maturity: None

Current yield: 15 percent

These securities may be picked up by you or your representative at our office at any time after December 31, 1992.

Mahesh was very pleased to be remembered in his uncle's will but was less than pleased with a portfolio consisting of fixed income securities.

Being a young man with family responsibilities, Mahesh decided that he was more interested in capital growth than fixed income. He called Lal & Co., his broker, and asked for some advice. In response he received the following letter:

> I am delighted to hear of your good fortune and of your desire to invest in high quality securities. May I suggest that you investigate Maharashtra Cement and Hind Petro, two fine companies with excellent prospects for their common stocks. I enclose our recent writeups on each company. If you decide to invest in common stock, let me know and I would be pleased to liquidate your fixed income holdings.

After looking over the prospects for the two companies, Mahesh has decided that either company would suit his needs, provided it offered 24 percent before tax return on his investment in the common stock. He has decided to liquidate his current portfolio and invest in the firm whose stock is most realistically priced, if the stock also offers a return of at least 24 percent.

Required

1) What is the current value of Mahesh's portfolio?
2) What are the intrinsic values of the common stock of Maharashtra and Hind?
3) Which stock is the best buy? why?

Maharashtra Cement

			Projected	
	1991	1992	1993	1994
Revenues	411	453	500	550
Net income	73	80	88	97
Earnings per share	Rs. 12.2	Rs. 13.0	Rs. 14.7	Rs. 16.2
Dividends per share	Rs. 5.0	Rs. 5.5	Rs. 6.0	Rs. 6.5
Market price				
Average for year	Rs. 80	Rs. 90		
High for year	Rs. 130	Rs. 140		
Low for year	Rs. 60	Rs. 70		

10-year growth rate:

1983-92 11 percent annually

1993-2002 9 percent annually

Shares outstanding, September 30, 1992: 6,150,000 shares

Market price, December 31, 1992: 85

Hind Petro

			Projected	
	1992	**1993**	**1994**	**1995**
Revenues	897	1022	1165	1330
Net income	179	204	223	266
Earnings per share	Rs. 17.9	Rs. 20.4	Rs. 23.3	Rs. 26.6
Dividends per share	Rs. 7.0	Rs. 8.0	Rs. 9.5	Rs. 11.0
Market price				
Average for year	Rs. 180	Rs. 210		
High for year	Rs. 270	Rs. 310		
Low for year	Rs. 110	Rs. 150		

10-year growth rate:

1983-92 12 percent annually

1993-2202 10 percent annually

Shares outstanding, September 30, 1992: 10 million

Market price, December 31, 1992: Rs. 160

7.10 FURTHER READINGS

Amling, F. 1984, *Investment - An Introduction to Analysis and management*, 5th ed., PHI, New Delhi.

Fischer, D.E. and R.J. Jordan, 1991, *Security Analysis and Portfolio Management*, 5th ed. PHI, New Delhi.

Francis, J.C., 1983, *Management of Investment.*

Appendix - 7.1

J.C. Francis, in his book, Management of Investment (1983) suggested the following list of questions which may be used to evaluate the management of a company.

1) Is management aggressive and growth oriented?
2) Is management looking ahead or resting on its part accomplishment?
3) Does the firm plan ahead, or is it managed by crisis?
4) Does the firms executives appear to have energy and good leadership instincts? Or, are the executives tired, dull, educationally deficient unable to answer questions satisfactiorily too young, too old or experienced?
5) Is the firm well diversified?
6) Does one customer provide most of the firm sales?
7) Does one product line provide most of the firms's sales?
8) Does the firm use only one marketing channel for its sales?
9) Is the firm a timebomb that is about to explode like lockhead was in early 1969? (Witnessing significant drop in sale).
10) Does the firm appear to have an adequate R & D program?
11) Is the industry in which the firm is located experiencing an increasing or decreasing sales trend?
12) If the trend is downward does the firm have a product that is becoming obsolete?

13) If this is the case, is the firm pouring all available funds into new product development while also seekings growing firm with which to merge?

14) Even if the company is profitable and is enjoying sales growth, does it nevertheless retain some of its current earnings for R & D expenditure?

15) Does the firm properly utilses its board of directors?

16) Does the board have many of the firm's own executives on it or does the board largely consist of competent executives from outside the firm, as it should?

17) Does the board of directors have access to information it needs to properly oversee and direct the firm?

18) Does management satisficatorily respond to vigorous questioning by the board at regular intervals?

19) Does the firm have management depth?

20) Is it a firm run by someone whose ego won't permit other competent managers to develop, or does the firm have an established chain of command?

21) Are authority and responsibility delegated are decentralised?

22) Does the firm have a good team of middle managers being groomed to take over some day?

23) Are Junior executives being developed properly?

24) Is management dynamic and flexible?

25) Do the firm's managers have the foresight and self-confidence needed to make the decisions essential to earnings high rates of profit?

26) Is the company profitable?

27) Is each product line profitable or at least potentially profitable?

28) Is each of the firm subsidiaries making its fair contribution to the parent corporation?

29) How high are th firm's profits margins compared with those of its competitors?

30) How does the firm's rate of return on equity compare to the returns available in equally risky industries?

31) Does the firm maintain or even augments its cash dividend payouts?

32) Is the firm keeping up with business development?

33) Are computers being used as they should be within the firm?

34) Is the company cleaning up its own messes or might the Environment Protection Agency sue the firm in order to force compliance with the pollution laws?

35) Does the firm hire fairly from among groups that have suffered the effects of discrimination?

36) Does the firm use inflation adjusted accounting statements?

37) Are the annual reports to shareholders informative or are they just pretty pictures and stories that flatter the firm's management?

38) Are managers properly compensated?

39) Do top executives have thier initiative stifled by fixed salaries or are bonuses, stock options and other incentives used to motivate top managers?

40) Does the management team have enough experience?

41) Does the firm promote people too quickly or too slowly?

42) Are too many or too few outsiders hired into top management slots?

43) Are executives fired so frequently as to make the remaining executives nervous about their own job security?

44) At the other extreme are top management job used as retirement positions for old and sometimes incompetent executives?

UNIT 8 TECHNICAL ANALYSIS

Objectives

The objectives of this Unit are to :

- explain the meaning of technical analysis and distinguish it from fundamental analysis
- discuss the origin and development of technical analysis
- pinpoint the Dow Theory and its basic tenets and explain and illustrate classical formations and the related rules
- explain and illustrate techniques of modern technical analysis
- highlight market indicators, as different from individual stock indicators.

Structure

8.1 Introduction
8.2 Meaning of Technical Analysis
8.3 Fundamental Analysis vs. Technical Analysis
8.4 Origin and Development of Technical Analysis
  8.4.1 Dow Theory and its Basic Tenets
  8.4.2 Classical Technical Analysis
  8.4.3 Modern Technical Analysis
8.5 Techniques of Technical Analysis
8.6 Market Indicators
8.7 Limitations of Technical Analysis
8.8 Summary
8.9 Self-assessment Questions/Exercises
8.10 Further Readings

8.1 INTRODUCTION

We noted in the previous Unit that estimating the future price of stock is the central concern of the equity investment decision and the fundamentalists makes a judgment of the stock's future price with a risk-return framework based upon economy, industry and company analyses. The principal decision variables take the form of earnings per share and dividend pay-outs.

In this Unit, we shall discuss an alternative approach to predicting stock price. This approach is called technical analysis or chartist approach. What is the meaning of technical analysis? How does it differ from fundamental analysis? What is its origin? What are its tools and techniques? What are their limitations? We sha l take up these questions one by one in this Unit. Let us, first of all, understand its meaning.

8.2 MEANING OF TECHNICAL ANALYSIS

Technical Analysis is concerned with a critical study of the daily or weekly price and volume data of the Index comprising several shares, like Bombay Stock Exchange Sensitive Index (SENSEX), or of a particular stock, like the Tata Iron and Steel Co. (TISCO).

8.3 FUNDAMENTAL ANALYSIS VS TECHNICAL ANALYSIS

The price of most of the Indices and the stocks keep on varying in a seemingly erratic fashion, so much so that the difference between the high and the low during a year may exceed by a ratio of two or more, even though the fundamentals do not change much. For instance, inspite of the daily variation of price, the earnings of the company do not vary during the year; the book value, the loans, the profit margin, the taxes and other charges, depreciation, etc. may not change from one annual report to the other. Hence, the fundamentals dictate the price horizon of the shares of a company, but are not able to say what the price at a particular point of time would be. Technical analysis incorporates techniques to determine when an equity is overbought, at which point of time it can be sold at a high price, or is oversold, at which point of time it may be bought at a low price.

According to a firm offering technical analysis services, the technical analyst or technician believes that the price movements, whatever their cause, once in force persist for some period of time and form patterns which can be detected. He further believes that by critical study of these patters of price and volume of trading, he can predict whether prics are moving higher or lower and even by how much. In sum and substance, technician believes that the forces of supply and demand, guided by logical as well as emotional factors, reflect in the price and volume movements and by carefully examining the pattern of these movements, future price of stock can be reliably predicted. And since the whole process involves much less time and data analysis, compared with fundamental analysis, it facilitates timely decision.

Timing of Trade is the Important Thing

Experts advise you to invest in a fundamentally strong company, one which has high reserves, large profits, low debt, and pays high dividends. But, if you buy such a share at the wrong time and then the price moves down, you lose, inspite of the strong fundamentals. With technical analysis you can avoid this pitfall, because it tells you the most appropriate time to buy a share and the most appropriate time to sell the same.

Why is Technical Analysis Superior to Fundamental Analysis?

Technical analysis analyses the buying and selling pressures which govern the price trend. It enables you to buy cheap and sell high regardless of the type of company you choose. An example of the pitfall of fundamental analysis is given below.

In February 1991, the market (represented by BSE Sensitive index) started a long climb as shown in Chart (1). Most shares were going up and those pertaining to the steel industry were considered to be amongst the best. Fundamentalist recommended shares of Nippon Denro Ispat at Rs. 37, because this company had reserves twice the equity, and a good earning per share of Rs. 4.23. The price of this share had gone down to Rs. 29 (a loss of 21 percent), while the BSE index had risen from Rs. 1000 to Rs. 1850 (a gain of 85 per cent) in September 1991.

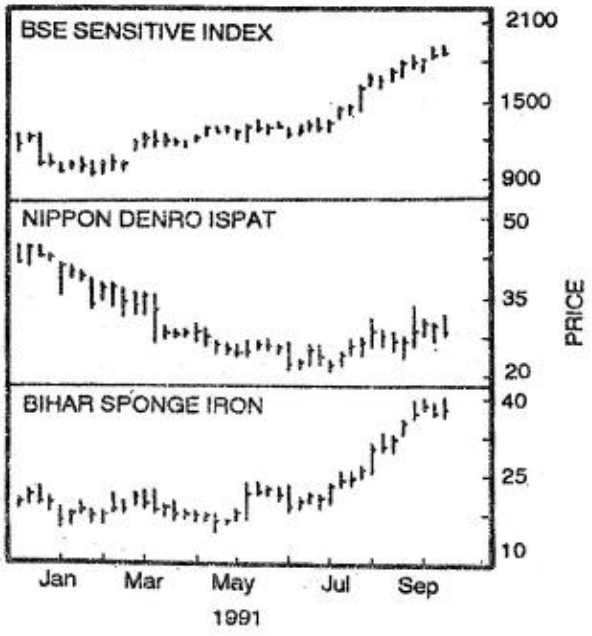
But had some body selected, at that time, Bihar Sponge Iron instead of Nippon Denro Ispat, he could have doubled his money. Bihar sponge Iron was a fundamentally weak company with negative reserves, and incurred a loss of Rs. 5.19 crore last year. It s earnings per share were minus Rs. 1.15. Technical analysis told to pick up the share for Rs. 20 at that time. In September 1991, it was quoted at Rs. 40 (a gain of 100 per cent).

The Insiders Versus the Crowd

Surveys indicate that 85 per cent of the investors lose money in the stock market. The insiders, who comprise 15 per cent of the total, win. They play a game. They spread rumours to mislead. They whisper to buy some shares because somebody

isbuying in huge lots and massive price rise is emminent. Some are tempted. They buy, only to lose ultimately and blame their *kismet* instead.

CHART (1)-THE DOWN FALL OF NIPPON DENRO ISPAT AND RISE OF BIHAR SPONGE IRON VERSUS BSE INDEX



You would notice that on the eve of a new public issue, relatively unknown companies come into preeminence. Big public campaigns are launched. Members of public are bombarded with mail. Hawkers thrust into your hands company prospectus and application forms. Magazines and newspapers splash the good news in big bold letters. The shares of companies which remained unheard of for a long time are traded actively on the stock market, at high prices. Many such companies go back into oblivion, after the public issue is over and leaves holes in many pockets.

But the insiders know the real truth. They do exactly the opposite of what the crowd does. They buy when the crowd sells and they sell when the crowd buys.

This is why the insiders, the stock brokers, and the company directors become multi-millionaires. This is why the membership of s Stock Exchange is coveted so much that the cost of a seat is astronomical, between Rs. 30 to Rs. 80 lakh.

The Broker

The broker belongs to the insider club. He gets prior knowledge of the inside working of a company. He knows why a company share are going up, and the shares of another company are going down. But, he may play against you in stock market. He makes money at the expense of gullible investors.

What does Technical Analysis do?

Price action of stock incorporates all the insider information. This includes manipulations within a company, the performance of the management, the hopes and the fears of the investors, the policies of the Government, the economic conditions, etc. Technical Analysis make meaningful studies of this price action.

It brings order into a seeemingly disorderly movement of prices. It highlights the hidden features in the price movements and lay bare the way the market is behaving and might behave in future. You will see from the description given later on, that the technical indicators used in technical analysis are based on many different components of the price movement.

This analysis of internal structure unfolds the insider action and brings to the fore the true picture. The cobwebs of rumours, differing opinions, and interested comments of the press are swept away. The investors are steered away from the crowd and are directed towards that strategy they should follow to win.

We thus note that technical analysis may be useful in timing a buy or sell order while fundamental analysis may help in identifying undervalued or overvalued stocks. It.is perhaps for this reason that technical analysis is frequently used as a supplement to fundamental analysis rather then as a substitute for it. The two approaches, however, differ in terms of their data bases and of focus analysis. While fundamental analysis focuses on macro and micro and qualitative and quantitative analyses, technical analysis is focused on market and individual stocks and uses quantitative analysis. The technician's central problem is to distinguish between reversals within a trend and real changes in the trend itself while fundamentalist seeks to identify the impact of changes in the fundamental factors on the value of stock. Fundamentalist's central problem is, thus, estimating the future value of stock as influenced by diverse macro and micro factors.

The technician views price changes and their patterns mainly through price and volumn statistics. His bag of tools comprise charts and other indicators. Fundamentalist analyst on the other hand uses detailed economy, industry and company data and information and makes use of accounting and statistical techniques.

We may here conclude by saying that fundamental analysis and technical analysis are two alternative approaches to predicting stock price behaviour. It would be no surprise that the technical analysis can, and frequently does, confirm findings based on fundamental analysis. After all, if fundamental analysis seeks to guide price action, technical analysis seeks to analyse the price action. You might now like to know something about the origin and development of technical analysis, which we shall indicate in the following:

Activity I

A) What do you mean by technical analysis?

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.....

B) List out two points of difference between fundamental analysis and technical analysis.

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C) Why should technical analysis confirm findings based on fundamental analysis?

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.....

8.4 ORIGIN AND DEVELOPMENT OF TECHNICAL ANALYSIS

Technical Analysis evolved in 1900-1902 when Charles H. Dow presented the celebrated 'Dow Theory' in a series of editorials in the Wall Street Journal in USA.

The Classical Technical Analysis evolved gradually in the early part of this century, and deals with a detailed study of price bar charts of the indices as well as the individual stocks.

The Modern Technical Analysis was perfected in the later part of the century. It went deeper into the internal structure of price movements, like the difference between the high and the low of a day, weeks or hours of trading, double moving averages, etc. The latest trend, evolved recently, uses the Synergetic Principle. Synergy represents the integrated behaviour of nature's systems. For example, addition of small quantities of various elements in a metal increases its strength considerably. Recently an alloy of cobalt and aluminium was found to be stronger than steel, and was also light in weight and was adopted for the space industry.

8.4.1 Dow Theory and its Basic Tenets

To start with, the Dow's Theory put forward six basic tenets as follows:

1) THE AVERAGES DISCOUNT EVERYTHING: Daily prices reflect the aggregate judgment and emotions of all stock market participants. This process discounts (takes into account) everything known and predictable that can affect the demand-supply relationship of the stocks.
2) THE MARKET HAS THREE MOVEMENTS: Primary movements, secondary reactions, and minor movements. The primary movement is the long range cycle that carries the entire market up or down. The secondary reactions act as a restraining force on the primary movement and tends to correct deviations from it. Secondary reactions usually last from several weeks to several months in length. The minor movements are the day-to-day fluctuations in the market. Minor movements have little analytic value because of their short duration and variations in amplitude.
3) PRICE BAR CHARTS INDICATE MOVEMENTS.
4) PRICE/VOLUME RELATIONSHIPS PROVIDE BACKGROUND.
5) PRICE ACTION DETERMINES THE TREND.
6) THE AVERAGES MUST CONFIRM: The movement of two different market indices must confirm each other to confirm the trend.

8.4.2 Classical Technical Analysis

Charting represents a key activity for the technical analyst. The two oldest and most widely used charting procedures are point-and-figure (P & F) charting and bar charting. The major features of P&F charting are that (1) it has no time dimension, (2) it disregards small changes in the stock price and (3) it requires a stock to reverse direction a predetermined number of points before a change in direction is recorded on the chart.

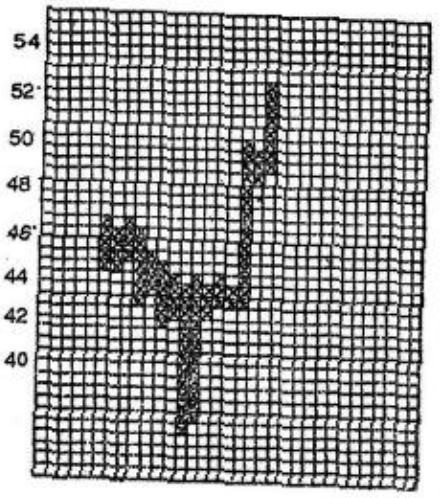
Bar Charts, on the other hand, contain measures on both axis - price on the vertical axis and time on the horizontal axis. On the bar charts, rather than just plotting a point on the graph, the analyst plots a vertical line to represent the range of prices of the stock during the period. Generally, bar charts also show at the bottom volumn information for the period of which price information is depicted.

Formations and Rules

A substantial number of formations and corresponding rules have been developed by chartists. Triple Top and the Congestion Area are two important formations observed on P&F charts.

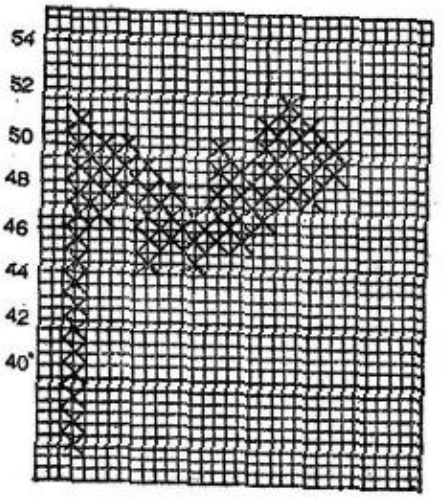
A *triple top* occurs when a stock reaches its third consecutive high at the same price level. A buy signal is given when the stock surpasses the third high. The triple top formation is depicted in Chart (2).

Chart (2): Triple Top Formation



A *congestion area* is formed on the chart by the lateral movements by Xs. This formation comes about by a series of brief rallies and reversals. Chart (3) depicts the same. The width of the congestion area gives insight into the probable size and *direction of stock price.*

Chart (3): Congestion Area Formation



Typical formations on the bar charts include head and shoulder, triangles, flags and pennants, support and resistance and trend lines.

Head and Shoulders: This formation is encountered when a bar chart forms a hump followed by a peak, and then another hump. A line joining the lowest points of the humps and the peaks produces a resistance line which foresees a bearish *market. A reversed head and shoulders formation is the opposite of this;* and depicts an on coming bullish tendancy.

Triangles: These are formed when the peak point of descending tops fall on a line, *as well as the ascending bottoms fall on a different line,* and both the lines join up at a point in the future. If the prices break out of this triangle upwards. it indicates *bullishness, and if the prices break out on the downside, it indicates bearishness.* The odds are that the new move will proceed in the same direction as the one prior to the triangle's formation.

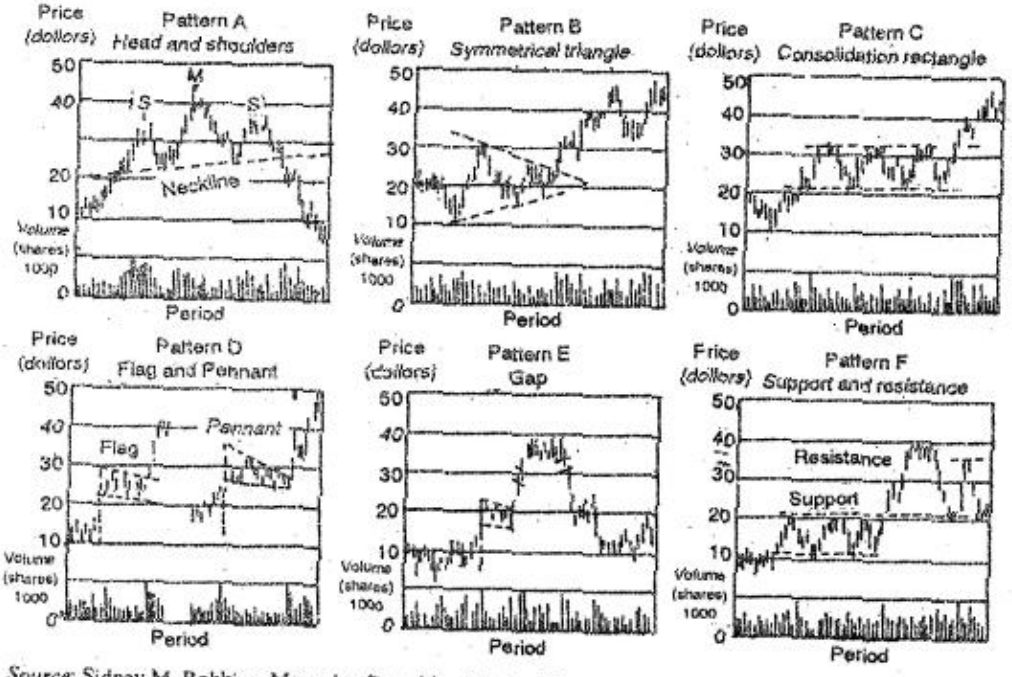
Flags and Pennants: These are forms when, in the midst of a big bull run, the price chart indicates a halt and the boundaries of this consolidation form a flag (parallel lines) or pennant (lines sloping down and up to meet at a point in future). These are formed almost exactly half-way between the bottom and the top, signaling bullish conditions.

Support and Resistance: *Support occurs when the price bar charts trend* downwards, but every time stop at a low price and bounce back. All these low *points can be connected by a horizontal line called a support line. If the stock prices* bounce back from a top, so that several tops can be joined together by horizontal line, *then this line* is called the *resistance line. If the stock breaks downwards from a* support line, it is very bearish. If it breaks upwards from a resistance line, it is very *bullish.*

Trendlines: The low point of a bar chart in a continuous upward move if joined together by a straight line, indicates the long term trend of the stock. Conversely, the high points of a bar chart in a continuous downward move if joined together, indicates the long term trend of the stock. If the trendlines are broken, other patterns should be closely studied to come to a conclusion about the nature of the market.

Some of the typical chart patterns used in technical analysis are shown in figures *8.1 and 8.2*

Fig. 8.1: Typical Price Bar chart Patterns



Source: Sidney M. Robbins, Managing Securities (Boston: Houghton Mifflin, 1954), p. 502. Reproduced in Fischer and Jordan, Security Analysis & Portfolio management, PHI, 1991.

8.4.3 Modern Technical Analysis

There are many technical analysts who put great weight on these charts and formations, but there are many others who do not. The modern technical analysis *deals with indicators, such as moving averages, exponential moving averages,* weighted moving averages, moving averages cross over, various types of bands around the moving averages like the bands in terms of standard deviations, Bollinger bands, etc., and the rate of change, etc. Several oscillators are also used, like stochastic, relative strength index (RSI), strength relative to a market index, moving average conversance divergence (MACD) technique.

Fig.8.2: Five Standard Chart Patterns

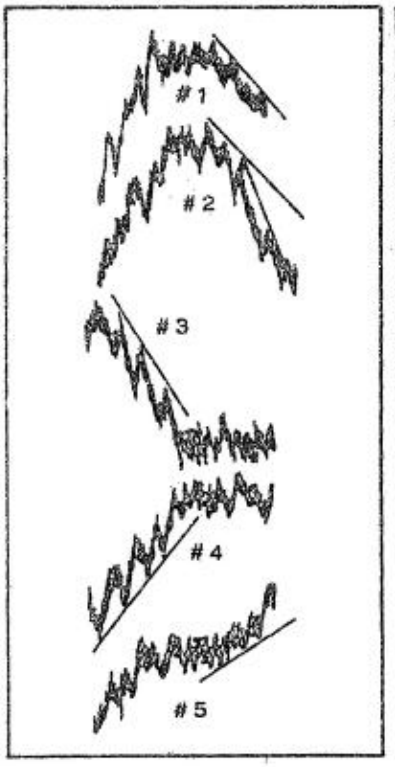


Chart Pattern #1 Stocks with vulnerable trends and/or Possible downside potential.
Chart Pattern #2 Stocks with less vulnerability that appear to have reached possible lows, but need consolidation.
Chart Pattern #3 Stocks that have declined and experienced consolidation, and could do well in a favourable market.
Chart Pattern #4 Stocks that have performed relatively well but are currently in "neutral" trends.
Chart Pattern #5 Stocks in established uptrends and/or with possible upside potential.

Source: Yale Hirsch, The 1971 Stock Trader's Almanac (Old Tappan, N.J.: The Hirsch Organisation, 1970), p.37.
Reproduced in Fischer and Jordan, Security Analysis & Portfolio management, PHI, 1991

In synergised trading systems, the trend following indicators and oscillators complement and confirm each other. The recent researches have found good results by combining the results of the indicators and the oscillators. For example, combining the moving averages with MACD or combining RSI with rate of change (ROC) can give useful signals.

Activity 2

A. What do the following formations signify?

a) Triple Top

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b) Head and Shoulder

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c) Flag and Pennants

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B. What do the following stand for?

a) RSI.....

b) ROC.....

c) MACD.....

8.5 TECHNIQUES OF TECHNICAL ANALYSIS

We give below, in the form of questions and answers, a simple and easily comprehensible presentation of the techniques employed by technical analysts:

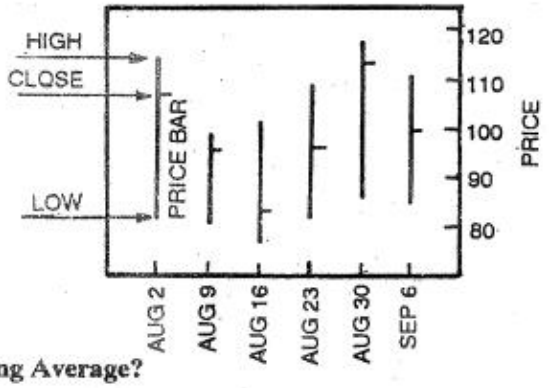
What is a chart?

A chart consists of a base line (horizontal) on which dates are marked. A perpendicular line at right angles to the base line is drawn and prices are marked on it.

What is a Price Bar Chart?

A Bar is formed by joining the highest price and the lowest price of a particular sate by a vertical line. The closing price of the day is marked by a horizontal mark on this vertical line.

Chart (4) - Price Bar Chart



What is a Moving Average?

An average is the sum of prices of a share over some weekly periods divided by the number of weeks. This point is market on the latest date for which a price bar has been plotted. This process is repeated for the previous dates. The points thus obtained are connected together to give the Moving Average line.

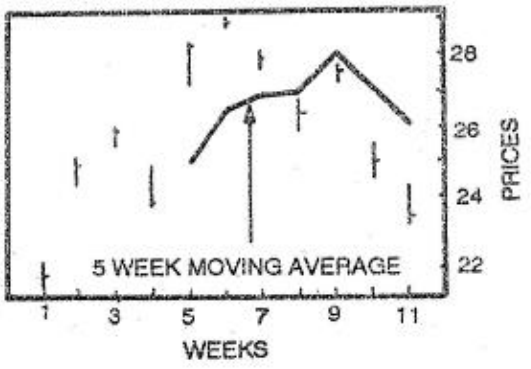
An example of the calculation of a 5-week Moving Average is given in Table A.

Table A - CALCULATION OF FIVE-WEEK MOVING AVERAGE

Week	Closing Price	Total of prices for five weeks	5-week average = Total / 5
1	22		
2	25		
3	26		
4	24		
5	28.5	125.5	25.1
6	29	132.5	26.5
7	28	135.5	27.1
8	26.5	136	27.2
9	27.5	139.5	27.9
10	25	136	27.2
11	23.5	130.5	26.1

The points calculated in the last column of th above table are plotted in Chart (5).

Chart (5) - Moving Average



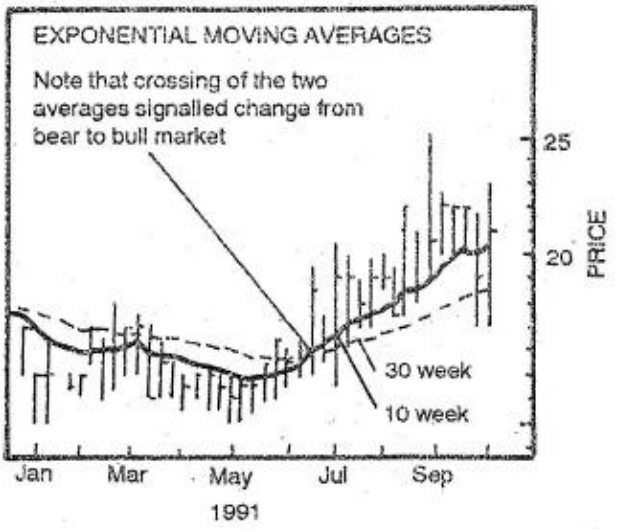
What is an Exponential Moving Average?

In an Exponential Moving Average, more weight is given on the most recent data and less weight is given to the older data.

What do the moving averages depict?

Moving Averages smoothen out the apparent erratic movement of share prices and highlight the underlying trend.

Chart(6) - Chokhani International: Exponential Moving Averages



In Chart (6), The 10-week Exponential Moving Average line depicts the intermediate term trend and the 30-week Exponential Moving Average line depicts the long term trend for Chokhani International.

When the 10-week moving average line slopes up, the intermediate term trend is rising. When the 30-week moving average line slopes up, the long term trend of the market is positive, i.e, the market is bullish. Similarly, when the 10-week moving average line slopes down, the intermediate term is falling. When the 30-week moving average line slopes down, the long term trend of the market is negative, i.e., the market is bearish.

What is an Oscillator?

The values of the 10-week moving average are subtracted from the values of the 2-week moving average. These differences are plotted on a horizontal zero line. As an example, calculations for a 2-week, 10-week Oscillator are illustrated in Table B.

The information of Table B is plotted in Chart (7).

Chart (7) - 2-week, 10-week Oscillator

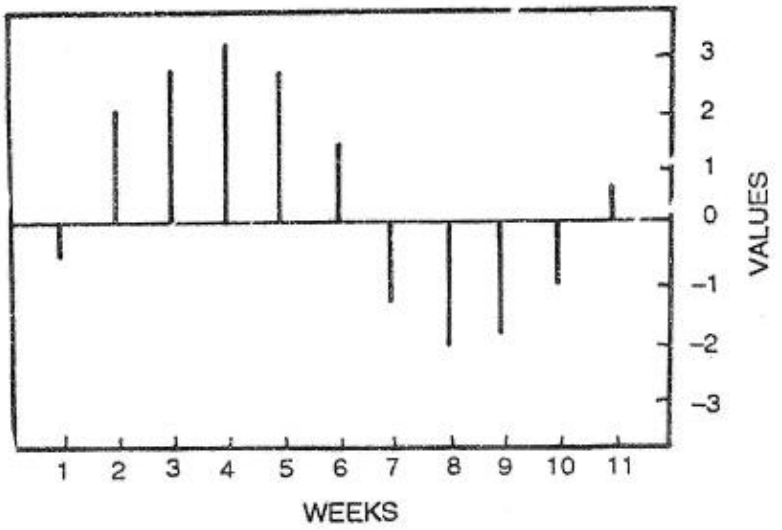


TABLE B - CALCULATION OF 2-WEEK, 10-WEEK OSCILLATOR

Week	2-week moving average	10-week moving average	Oscillator = difference of the two
1	19.5	20	−0.5
2	24	22	2
3	26.75	24	2.75
4	29	26	3
5	29.75	27	2.75
6	29.5	28	1.5
7	27.5	29	− 1.5
8	28	30	−2
9	27	29	−2
10	27	28	−1
11	27.5	27	0.5

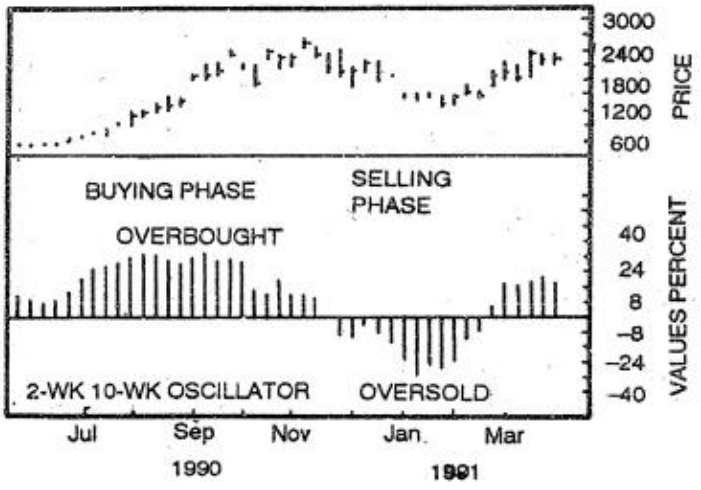
What help does an Oscillator give?

An Oscillator is an excellent indicator of overbought/oversold conditions.

Values above the zero line indicates that buying is in progress, while values below the zero line indicates that selling is in progress. When the Oscillator moves from negative to positive, it shows a possible buying opportunity. When the Oscillator moves down from the positive towards the negative, it indicates that selling may be considered.

The Oscillator for Associated Cement Companies and its signals are depicted in Chart (8).

Chart (8) :ACC : Price and Oscillator



What is Rate-of-Change (Momentum)?

It indicates the rate of change of the price as compared to the price a certain period back.

To calculate a 7-week Rate-of-Change,today's price is divided by the price 7 weeks ago, and this ratio is subtracts from 1. An example of the calculations is given in Table C.

TABLE C - CALCULATION OF RATE-OF-CHANGE

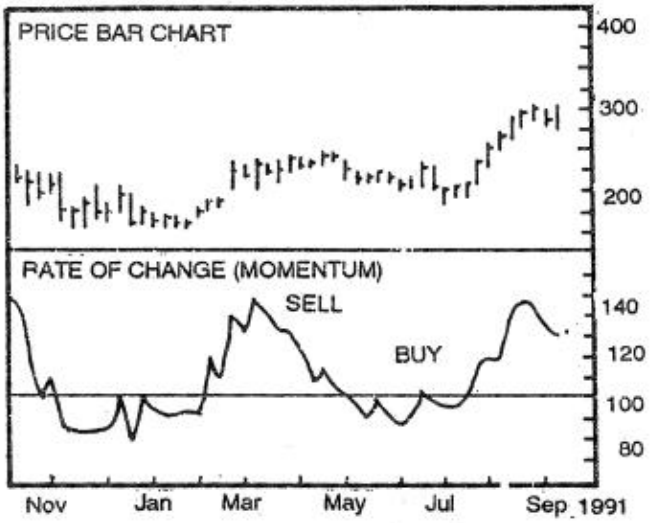
Week	Closing Price	Price Seven weeks ago	Ratio of the two prices	ROC = Ratio less 1
1	49			
2	50			
3	52			
4	54			
5	55			
6	56			
7	56	49	1.14	0.14
8	55	50	1.1	0.1
9	54	52	1.04	0.04
10	48	54	0.89	-0.11

How does Rate-of-Change (ROC) help ?

ROC depicts the speed of upward or downward movements of the price ahead of the price movement. When the ROC line is above the zero line, the price is rising and when it is below the zero line, the price is falling.

Upside crossings (from below to above the zero line) indicate buying opportunities and down side crossings warn you to sell. Rate-of-change curve of Bombay Dyeing is shown in Chart (9).

Chart (9) : Bombay Dyeing ; Price and Rate of Change



What is Relative Strength Index?

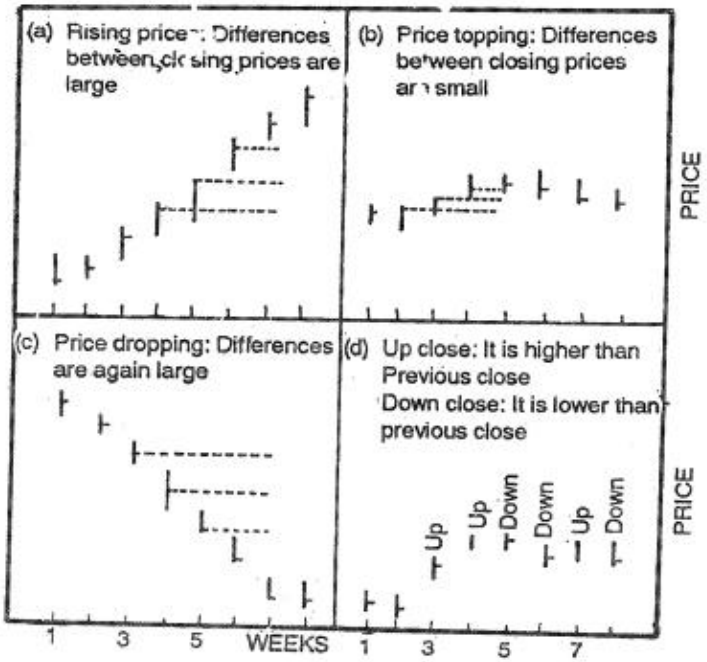
This index emphasizes market moves before they occur.

When the price of a stock ac ances, the closing price is higher than the closing pri:e of the previous day. When the price of the stock declines, the closing price is lower than the closing price of the previous day.

However, the rise or fall of a market is not smooth. During the rising phase, the price falls several times, while during the falling phase, the price rises several times.

Relative Strength Index tells us whether the net difference between the closing prices is increasing or decreasing. The concept of Relative Strength is illustrated in Chart (10).

Chart (10) : Relative Strength Illustrated



During the rising phase of the market, the prices move up fast, and the differences between the recent close and the previous close are large. When the market reaches the top, these differences reduce. When the market declines, the difference again become large.

The formula for 14 - week Cutler's Relative Strength Index (RSI) is given Below:

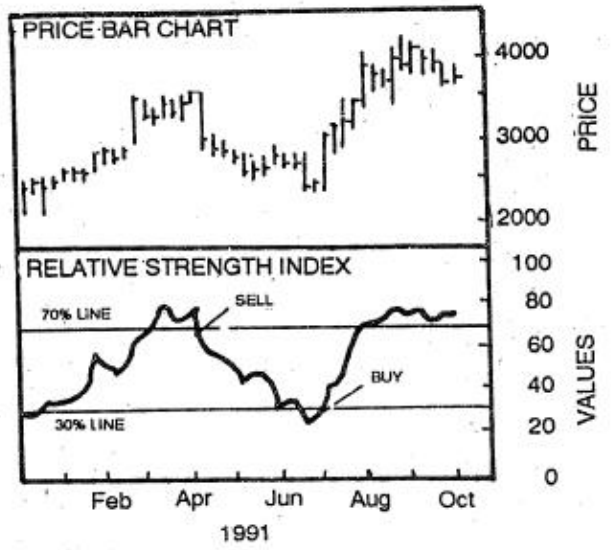
$$RSI = 100 - [\,100/(\,1 + RS\,)\,]$$

where

$$RS = \frac{\text{Average of 14 weeks' up closing prices}}{\text{Average of 14 weeks' down closing prices}}$$

This is powerful indicator and pinpoints buying and selling opportunities ahead of the market. It ranges in value from to 0 to 100. Values above 70 are considered to denote overbought conditions, and values below 30 are considered to denote oversold conditions.

Chart (11) - Hoechst India: Price and Relative Strength Index



If the RSI has crossed the 30 lines from below to above and is rising, a buying opportunity is indicated. If it has crossed the 70 lines from above to below indicates a selling opportunity. Note these signals in Chart (11) which shows the Relative Strength Index of Hoechst India.

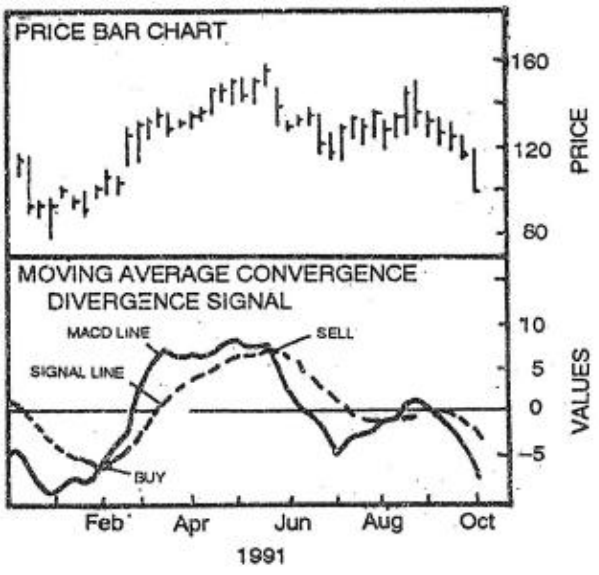
What is Moveing Average Convergence Divergence (MACD) Signal?

This indicator gives advance warning of buying and selling opportunities.

A firm line and a dotted line are plotted above or below a zero line. The firm line represents the difference between a 12-week exponential moving average and a 6-week exponential moving average. The dotted line represents a 9-weeks exponential moving average of the differential. If the lines are below the zero line and the firm line crosses the dotted line from below to above, it indicates buying opportunities. If the lines are above the zero line and the firm line crosses the dotted line from above to below, it indicates selling opportunities.

Chart (12) shows the MACD lines for Kelvinator India. Note that buy signal was given in Feb 1991 after which the prices rose from Rs. 100 to Rs. 150. A sell signal was given in late may 1991 when the price was Rs. 138.

Chart (12) - Kelvinator India: Price and MACD Signal



8.6 MARKET INDICATORS

After discussing various techniques of technical analysis under 8.5, we may make it clear that technical indicators help not only to predict individual stock price behaviour but also the trend of the market. Some important Price, Volume and other indicators of market are highlighted below:

Price Advances vs. Declines: By Comparing number of shares which advanced and those declined during a certain period of time, one may know what the market is really doing. The difference between the advances and declines is called 'breadth of the market'. The technician is generally more interested in change in breadth than in absolute level. Further, breadth may be compared with a stock-market index. Normally, breadth and the stock market index will move in unison. However, when they diverge, a key signal occurs. During a bull market if breadth declines to new lows while the stock market index makes new highs a peak in the average is suggested. The peak will be followed by major downturn in stock prices generally.

High-low Differential or Index can be used as a supplementary measure to 'breadth of the market' to predict market. In theory, a rising market will generally be accompanied by an expanding number of stocks attaining new highs and a dwindling number of new lows. The reverse will hold true for a bearish market.

The **volume of short selling** which refers to selling shares that are not owned, can be useful indicator of the market as well as for individual stocks. Short selling, or as it is called **short interest** also, can be related to average daily volume. The short interest for a period say a month, divided by average daily gives a ratio. This ratio indicates for many days of trading it would take to use up total short interest. Historically, on the New York Stock exchange (NYSE) and the American Stock Exchange (AMEX), the ratio has varied between one-third of a day and four days. In general when the ratio is less than 1.0, the market is considered weak or weakening. It is common to say that the market is overbought. A decline should follow sooner or later. The zone between 1.0 and 1.5 is considered a neutral indicator. Values above 1.5 indicate bullish territory with 2.0 and above highly favourable. This market is said to be 'oversold'. A rise should follow sooner or later as 'oversold' state will lead to buying pressure (to cover short position) in the market.

Odd-lot trading, which can be measured by constructing an odd-lot index by relating odd-lot purchases to odd-lot sales (Purchase + Sales), can indicate the direction of the market, as technicians feel that the odd lotters are inclined to do the wrong thing at critical turns in the market. Rising index indicates rising market and falling index indicates falling market which, in effect, mean selling proportionately less at or near the market peak and selling proportionately more before a rise in the market.

Mutual-funds Cash as a Percentage of Net Assets on a daily or weekly or monthly basis has been a popular market indictor. The theory is that a low cash ratio, say about 5% would indicate a reasonably fully invested position leaving negligible buying power indicating that the market is due for climb down. High cash ratio indicates possibilities of market climb up.

In the U.S., two **confidence indicators** have been quite popular with market analysts. One is *Barron's* ratio of higher-to lower grade bond yield. And the second is *Standard and Poor's* low priced and high grade common stocks. A rise in *Barron's* ratio indicates a narrowing of the spread between high and low grade bonds which is considered indicative of the rising markets. A fall in the ratio would indicate declining markets.

The *S&P* confidence indicator relates low-priced (speculative) stocks to the high-grade (quality) stocks. A rise in the ratio (low priced/high grade) indicates rising market, while a fall in the ratio is indicative of declining market.

General Motors Theory is that as General Motors goes so goes the market.

Indeed, the number of indicators technicians use to predict changes in the direction of the overall market is almost limitless. In the foregone discussion, we have tried to capture the essence of some such indicators.

8.7 LIMITATIONS OF TECHNICAL ANALYSIS

The Dow's theory serves only as a starter so far as Indian conditions are concerned. Let us review each of the basic tenets of Dow theory, one by one.

THE AVERAGES DISCOUNT EVERYTHING: This is valid even in India. The most popular depictions of averages are simple moving average (average of close, high or low price of a given period) and exponential moving averages (which extend the average over the entire record, assigning more weight to the most recent data). Moving averages of 30 days or 5 weeks depict short term trend and moving averages of 200 days or 14 to 40 weeks depict long term trend. The crossovers of two averages indicate that the trend is changing direction. For instance, if the 5-weeks moving average crosses the 14-week moving average from below to above, it indicates beginning of bullish phase, and may define buying opportunities. The reverse is true if crossing is from above to below.

THE MARKET HAS THREE MOVEMENTS: Primary, Secondary and Minor. Elliot Wave Theory is the most popular depiction of this principle. It states that the market moves up in five waves i.e., five up or down, e.g., three moves up and two down,while it moves down in three to five waves. These waves are primary, secondary and tertiary superposed on each other, and it takes experience to separate the three movements. For instance, an upward movement of a primary wave comprises five secondary waves, and so on. This applies well to stocks in U.S.A where the market movement is free from all constraints, and the public takes part freely in investment as well as options trading. However, in India the market suffers frequent upheavals because of the frequent changes in the government policy, as well as speculative activity indulged in by brokers, and it is not unusual to see the market gain by 25% post-budget, and the individual stocks may jump up or down

by 50% within a few weeks due to speculation. Hence in India this theory does not apply, though some analysts persist in trying to fit the market movements to this theory.

PRICE BAR CHARTS INDICATE MOVEMENT: This is true, but moving averages remove the daily or weekly fluctuations and bring out the trend more reliably.

PRICE/VOLUME RELATIONSHIPS PROVIDE BACKGROUND: Unfortunately volume data are not reported in India, and the volume data of specified group shares, where in forward trading is allowed by the exchanges, is published after delay of several weeks. Since forward trading is no indicator of the actual market activity, these relationships are of little value in India.

PRICE ACTION DETERMINES THE TREND: This is true in India as well.

THE AVERAGES MUST CONFIRM: This is based on the premise that if one group of activity, say manufacturing, does not trend in the direction of another group, say transportation, it indicates an oncoming change of trend of the market. In U.S.A. data about different activities is regularly published, for instance, utilities average and transportation average. In India, we only get data for all activities grouped together in the published indices, e.g., BSE Sensitive Index, BSE National Index, FE Index, DSE Index, etc. Hence such a comparison is not possible.

Further, in India the Stock Exchange Foundations in itself creates inaccuracies while publishing daily price movements on which the public at large base their investment decisions. This is not so in U.S.A. as minute-by-minute computerised quotations are available on the computer screens. In Indian stock exchanges brokers indulge in huge trading on their own account, using the customers' money, and thereby pocket profits to themselves. The Futures trading is extremely unregulated, and the Badla charges are changed every few weeks without any rationale. Also, the dates of settlement are frequently extended for no apparent reason. This is not so in U.S.A., where the option prices are published daily in the newspapers, and on computers, and the public can freely take part in the futures trading, thus limiting the power of the brokers.

The function of technical analyst, investment advisor, financial adviser, portfolio manager, stock broker and stock exchange management are all vested with the stock brokers in India. In reality no one can do more than one job listed above at one time.

The stock brokers are grossly inadequate in number compared to the transactions involved and thus a seller's market has envolved where in the public has to jostle in order to get their orders executed. This gives the brokers a hand to cheat the public. This shortage of brokers required to conduct the business of the day is compounded by the shortest trading hours in the world (12.00 AM to 2.30 PM), coupled with very frequent shut down of the Stock Exchanges. In U.S.A., the Stock Exchanges work from 9.00 Am to 4.00 PM, Monday to Friday,with only 5 holidays in a year.

Insider manipulations are rampant in the Indian Stock Market. Such manipulations are encountered in U.S.A. also, but they are few in number and the culprits are caught and punished. In the Indian Stock Market, it is not unusual to find that the price of a share doubled in one day, and fell back to its original value a few says later. All these malpractice leave their mark on the prices of stocks. The charts do not represent the true balance of the demand and the supply forces, as in NYSE, but have superposed in them the manipulations, artificial pricing and the cover provided by delayed transactions and settlement. Hence some of the technical analysis techniques suitable for NYSE are not found suitable here and indicators evolved for American conditions may lead to erroneous conclusions.

Activity 4

A. List out three market indicators.

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B. List out two reasons for which all the techniques of technical analysis as developed and applicable in U.S.A. are not applicable in India.

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8.8 SUMMARY

In this Unit, we have discussed the technical analysis approach to predicting share price behaviour. This approach differs from fundamental approach is as much as it is based on the analysis of movements of price and volume of stocks, while fundamental analysis is focused on economy, industry and company variables affecting share price. The two approaches are, however, complementary to each other rather than substitutes. In this Unit, we have also explained the origin and development of technical analysis. The Dow Theory, which takes its name from Dow-The originator of technical analysis, dated 1902-4, and its basic tenets have been discussed and classical charting techniques viz. point and figure chart and bar chart and classical formations viz, triple top, congested area,head and shoulder, triangle, flag and pennant and support and resistance, etc., have been explained and illustrated. The techniques of modern technical analysis viz. price bar charts, moving averages, exponential moving average, oscillators, Rate of Change (ROC), Relative Strength Index (RSI) and Moving Average Convergence Divergence (MACD) techniques have been explained and illustrated. market indicators,as different from individual stock indicators, have also been highlighted. The Unit closes with a brief description of the limitations of technical analysis, as evolved and developed in U.S.A., in our conditions.

8.9 SELF-ASSESSMENT QUESTIONS/EXERCISES

1)0 Define 'Technical Analysis' and 'Fundamental Analysis'. Between the two which one do you consider superior and why?

20 Write a brief note on the origin and development of technical analysis.

3) Compare and contrast classical and modern technical analyses.

4) Compare and contrast 'Point-and-Figure-Charting' and the 'Bar- Charting'. Which one do you consider superior and why?

5) 'Technical analysis is useful for predicting individual share price as will as the direction of the market as a whole'. Elaborate and illustrate.

6) 'Technical analysis, as evolved and developed in U.S.A., requires various modifications for useful application in India'. Comment, Bring out the rationale for and nature of modifications, if any, required.

7) Write short notes on the following:

   a) Technical Analysis

   b) Dow Theory

   c) Charting

d) Classical formations and their rules

e) Market indicators.

8) a) What is General Motors Theory? How valid is it in India?

b) Would you agree that the counter part of General Motors Theory in India can be called the Reliance Theory? Why?

9) Write a brief note on the techniques of modern technical Average.

10) Distinguish between the following:

a) Moving Average and Exponential Moving Average

b) Oscillator and Momentum

c) Relative Strength Index and Moving Average Convergence Divergence Signal.

8.19 FURTHER READINGS

Clifford, P., 1992, *Technica.. .ysis*, vision Books, New Delhi.

Charles Le Beau and Gav 1 V. Lucas, *Technic l Traders Guide to Computer Analysis of the Futures Market*, *Business*-Irwin, Illinois, U.S.A.

Fischer, D.E. and R.J. Jordan, 1991, *Security Analysis and Portfolio Management*, 5th ed. PHI, New Delhi.

Martin, J., 1985, *Technical Analysis*, McGraw Hi'l.

Murphy J., 1986, *Technical Analysis of the Futures Market*, Prentice Hall, New Delhi.

UNIT 9 EFFICIENT MARKET HYPOTHESIS

Objectives

After reading this Unit, you should be able to:

- explain the concept of market efficiency
- differentiate various forms/degrees of market efficiency
- undertake various empirical tests of market efficiency
- pinpoint implications of efficient market hypothesis for security analysis and portfolio management.

Structure

9.1 Introduction
9.2 Definitions of Market Efficiency
9.3 Forms of Market Efficiency
9.4 Empirical Tests of EMH
  9.4.1 Tests of Weak Form
  9.4.2 Tests of Semi-Strong Form
  9.4.3 Tests of Strong Form
9.5 Anamolies in EMH
9.6 Indian Studies on Market Efficiency
9.7 Implications of EMH for Security Analysis
9.8 Implications of EMH for Portfolio Management
9.9 Summary
9.10 Self-assessment Questions/Exercises
9.11 Further Readings

9.1 INTRODUCTION

Efficient market hypothesis, or Random walk Model as it is sometimes called, is indeed a logical extension of the fundamental and the technical analyses approaches to equity investment decision. You would recall from Units 6 and 7 that fundamental analysis involved analysing fundamental factors such as economic influences, industry factors and company-specific variables viz. product demand, earnings, dividend and management, in order to estimate the intrinsic value of stock and comparing it with the current market price of the stock to make buy/sell decision. The technician, in essence, expected every other investor to undertake fundamental analysis and therefore found it a futile exercise to be undertaken by him or her. Instead he concentrated on analysing historical movements of price and volume of trading, the final outcome of the price action triggered by fundamental analysis, to predict future price of stock. Efficient market hypothesis (EMH) took the same logic a bit further. It said you can't outperform the market for the simple reason that there are numerous knowledgeable analysts and investors who would not allow the market price to deviate from the intrinsic value due to their active buying and selling. The current market price, therefore, reflects the intrinsic value at all time and there is therefore no need for fundamental analysis or technical analysis. Empirically also market prices have been observed to move randomly or independently, though technical analyst generated much evidence to the contrary. A net outcome of all this had been a good deal of confusion surroundings efficient market model or random walk model . It is perhaps for the same reason that we still talk of efficient market hypothesis and not efficient market approach to equity investment decision. In this Unit, we shall discuss the concepts and forms of market efficiency, some empirical tests of EMH and anamolies in EMH. In this Unit, we

shall also highlight the Indian works on market efficiency and the implications of EMH for security analysis and portfolio management. Let us begin by listing some of its definitions.

9.2 DEFINITIONS OF MARKET EFFICIENCY

Rationale investors seek to maximise returns at a given level of risk. If a security is underpriced, investors will quickly identify it and rush to pick it up. Competition for the underpriced security drives the price up. Hence it would be difficult to consistently achieve superior performance.

Most securities are correctly priced and it should be possible to earn a normal return by randomly choosing securities of a given risk level.

Notion of financial market efficiency is in fact akin to the concept of profit in a perfectly competitive market. Abnormal or excess profits, in such a market are competed away. In an efficient market new information is discounted as it arrives. Price *instantaneously* adjusts to a new and correct level.

An investor cannot consistently earn abnormal profits, by undertaking fundamental analysis (to identify undervalued/overvalued securities) or by studying the behaviour of share prices with a view to discerning definite patterns. Isolated instance of windfall gains from the stock market do not negate the theory that markets are efficient.

William Sharpe stated that

A perfectly efficient market is one in which every *security price equals its market value at all times.*

Eugene Fama expressed that

An efficient capital market is a market that is efficient in processing information. The prices of securities observed at any time are based on "correct" evaluation of all information available at that time. In an efficient market, prices *fully refelect* all available information.

Substantial evidence has been presented by empirical studies regarding the validity of EMH. Conclusion of these studies is not that superior performance is impossible, but that consistently superior performance for a given risk level is extremely rare.

Paradox of the efficient market is that it is efficient because of the organised and systematic efforts of thousands of analyst to evaluate intrinsic values. It ceases to be efficient the moment such efforts are abandoned by the investing community and analyst firms. Market prices will promptly and fully reflect what is knowable about the companies whose shares are traded only if investors seek superior returns and analyse information promptly and perceptively. If the efforts were abandoned, the efficiency of the market would diminish rapidly. In order for EMH to be true, it is necessary for many investors to disbelieve it.

9.3 FORMS OF MARKET EFFICIENCY

Eugene Fama gave three flavours to market efficiency and subsequently all empirical testing has proceeded on these lines. The three forms are:

Weak form: The weak form means that the current prices of stock already fully reflect all the information that is contained in the historical sequence of prices. Hence abnormal profits cannot be a earned by studying the past behaviour of share prices. By implication, technical analysis which relies on charts of prices, moving averages and momentum and volume of trading is not a meaningful analysis for making abnormal trading profits.

Semi-Strong Form strikes at the very heart of the analyst profession. Tests of semi-strong have dealt with the speed at which market participants react to public releases of new information. Empirical evidence generally supports the contention that the public reacts quickly to information; but there is also some evidence that the market does not always digest new information correctly.

Strong Form represents the extreme case of market efficiency. Under the strong form it is argued that security prices reflect *all information*, including public and private (monopolistic) information.

To test the strong form three groups of investors having potential access to private information have been examined. These are:

a. Corporate Insiders

b. Stock Exchange Specialists

c. Mutual Funds

9.4 EMPIRICAL TESTS OF EMH

What is the degree of efficiency witnessed in the stock market? Is it efficient of the weak form or semi-strong form or strong form? In order to be able to answer these questions, certain empirical tests have been devised. Let us discuss these tests in the following:

9.4.1 Tests of Weak-Form

There have been empirical tests of weak-form market efficiency for equities, bonds and futures contracts. Random walk hypothesis suggests that even bond price changes should be essentially random or unpredictable.

Two main approaches have been used to test weak form EMH.

One approach looks for statistically significant patterns in security price changes. Another approach searches for profitable short-term trading rules. Serial independence, filter rules, run tests and distribution pattern test for weak form are described below:

Serial Independence

Randomness in stock price movements can be tested by calculating the correlation between price changes in one period and changes for the same stock in another period. If the autocorrelations are close to zero, the price changes are said to be serially independent. Fama, for instance, calculated the auto- correlations for the period 1958-1962 for US stock prices. The autocorrelation was found to be insignificant.

Filter Rules

Filters can be prescribed for trading as follows:

A share is increasing in price and a 20 per cent filter has been set. Suppose it starts declining and when it reaches a level 20 per cent below its peak, it is a sell signal. Similarly, if the share is declining in price and it reverses its trend and level, then it is a buy signal. By using such buy and sell signals, using filters ranging from 1 to 50 per cent several studies found that it was not possible to earn abnormal returns.

Run Tests

Price changes may be random most of the time, but occasionally become serially correlated for varying periods of time. Further serial correlation coefficients can be affected by extreme values. To overcome these problems, the run test is used.

Run tests ignore the absolute values of the numbers in the series and observe only their signs.

For example , the sequence

+,+,– – – – – – – – –, 0, +, +, – has five runs

The actual number of runs observed is compared with the number that are expected from a series of randomly generated price changes. If no significant differences are found, than price changes are random in character.

Distribution Pattern

The sum or the distribution of random occurrences will statistically conform to a normal distribution. If proportionate price changes are randomly generated events, then their distribution should be approximately normal.

Fama has tested for normal distribution and found only slight difference from the normal.

Studies have also been undertaken of technical trading strategies based on information other that historical prices, such as odd-lot figures, volume of short sales, advance-decline ratios, chart patterns, etc. The general conclusion is that such strategies have failed to outperform a naive buy-and-hold strategy.

Acitvity 1

A) List out three forms of market efficiency

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B) List out four test of weak form of market efficiency and point out which of the four are statistical in nature?

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9.4.2 Tests of Semi-Strong Form

Semi-Strong form contends that *all public information* is fully reflected in security prices. Public information includes company financial statements, earnings and dividends, bonus announcements and macro-economic data.

Fama, Fisher, Jensen and Roll have tested the speed of the market's reaction to a company's announcements of a stock split and with respect to a change in dividend policy.

They estimated the abnormal returns using "residual analysis".

Security returns were regressed against the returns on a market index and the error term in the following linear equation represented the residual or abnormal return.

$$r_{it} = a_i + B_i r_{mt} + e_{it}$$

where

r_{it} = realised return on security i in time period t

r_{mt} = realised return for marked index in time period t

a_i, B_i = regression co-efficient

e_{it} = error term, or residual for time period t

$e_{it} = r_{it} - (a_i + B_i r_{mt})$

i.e. realised return - normal return.

Fama, Fisher, Jensen & Roll examined 940 Stock Splits on the New York Stock Exchange from 1927 to 1959. Price of the Stocks was examined for a period of 29 months before the date of the split and 29 months after the split. The actual act of splitting did not have any impact on the wealth of shareholders.

Further, buying stocks after a stock split did not appear to produce abnormal returns. Ball and Brown did an analysis of the stock market's ability to absorb the informational content of reported annual earnings per share. They found that those companies which reported "good" earnings experienced price increases and those with "bad" earnings reports experienced price declines. Nearly 85 per cent of the informational content of the earnings announcements was reflected in stock price movements, prior to the release of the actual earnings figure.

9.4.3 Tests of Strong-Form

Strong form argues that *all information* is fully reflected in security prices. Top management have access to corporate and financing strategies. Specialists have access to the book limit orders for a share. Knowledge of the price and quantities of the limit order represent private information. Professional portfolio managers who have large research database and access to top management may have private information not disclosed to the public. Merchant banking firms, for example, may have private information on a new company which has not been disclosed to the public.

To disprove strong form EMH, one has to find an insider who has profited from inside information.

The strong form EMH is of two types:

a. Super-strong form which includes insiders and specialists (who possess monopolistic information)

b. Near-strong form which includes private estimates developed by (who possess information) financial analysts, portfolio managers. etc.

In USA, corporate managers or say one who owns more than 10 per cent of an issue of securities are deemed to be " insiders" under the Securities and Exchange Acts of 1933 and 1944. Insiders are required to report their transactions within 10 days to the Securities and Exchange Commission. Such insider trading information is published in the SECs Official Summary of Securities Transactions and Holdings.

Nearly 2 months elapse before information on insider transactions becomes publicly available. Several studies have found that insiders and specialists in USA use such monopolistic information to advantage and earn positive abnormal returns. Hence' the super-strong form EMH was by and large not valid.

In India, the Securities and Exchange Board of India has released a draft on insider trading which defines an insider as a person who, during the preceding eight months is connected with a company or deemed to have been connected with a company, and who may reasonably be expected to have an access to unpublished price sens'tive information in respect of securities of that company or any other company and includes any other person who has received or has an access to such unpublished price sensitive information.

The draft regulation has given an illustrative list of information which may be construed upon as price sensitive information. It includes financial results (both half yearly and annual), declaration of dividends (both half yearly and annual), issue of shares by way of public, rights or bonus, any major expansion or execution of new

projects, amalgamation, mergers and take-overs, taxation charges, extra-ordinary events like strikes, etc.

Further the regulation say that a person guilty of insider trading based on reports submitted by the inspector of SEBI is liable to be punished with a civic penalty not exceeding three times of the profit gained or loss avoided as a result of dealing, subject to a minimum of Rs. 5,00,000 or punishable with rigorous imprisonment not exceeding two years, or a fine not exceeding Rs. 5 lakhs or both as the court may decide.

With the implementation of the regulation to curb insider trading, it is hoped that stock market would become more efficient and devoid of malpractices.

Even studies in USA which rejected the superstrong form EMH did not report exceedingly large returns. Insiders have been able to earn abnormal returns of the order of 4-5 per cent over a period of 8 months *before transaction costs.*

Between 1968 and 1977, the performance of more than 83 per cent of all mutual funds in USA was worse than S & P 500 index.

The fact that mutual funds did not outperform randomly selected portfolio probably means that mutual fund managers compete in an efficient market with other portfolio managers of equal competence.

9.5 ANAMOLIES IN EMH

While Ball and Brown analysed annual earnings, Joy, Litzenberger nad McEnally tested the impact of quarterly earnings announcement on stock prices. They found that favourable information published in quarterly reports are not instantaneously reflected in stock prices.

S. Basu in a well researched article tested for the informational content of the price earnings multiple. His study inquired into whether *low price earnings multiple tended to outperform stocks with high P/E ratios.* His study indicates that low P/E portfolio experienced superior returns relative to the market. Over 20 different studies of market reaction to earnings announcements reported post-announcement excess returns.

One of the studies found that the *size of the firm is highly correlated with stock returns.* Larger the market value of the company, lower the rate of return and vice versa. Small firm portfolios outperforms large firm portfolio by 19.8 per cent.

Empirical study has also established that over one-half of the small firm effect occurs in January and most of the abnormal return associated with January takes place during the first 5 days of trading.

Another interesting study by French examined the returns generated by the Standard and Poor 500 index for each day of the week, over the time period 1953-1977. Monday returns were not only less than other days of the week but actually negative. This came to be known as the *Weekend Effect.* By purchasing on Monday and selling on Friday, one could earn abnormal return.

9.6 INDIAN STUDIES ON MARKET EFFICIENCY

Studies by Rao and Mukherjee (1971) Sharma and Kennedy (1977) S K Barua (1980), O P Gupta (1985) and Y B Yalawar (1985) have all validated the weak-form EMH in India.

J Ramachandran has studied the impact of bonus issues on share prices and found the market to be efficient in semi-strong form.

Other Indian Studies by Desai M (1965), Ojha P R (1976), Prasanna Chandra

(1975) and Ramachandran G (1989) showed the dividends have a positive influence on share price behaviour.

There has been no empirical study validating the strong form EMH in India.

9.7 IMPLICATIONS OF EMH FOR SECURITY ANALYSIS

There are three reasons why security analysis remains relevant even in a generally efficient market.

In an efficient but less than perfect market, there is a time lag between the arrival of information and its subsequent reflection in price. During the interval, security analysis provides an opportunity to adjust portfolios profitably. Such rewards are captured by institutional investors that have the capacity to process large amounts of data quickly and efficiently.

Competition of information which ensures market efficiency, limits the opportunity to earn above average return. The legitimate function of security analysis is to discover information before competitors get it.

Security analysis is critical to the investment process even in the case of instantaneous price response. Correct pricing of assets in an efficient market (but less than perfect) does not imply investor indifference to the choice of assets held in a portfolio. As price of security responds to new information, reflecting change in risk and returns, portfolio adjustment takes place. Security analysis and portfolio management are complimentary to an efficient capital market.

9.8 IMPLICATIONS OF EMH FOR PORTFOLIO MANAGEMENT

Two important implications of EMH for portfolio selection are:

1) Even simple random selection leads to portfolio which approximates the market very closely when 15-20 stocks are held.

2) Index Funds are an outgrowth of the increasing awareness and acknowledgement of market efficiency.

Managed portfolios involve tailoring portfolios to meet the risk and return preference of clients and does not attempt to "beat the market". Unless the portfolio Manager has superior skills, much is to be said for passivity. The tasks of such portfolio manager would be to:

1) Determine appropriate level of risk
2) Achievement of the desired level
3) Periodic review of the appropriate level of risk
4) Minimisation of transaction costs

Studies have established that even a relatively minor skill to forecast security returns can be utilized to form portfolios which generate more return than a passive strategy for the same level of risk.

Activity 2

A) Is the Indian stock market efficient? Why?

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B) List out three implications of EMH for security analysis and portfolio management in India.

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9.9 SUMMARY

In this Unit, we have discussed various dimensions of the hypothesis that the stock markets are efficient. We have highlighted the concept and forms of market efficiency viz. weak form, semi-strong form, strong form and described various empirical tests of EMH. Indian studies on market efficiency are briefly indicated and the anamolies in EMH are pointed out. The Unit closes by highlighting the implications of EMH for security analysis and portfolio management. 'Investing by dart' can still not be recommended as superior equity investment strategy in the context of most of the stock markets of the world. Most of the world stock markets are still less than efficient and hold scope for abnormal returns by following active security analysis and portfolio management strategies.

9.9 SELF-ASSESSMENT QUESTIONS/EXERCISES

1) Define market efficiency.
2) Describe the differences in various forms of market efficiency.
3) Describe the different tests of the weak form of EMH.
4) What are the implications of EMH for technical analysis?
5) What factors can act as signalling devices for stock price movements? Explain, how these factors would affect market efficiency?
6) Distinguish between active and passive portfolio management strategies.

   Why did Index funds became popular in U.S.A.?
7) What are some of the anamolies in efficient market hypothesis?
8) What are the implications of EMH for security analysis and portfolio management?

9.11 FURTHER READINGS

Ball R and P Brown. "An Empirical Evaluation of Accounting Income Numbers", *Journal of Accounting Research*, Autumn, 1968.

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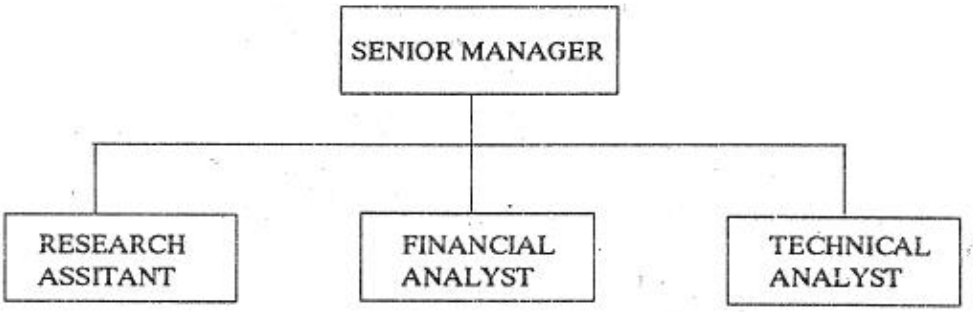
CASE: TATA TEA LIMITED

Rohit Handa, Senior Manager of Liberty Finance Limited (LFL), a financial subsidiary of a nationalised commercial bank, was on the telephone at his office in South Bombay. A prospective client was on line and was inquiring about the portfolio management services offered by the LFL. He wanted to appoint the LFL as his portfolio manager for his portfolio valued at the current market price of about Rs. 18 lakhs. At present, he was toeing with an idea to purchase some shares of Tata Tea Limited (TTL) and wanted Handa's advice. He said, " Mr. Handa, since Russia has become a strong buyer of Indian Tea once again after rupee-rouble agreement; rupee is now fully convertible, and the Finance Minister Dr. Manmohan Singh has announced the abolition of excise duty on tea and coffee, I think investment in the TTL is going to be rewarding investment. What is you view? Would you recommend it?" The call ended with an appointment for the next day.

After concluding the call, Mr. Handa asked his subordinates to prepare a note on the economic environment of the country from the view point of investment on the stock market. He said " The note must include profile of tea industry, financial performance of TTL alongwith selected good companies in the industry, the stock market price movement charts etc. for the purpose of discussion with the client."

BACKGROUND OF THE COMPANY:

LFL is subsidiary of a reputed nationalised commercial bank. The company is catering to various financial services like merchant banking, lead bank to the issues, underwriting services, foreign exchange risk management services etc. It has recently started portfolio management services. The portfolio division is headed by Mr. Handa. The organisation structure of the division is as shown below:



Mr. Lakdawala is a research assistant looking after analysis of industry and economy. He is a postgraduate in economics from Delhi School of Economics with a 10 years of research experience in The Economic Times Group of Publications. Mr. Sonawala, financial analyst, is a fresh Chartered Financial Analyst and Mrs. Gahan is an M.B.A. with finance. She graduated in science with computer specialisation.

Mr. Lakdawala prepared a brief review note on Indian economy and the profile of the tea industry. See EXHIBIT: I and EXHIBIT: II. Mr. Sonawala prepared a brief note on TTL's performance whereas Mrs. Gahan prepared the stock market price movement charts which are represented in EXHIBIT: III and IV, respectively.

After studying the details prepared by his subordinates, Mr. Handa was in dilemma as to what to recommend to his client since stock market index was continuously falling.

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* Case prepared by Dr. B.A. Prajapati, Reader in Finance Area, G.H. Patel Institute of Business Management, Sardar Patel University, Vallabh Vidyanagar - 388 120. Case material has been prepared to serve as a basis for class discussion. Case is not designed to present illustrations of either correct or incorrect handling of managerial problems.

EXHIBIT: I

INDIAN ECONOMY: A BRIEF REVIEW

CAPITAL MARKET SCENARIO:

In the late seventies, the first alarm bell for the sleeping Indian capital market coincided with the FERA dilution. The waking up process of the market was spread over the entire decade of eighties. The decade witnessed emergence of companies in new fields like - leasing, hire purchase, housing, venture capital, mutual funds, consumer credit etc. Several new instruments found their place in the market, namely zero coupon bonds, cumulative convertible preference shares, warrants, certificates of deposits, commercial paper, etc. Various new institutions were established to develop, monitor and control capital market operations like- Discount and Finance House of India, Over The Counter Exchange of India, credit rating agencies - CRISIL and ICRA, Securities and Exchange Board of India, etc.

In 1991, the interest rates were deregulated which paved the way for free economy. The ceiling limit of 10% interest rate on call money market was removed. The short-term bank lending rate to non-priority sector was linked to perceived credit risk of the client. The Statement on Industrial Policy announced on July 24,.1991 made the libralisation move speedier by removing the licensing requirements and dereserving the industries which were exclusively for Central Government. In 1991-92 budget, it was proposed to deregulate the interest rates on long-term corporate securities also.

BUDGET PROPOSALS: 1992-93 AND 1993-94

The 1992-93 and 1993-94 budget brought about many more significant policy changes, thus opening the gates further wider for the free market forces in the capital market. The illustrative list is as follows:

- Abolition of Govt. control on capital issues
- Free pricing of issues
- Full convertibility of rupee
- Comprehensive changes in foreign exchange regulations
- Allowing Indian companies to float securities in foreign markets
- Abolition of wealth tax on productive investments
- Treatment of capital gains tax indexed with inflation
- Reduction of custom duties, and many more.

EIGHTH FIVE YEAR PLAN:

The macro parameters for the Eighth Five Year Plan: 1992- 97 has fixed the target growth rate of 5.6% per annum for the GDP. The details are as follows:

RATES/RATIOS	SEVENTH PLAN 1985-90	SEVEN YEARS 1985-1992	EIGHTH PLAN 1992-97
1) Rate of growth in GDP (% per annum)	5.80	5.30	5.60
2) Domestic Savings (% of GDP)	20.40	20.70	21.60
3) Investment (% of GDP)	22.70	23.00	23.20
4) Current Account Deficit (% of GDP)	2.40	2.40	1.60
5) Growth rate in:			
- Export of goods (% p.a.)	8.10	8.50	13.60
- Import of goods (% p.a.)	10.00	7.50	8.40

SOURCE : CMIE, Economic Intelligence Service, Eight Five Year Plan-Executive Summary.

RBI CREDIT POLICY:

On April 7, 1993, the RBI came out with much awaited credit policy for the season. The major issues covered in the policy were·

- Reduction in SLR and CRR
- No change in interest structure
- Redefinition of Maximum Permissible Bank Finance
- Lending categories reduced to three from four
- Lending limits against shares eased

IMPACT OF THE CHANGES - AN EVALUATION:

Prof. V. Raghunathan of Indian Institute of Management, Ahmedabad has evaluated whether all these changes adopted by the Government has been in the right direction or not from the view point of return to the investors. He has studied annual returns over different time periods. The return has been calculated using ET Ordinary Share Price Indices, computing over the mid-year averages as shown below:

PERIOD	TIME (YEARS)	INDEX RETURN (%)
1965 to 1993	28	15
1970 to 1993	23	17
1980 to 1993	13	24
1985 to 1993	08	31
1990 to 1993	03	31
1970 to 1990	20	16
1980 to 1990	10	23
1985 to 1990	05	30
1970 to 1980	10	06
1980 to 1985	05	15

SOURCE: Paper presented at the Seminar on Capital Market - Changing Scenario, organised by G.H. Patel Institute of Business Management, Sardar Patel University, Vallabh vidyanagar, on 24th April, 1993.

EXHIBIT: II

PROFILE OF TEA INDUSTRY

Tea - the cup that cheers, occupies a prominent place in the Indian plantation industry. India produces 0.7 million tonnes of tea in the world total production of 2.5 million tonnes, topping the world production. It contributes about Rs. 3000 crores to the country's GNP. The other major tea producing countries are Sri Lanka, Indonesia, Kenya and other Eastern African countries.

The industry is spread over a number of States mostly in Eastern and Southern India. The State wise production of tea and percentage share to all India production is given in Table: 1. With 96% of the tea gardens falling in the organised sector, the industry is predominantly organised and privately owned.

The industry has registered a phenomenal growth in the past decade with production in 1980 at 569.19 million kg. to 700 million kg. in 1992. Till the seventies, the industry was on uneven ground due to both internal market pressures and international market fluctuations. The eighties proved to be a decade of consolidation largely due to introduction of modern techniques in implanting and processing alongwith professional management. The details regarding production, average consumption and export of tea are presented in Table: 2. According to CMIE's most likely projections the production will touch the figure of 745 million kgs during the year 1991-92.

OPERATIONAL SET-UP:

Tea Board set up by the Ministry of Commerce is the apex body involved in the target setting for production, exports, regulating the auction systems, providing various incentives and inputs for the industry. The tea planters are organised into various associations of which Indian Tea Association (ITA) and Tea Association of India (TAI) are prominent. United Planters Association of Southern India, apart from tea, represents coffee, rubber and cardamom planters. These associations represent to the government on matters like taxation, additional land availability and other industry matters.

MARKETING IN INDIA:

The Indian tea is sold in three categories - orthodox, CTC and dust. Orthodox tea has small share. The premium CTC (Crush, Tear and Curl) leaf tea and CTC dust tea forms the largest share. Nearly 74% of the tea sold in India is in loose form while the rest is in packed form. The market share of top six companies is given in Table: 3. The economics of tea marketing is peculiar: On the one hand, the auction price determines the material cost, while on the other hand, blends account for the value addition, based on flavor and strengths blends are classified as premium, popular and economy. Premium blends are high priced and strong flavor generally preferred by high income groups while the economy blends are low priced with high strength popular among lower income groups.The marketing costs are higher for premium tea than the economy blends. Tea is sold through auction centers of Calcutta, Gauhati, Siliguri, Amritsar, Coonoor, Cochin and Coimbtore. Table: 4 covers data regarding financial performance of selected tea processing companies.

EXPORT PERFORMANCE:

Gone are the days when India had about one-half of the international market of tea. Over the years, the country's share in the world trade has dwindled from as high as 45 per cent in 1951 to a meager 18 per cent by 1991. Today it has lost its preeminent position of being the largest exporting country to Sri Lanka. At present India is exporting tea to around 80 countries in the world. A substantial quantity of tea has started entering the markets of Iran, Poland, Germany, Saudi Arabia besides the traditional markets in U.K. and U.S.A. About 45 per cent of Pakistan's requirement is met by India although the quantum of off-take is not so high. See Table: 5 for the major exports to the different countries with the percentage of export.

The chairman of the Tea Board, Mr. P.K. Bora, feels that tea exports to Russia could get a boost following the recent agreement between India and Russia signed on rupee-rouble exchange rate. Excerpts from the interview given to The Economic Times published on March 4, 1993 are reproduced here.

"The size of the tea market in Russia is estimated at around 130 million Kgs. Since the tea growing areas in erstwhile USSR have not fallen in the region of the Russian federation, it will have to totally depend on imports. As a corollary to the recent Indo-Russian agreement on ruppe-rouble-exchange rate, the RBI and

the Central bank of Russian Federation will allow Russian exporters, their banks and importers to maintain the existing special accounts and to open special accounts in US dollar with commercial banks in India. This is expected to give fillip to boost Indian tea exports to Russia.

The other major tea markets in the CIS (Commonwealth of Independent States) are Ukraine, Kazakistan and Uzbekistan. During 1992, exports of tea to Uzbekistan was practically nil and to Ukraine, it was negligible. The size of the tea markets in Ukraine is around 45 million kgs., Kazakistan 15 million Kgs., Tazikistan around 4 million Kgs. and Uzbekistan 15 million Kgs. With all these republics, India has entered separate trade agreements. It is expected that particularly Ukraine and Uzbekistan will purchase tea from India. Exports to Kazakistan in 1992 was around 7 million kgs. which is expected not to come down in 1993."

ATTITUDE OF THE GOVERNMENT:

The government of late has been encouraging diversification of tea exports by sponsoring tea industry delegations to various countries. Trade protocols have been entered into with some of the CIS countries including Russia for the purpose. Other tea importing countries are being persuaded to buy higher quantities of Indian Tea.

As a major step, the Tea Board has prepared a perspective plan to increase the production of tea to 1000 million Kgs. by 2000 AD so as to obtain exportable surplus of 260 million Kgs. The perspective plan includes - short-term measures such as optimisation of inputs and improved cultural practices, medium, term measures such as irrigation and drainage, and long term measures like replanting and extension planting. During the Eighth Plan period it has been proposed to bring 17,250 hectares of additional areas under tea in the country. Out of this 14,750 hectares would be in traditional area and 2,500 hectares in non-traditional areas.

The Finance Minister has exempted tea and coffee from excise duty, while presenting budget for 1993-94. As a result of this announcement, the plantations industry on the whole will get a duty relief of Rs. 74 Crore.

The tea out put has increased over the years despite stagnation of cultivable area under tea. In comparison to top ten tea yielding countries the yield in India per hectare is very low. This can be seen in TABLE: 6. The main reason being most of the India's tea bushes are over 50 years old and this aging may ultimately lead to a saturation point in productivity inspite of perceptible improvements in the yield per hectare. Hence, there is an increasing need for more land under tea, with an increased emphasise on Research and Development in order to increase production and productivity.

EXHIBIT: III

TATA TEA LIMITED

TTL is one of the blue chip companies managed by Tata Group and chaired by Darbari Seth. The company was set up in technical and financial collaboration with James Finlay & Co. Ltd. of Glasgow, U.K. in 1962. The collaboration agreement expired in 1971. The company is engaged in the cultivation of tea, coffee, cardamom etc. It is also involved in implantations and manufacturing, selling and exporting instant tea and blended and packeted tea. The details regarding tea estates owned by the company in different states with hectarage, yield per hectare etc. are given in TABLE: 7. During 1983, consequent to changes in the shareholding of the company, the name of the company was changed from Tata-Finley Ltd. to Tata Tea Ltd. During 1985, the world's largest tea factory was set up at Chundavurrai tea estate in Kerala by the company. The factory can process 4.5 to 5 million Kgs. of black tea per annum. The company has acquired a 52% stake in consolidated Coffee Ltd, the

largest coffee grower in Asia in 1990. The other subsidiaries of the company are Bombino Investment & Trading Co. Pvt. Ltd. and Tata Tea Inco., a 100% subsidiary established by acquiring the instant tea processing facilities of Tritea Incorporated, Florida, U.S.A.

Almost 60% of the company's export were to rupee payment areas and the balance to the general currency areas. The company is selling packaged tea in polypacks which accounts for 25% of its sales. During the year 1991-92, a new blend under the name of "PRESTIGE" was launched. A new brand of polypacks "BRAHMAPUTRA" was also launched containing a blend of Assam teas. These were well received in the market. The company has launched a new premium dust "CHAKRA GOLD" during the year 1992. The company has also completed major expansion project in the Kellyden Polypack Centre, Assam reflecting a high degree of automation with the state of art electronic machinery. The financial performance of the company for the years 1982 to 1992 is given in the TABLE: 8.

The company in order to pre empt any reduction of sales due to withdrawl of the Russian from the auction blocks, has tied up with a Russian Firm. It has set upon Indo-Russian joint venture. The company named Tata Krasnodar Industries Ltd. with 50% equity stake from Tata Tea and Krasnodar Tea co, is intended to sell package tea in Russia under a combined name. Similar agreements with the other CIS states area are also being planned. The company also tied up with Tetly Inc, U.S.A. to sell instant Indian tea in the US under the "TATA TETLY" brand. It purposes to establish a wholly owned subsidiary Tata Tea International Ltd. in Jersey, Channel Islands, United Kingdom which will set up joint venture companies for managing tea and rubber estates in Sri Lanka.

The company has four laboratories - two in Munnar, one in Bangalore and one in Assam. The company set up a pilot project at Munnar for the production of Button Mushrooms and commenced test marketing the product. Based on the experiments of R & D, Spice Processing Centre in Cochin and Medicinal And Aromatic Plant Processing Centre in Munnar, were being set up.

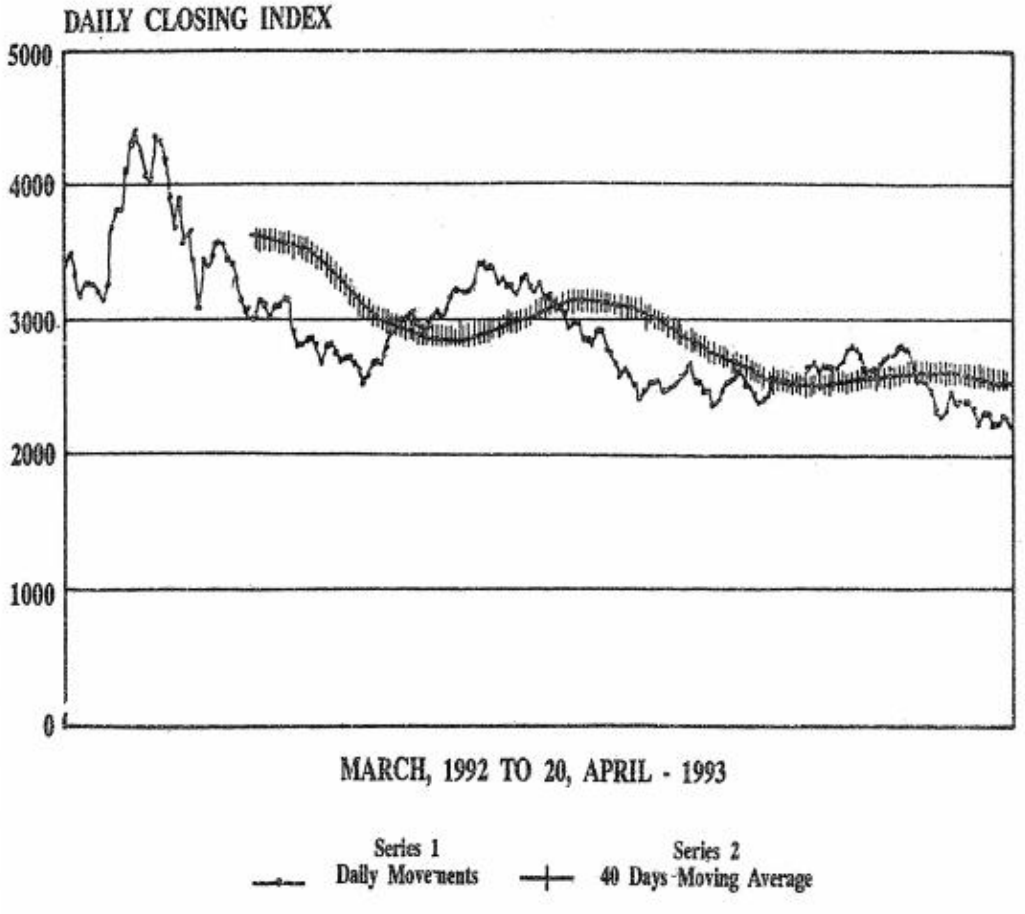
The company has recently been chosen for the ET-HBSAI Corporate Performance Award - 1992. The award is given from 101 giant and 150 mini-giant companies in India by the Economic times and Harvard Business Association of India.

Share of the company is included in the specified category of the Bombay Stock Exchange. The daily movement of BSE SENSEX and price of Tata Tea during March - 1992 to April - 1993 is given in **Table: 9 and in Charts**: A and B in Exhibit: IV.

EXHIBIT : IV

CHART : A

B S E SENSEX MOVEMENT



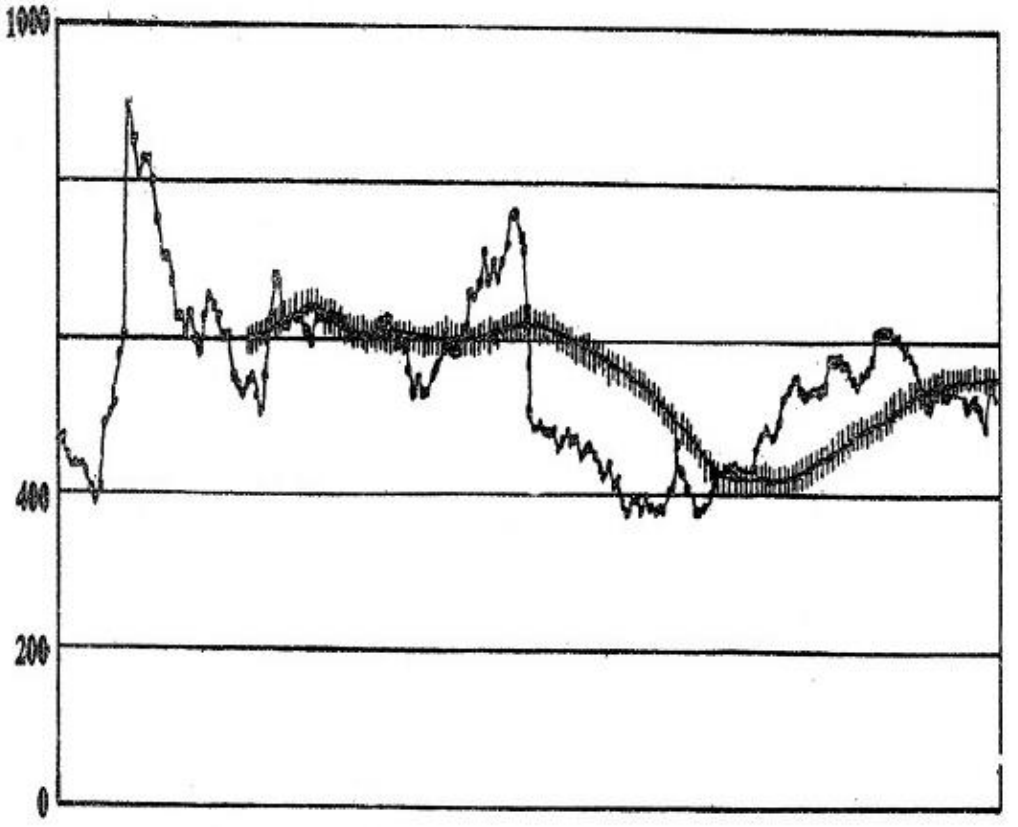
SOURCE : DAILY B S E SENSEX INDEX NUMBER

EXHIBIT : IV

CHART : B

TATA TEA LIMITED

SHARE PRICE MOVEMENT



MARCH, 1992 TO 20, APRIL - 1993

Series 1 — Daily Movements

Series 2 — 40 Days Moving Average

SOURCE : THE B S E DAILY QUOTATIONS

TABLE 1

STATEWISE PRODUCTION OF TEA
(In Million Kgs.)

STATES	70-71	%	80-81	%	90-91	%
ASSAM	212.0	50.7	300.7	52.8	379.8	53.2
BIHAR	1.6	0.4	0.8	0.1	2.8	0.4
KARNATAKA	2.8	0.7	3.4	0.6	3.8	0.5
KERALA	42.8	10.2	53.6	9.4	64.0	9.0
TAMIL NADU	55.6	13.3	74.0	13.0	102.6	14.4
TRIPURA	2.5	0.6	3.7	0.6	4.0	0.6
WEST BENGAL	101.2	24.2	133.2	23.4	157.2	22.0
ALL INDIA	418.5	100	569.6	100	714.7	100

Source: CMIE Reports

TABLE 2

TEA PRODUCTION, ACERAGE, RETENTION AND EXPORT

YEAR	PRODUCTION (Million Kgs)	TOTAL AREA (Hectares)	YIELD RATE (Kg/hec)	RETENTION (Million Kgs)	EXPORT (Million Kgs)
1980	569.19	381086	1491	345.51	224.03
1981	560.42	283629	1456	319.18	241.25
1982	560.65	394170	1422	370.63	189.83
1983	581.48	396066	1468	373.00	208.48
1984	639.86	398453	1606	422.82	217.04
1985	656.16	399929	1641	442.14	214.02
1986	620.80	411673	1508	417.65	203.15
1987	674.30	414232	1605	472.41	201.89
1988	701.09	416468	1683	800.13	200.96
1989	684.14	412140	1652	479.47	204.67
1990	714.67	418625	1707	514.65	210.02
1991	741.72	421271	1761	438.80	202.92
1992	703.90	—	—	—	182.00

Source: The Economic Times, March - 4,1993, p - 17.

TABLE 3

THE LARGEST GROWERS AND THE BEST SELLERS

AREA & YIELD DETAILS (1991-92)			MARKET SHARE	
COMPANY	HECTARES	Kgs/Hect.	COMPANY	1990-91
McNeil & Magor group	29101	2211	Brooke Bond	13.7
Tata Tea	24179	2403	Tata Tea	7.1
Harrison Malyalam	6009	2190	Lipton India	6.6
Rossell Industries	4589	2184	Duncans Agro	3.1
Tea Estates	3412	3700	Goodricks Group	2.0
Peria Kaamalai	1537	2771	Assam Co.	1.9

Source: Company Annual Reports and CMIE's Market & Market Shares

TABLE 4

SELECTED DATA OF SOME TEA PRODUCING COMPANIES

(Rs. in Crores)

COMPANY	YEAR ENDED	SALES	G.P.	INT.	N.P.	EQUITY	EPS (Rs.)	DIV. (Rs.)	P/E RATIO (20-4-1993)
ASSAM	9203	33.80	2.62	4.43	1.45	1.93	7.51	48	16.95
BROOKE	9103	27.45	4.20	2.06	2.65	1.93	13.73	40	
ASSAM	9203	80.78	26.36	0.38	15.71	14.00	11.22	55	15.40
COMAPNY	9103	77.99	30.42	0.08	14.17	14.00	10.12	55	
GOODRICKE	9203	82.81	23.13	0.38	8.43	21.60	3.90	80	19.40
GROUP	9103	79.58	30.20	0.26	13.59	10.80	12.58	65	
JAYSHREE	9203	137.0	26.06	5.90	9.02	6.15	14.67	32.5	32.20
TEA	9103	131.6	29.75	6.04	13.92	6.15	22.63	32.5	
McLEOD	9203	79.47	18.40	3.26	7.98	10.00	7.89	45	20.05
RUSSEL	9103	84.41	21.91	3.11	10.84	10.00	10.84	45	
ROSSELL	9203	52.07	10.74	0.82	5.21	10.12	5.15	45	
IND.	9103	54.12	21.29	0.05	9.51	10.00	9.51	60	
TEA	9112	43.88	19.06	2.05	10.06	13.20	7.62	60	48.30
ESTATE	9012	43.53	22.37	1.77	11.75	13.20	8.90	60	
WARREN	9203	66.04	19.51	1.98	9.32	7.80	11.95	50	12.30
TEA	9103	61.15	22.92	1.88	10.37	7.80	13.29	80	

Source: The Economic Times, March 4, 1993, p - 18 and April - 21, 1993

TABLE 5

COUNTRYWISE TEA EXPORTS

(Rs. IN LAKHS)

COUNTRY	1990-91	% OF TOTAL	APRIL - JANUARY	
			1990-91	1991-92
USSR	60025	55.85	55168	47941
U K	11352	10.56	11267	12870
IRAN	6178	5.75	6099	8023
GERMANY (W)	4336	4.03	4173	5449
POLAND	4054	3.77	3437	3098
EGYPT	3200	2.98	2435	2628
UAE	3010	2.80	2267	3905
SAUDI ARABIA	2780	2.59	2630	2129
JAPAN	2370	2.21	2170	1712
U S A	1309	1.22	1146	1447
NETHERLAND	1104	1.03	1060	1912
IRELAND	991	0.92	974	1490
YUGOSLAVIA	910	0.85	910	60
MOROCCO	764	0.71	764	325
LIBYA	701	0.65	335	1364
OTHERS	4398	4.09	3729	5621
TOTAL	107482	100	98521	99974

Source: The Stock Exchange Official Directory, Vol - 16, No. 34 (i) p - 3

TABLE 6

PER HECTARE YIELD OF TEA IN TOP TEN COUNTRY

RANK	COUNTRY	YIELD PER HECTARE (Kg)	
		1979-81	1988
1.	Zimabawe	2,205	4,052
2.	Cameroon	2,027	2,400
3.	Malaysia	1,330	2,400
4.	Bolivia	2,483	2,222
5.	Brazil	2,011	2,200
6.	N. Guinea	2,203	2,195
7.	Kenya	1,458	1,953
8.	Mauritiuis	1,208	1,878
9.	Madagascar	1,773	1,793
10.	Malawi	1,800	1,750
12.	INDIA	1,482	1,712
	WORLD AVERAGE	797	940

Source: Industrial Survey, The Bombay Stock Exchange Directory, Vol: 16, p - 4·

TABLE 7

TEA ESTATES OWNED BY TATA TEA LIMITED

STATE	NO.	HECTARE	CROP (Kg.) 1991-92	YIELD/HECTARE (Kg.)
Kerala	25	9662.55	22880872	2380
Tamilnadu	4	1587.43	5068452	3232
Assam	19	11212.66	22478216	2080
West Bengal	3	1701.84	3334045	2027

Source: The Stock Exchange official Directory, Vol: 16, No. 34(iv)

TABLE : 8

TATA TEA LIMITED

INCOME STATEMENT FOR THE YEAR ENDING

(Rs. in Crore)

PARTICULARS	31.12.82	31.12.83	31.12.84	31.12.85	31.12.86	31.12.87	31.03.89 **	31.03.90	31.03.91	31.03.92
NET SALES	78.25	136.94	195.79	174.23	154.21	173.80	234.69	272.32	316.91	361.38
COST OF GOODS SOLD	62.24	98.05	128.79	138.71	121.23	129.04	182.32	171.06	195.27	242.36
STOCKS CONSUMED	6.18	0.00	0.00	0.00	0.00	0.00	6.96	0.00	0.00	2.34
WAGES & SALARIES	8.04	19.79	26.42	28.49	29.12	31.59	42.68	41.93	48.33	56.49
DIRECT MFG. EXP.	48.02	78.26	102.37	110.22	92.11	97.45	132.68	129.13	146.94	183.53
GENERAL EXPENSES	7.77	18.15	12.83	13.19	11.91	14.99	23.24	24.72	30.64	39.46
GROSS PROFIT	8.24	20.74	54.17	22.33	21.07	29.77	29.13	76.54	91.00	79.56
INTEREST	3.64	2.49	2.89	5.23	8.39	7.22	10.44	11.70	14.16	20.35
PROFIT BEFORE DEP.	4.60	18.25	51.28	17.10	12.68	22.55	18.69	64.84	76.84	59.21
DEPRECIATION	2.60	3.59	6.76	4.92	5.90	10.52	5.04	5.02	5.41	6.43
NON. OP. Sur./Def./Adj.	2.64	1.66	5.27	5.52	7.03	6.80	29.53	11.93	15.14	30.59
PROFIT BEFORE TAX	4.64	16.32	49.79	17.70	13.81	18.83	43.18	71.75	86.57	83.37
PROV. FOR TAXES	1.69	6.49	32.45	6.10	5.55	8.17	6.50	30.25	35.00	30.50
NET PROFIT	2.95	9.83	17.34	11.60	8.26	10.66	36.68	41.50	51.57	52.87
EQUITY DIVIDEND	0.00	2.80	4.00	2.40	2.77	5.11	7.81	10.25	71.92	19.27
RETAINED PROFIT	2.95	7.03	13.34	9.20	5.49	5.55	28.87	31.25	33.65	33.60
BALANCE SHEET AS AT										
TOTAL ASSETS	56.06	78.00	112.38	136.91	130.14	152.36	203.22	272.71	359.28	419.72
CURRENT ASSETS	32.15	48.78	73.77	88.62	81.13	80.19	128.58	183.44	234.41	276.41
CASH & BANK	0.88	1.15	2.37	1.27	2.28	1.58	2.54	4.17	5.04	6.38
SUNDRY DEBTORS	9.53	15.27	14.37	15.73	14.84	17.99	18.91	39.79	46.03	73.49
INVENTORY	20.63	30.96	42.00	36.63	28.24	38.78	26.64	32.47	31.10	52.59
MISC. Cur. Assets	1.11	1.40	15.03	34.99	35.77	21.84	80.59	107.01	132.22	143.94
FIXED ASSETS (NET)	23.76	29.20	37.78	47.86	48.58	45.72	73.36	88.01	101.38	119.86
INV. IN SUBSIDIARIES	0.00	0.00	0.70	0.20	0.20	0.52	0.52	0.52	22.55	22.55
MISC. ASSETS	0.15	0.02	0.13	0.23	0.23	25.93	0.66	0.71	0.91	0.90
INTANGIBLE ASSETS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.00
CURRENT LIABILITIES	29.14	43.25	63.17	57.50	47.64	65.19	89.72	118.90	158.18	185.70
LOANS & ADVANCES	14.19	15.04	5.14	18.71	18.19	27.50	59.77	56.69	79.06	92.60
SUNDRY CREDITORS	9.93	13.77	22.22	21.20	21.24	24.28	26.60	33.21	35.34	53.54
PROV. FOR TAX	2.32	11.61	28.54	15.61	4.45	7.14	4.62	20.31	23.39	14.11
MIS. CUR. LIA & PROV.	2.70	2.83	6.27	1.98	3.76	6.27	6.73	8.69	20.39	25.45
DEFERRED LIABILITIES	9.40	10.23	11.36	32.40	27.30	19.24	17.62	26.71	28.33	37.67
DEBENTURES	2.50	2.50	2.50	13.34	18.93	12.52	11.57	10.89	25.42	24.94
LONG TERM LOANS	6.90	7.73	8.86	19.06	8.37	6.72	6.05	15.82	12.91	12.73
TOTAL LIABILITIES	38.54	53.48	74.53	89.90	74.94	84.43	107.34	145.61	196.51	223.37
SHARE CAPITAL	8.00	8.00	8.00	8.00	10.52	12.20	17.09	17.08	19.08	19.08
RESERVES & SURPLUS	9.52	16.52	29.85	39.01	44.68	54.82	78.79	110.02	143.69	177.27
NET WORTH	17.52	24.52	37.85	47.01	55.20	67.02	95.88	127.10	162.77	196.35
TOTAL LIABILITIES	56.06	78.00	112.38	136.91	130.14	151.45	203.22	272.71	359.28	419.72

TABLE : 8 (Contd.)										
EQUITY DATA										
PARTICUL. RS	31.12.82	31.12.83	31.12.84	31.12.85	31.12.86	31.12.87	31.3.89 **	31.3.90	31.3.91	31.3.92
EARNING PER SHARE	3.69	12.25	21.66	14,46	8.03	9.05	21.46	24.28	27.93	27.00
DIVIDEND PER SHARE	0.00	3.50	5.00	3.00	3.00	44.50	5.00	6.00	10.10	10.10
PRICE EARNING RATIO	24.82	35.25	2.85	6.98	10.59	11.27	6.71	6.51	11.79	28.98
BOOK VALUE PER SHARE	21.90	30.65	47.31	58.77	52.46	54.92	56.11	74.37	85.29	102.91
MARKET PRICE 1. HIGH	17.00	38.00	63.50	172.00	161.00	131.50	164.00	208.00	490.00	950.00
2. LOW	9.00	12.75	31.00	62.00	48.00	85.00	105.00	142.50	185.00	308.00
BONUS							2 : 5			
** FOR 15 MONTHS										
SOURCE: The Bombay Stock Exchange Official Directory & Annual Reports of the Company.										

TABLE : 9

Price Movement of BSE Sensitive Index (1978-79 = 100) From March - 1992 to April - 20, 1993						Daily Price Movement of TATA Tea LTD. From March-1992 to April-20, 1993					
MONTH	DATE	OPENING	HIGH	LOW	CLOSING	MONTH	DATE	OPENING	HIGH	LOW	CLOSING
MARCH-92	2	3273.47	3333.25	3273.47	3333.25	MARCH-92	2	460.00	465.00	440.00	462.50
	3	3323.60	3479.33	3314.53	3472.78		3	455.00	470.00	450.00	467.50
	10	3480.74	3480.74	3261.00	3316.03		10	470.00	445.00	440.00	445.00
	11	3137.95	3173.19	3069.00	3163.68		11	420.00	432.00	415.00	430.00
	12	3178.14	3306.17	3178.14	3241.97		12	430.00	455.00	425.50	432.50
	13	3299.74	3346.26	3259.36	3259.36		13	442.50	452.50	432.50	432.50
	16	3305.62	3385.99	2949.70	3250.70		16	445.00	452.50	422.50	422.50
	17	3296.41	3296.41	3197.51	3198.78		17	435.00	400.00	400.00	400.00
	18	3212.66	3212.66	3126.45	3128.01		18	405.00	387.50	385.00	387.50
	20	3135.85	3243.53	3135.88	3243.53		20	387.00	410.00	407.50	407.50
	24	3521.25	3688.53	3521.25	3669.58		24	460.00	505.00	485.00	485.00
	25	3655.00	3807.64	3655.00	3802.17		25	480.00	502.50	497.50	497.50
	27	3672.99	3800.83	3655.12	3791.18		27	485.00	510.00	480.00	510.00
	30	4112.23	4159.53	4091.43	4091.43		30	560.00	600.00	557.50	575.00
	31	4172.21	4318.95	4172.21	4285.00		31	590.00	605.00	600.00	600.00
APRIL-92	2	4546.58	4546.58	4387.86	4387.86	APRIL-92	2	975.00	1000.00	850.00	900.00
	3	4120.45	4241.07	4026.77	4238.25		3	800.00	850.00	750.00	850.00
	6	4150.74	4150.74	4062.57	4062.57		6	800.00	850.00	750.00	800.00
	7	3988.28	4023.11	3930.64	4023.11		7	800.00	825.00	750.00	825.00
	8	4062.31	4341.27	4062.31	4333.57		8	775.00	850.00	825.00	825.00
	10	4328.63	4338.75	4266.26	4306.43		10	775.00	850.00	750.00	800.00
	13	4266.68	4307.21	4163.02	4163.02		13	800.00	750.00	725.00	750.00
	28	4109.84	4112.78	3896.90	3896.90		28	750.00	700.00	700.00	700.00
	29	3727.18	3750.07	3611.11	3674.41		29	750.00	700.00	650.00	700.00
	30	3637.17	3887.72	3636.02	3887.72		30	675.00	700.00	625.00	675.00
MAY-92	6	3531.21	3579.87	3460.60	3560.72	MAY-92	6	625.00	650.00	585.00	625.00
	7	3651.01	3710.86	3651.01	3658.00		7	625.00	660.00	600.00	625.00
	11	3556.94	3566.07	3407.54	3420.05		11	625.00	600.00	575.00	600.00
	12	3273.82	3307.71	3080.43	3086.37		12	600.00	530.00	505.00	630.00
	13	3283.16	3493.47	3283.16	3431.13		13	600.00	630.00	585.00	600.00
	14	3407.85	3407.85	3335.48	3394.48		14	590.00	600.00	575.00	575.00
	18	3475.12	3527.21	3454.13	3456.16		18	600.00	650.00	625.00	625.00
	19	3490.91	3574.92	3481.82	3568.67		19	625.00	665.00	650.00	650.00
	20	3499.27	3562.36	3495.29	3559.28		20	640.00	650.00	625.00	640.00
	22	3378.88	3442.65	3376.12	3435.07		22	600.00	625.00	575.00	625.00
	25	3432.43	3432.43	3399.92	3406.29		25	600.00	625.00	600.00	600.00
	26	3349.11	3352.43	3271.13	3298.74		26	575.00	600.00	600.00	600.00
	27	3307.02	3307.02	3111.37	3144.79		27	565.00	575.00	530.00	550.00
	28	3002.42	3072.48	2963.49	3072.48		28	520.00	540.00	510.00	540.00
	29	3050.19	3070.60	2987.69	3006.08		29	560.00	525.00	525.00	525.00

JUNE-92	1	2958.39	3003.83	2928.10	3001.24		JUNE-92	1	540.00	540.00	510.00	540.00
	2	3014.07	3147.20	3014.20	3133.83			2	507.50	550.00	550.00	550.00
	3	3120.37	3192.45	3092.45	3101.66			3	535.00	575.00	525.00	525.00
	4	3016.83	3018.64	2993.68	3004.92			4	525.00	540.00	500.00	500.00
	5	2983.22	3086.99	2983.22	3086.74			5	475.00	560.00	550.00	550.00
	8	3063.22	3113.66	3063.22	3100.66			8	550.00	650.00	525.00	625.00
	9	3127.57	3198.77	3127.57	3154.23			9	700.00	720.00	660.00	685.00
	10	3139.94	3193.17	3139.46	3140.87			10	685.00	695.00	665.00	670.00
JULY-92	15	2972.96	2972.96	2912.92	2912.92		JULY-92	15	600.00	625.00	625.00	625.00
	16	2890.75	2891.81	2797.92	2809.69			16	612.50	625.00	610.00	610.00
	17	2795.31	2807.96	2761.45	2806.31			17	605.00	630.00	600.00	630.00
	20	2794.95	2864.05	2794.42	2855.43			20	605.00	640.00	625.00	625.00
	21	2839.17	2870.59	2837.07	2870.59			21	615.00	640.00	625.00	625.00
	22	2857.01	2881.94	2814.26	2818.12			22	635.00	650.00	600.00	610.00
	23	2784.04	2784.04	2677.07	2678.34			23	600.00	625.00	575.00	590.00
	27	2740.74	2807.41	2737.65	2804.15			27	600.00	640.00	625.00	625.00
	28	2850.25	2872.71	2822.24	2830.57			28	650.00	640.00	625.00	625.00
	29	2796.53	2805.99	2752.94	2755.25			29	630.00	640.00	610.00	625.00
	30	2733.86	2733.86	2680.69	2698.83			30	615.00	625.00	610.00	625.00
	31	2717.76	2727.06	2698.75	2727.06			31	630.00	640.00	625.00	625.00
AUG-92	3	2721.02	2730.82	2697.04	2722.65		AUG-92	3	635.00	650.00	625.00	625.00
	4	2699.45	2700.26	2676.82	2686.49			4	625.00	625.00	600.00	625.00
	5	2676.50	2681.42	2628.20	2630.23			5	600.00	625.00	590.00	600.00
	6	2594.45	2595.37	2529.59	2529.59			6	580.00	600.00	600.00	600.00
	7	2568.81	2605.19	2568.81	2590.68			7	575.00	600.00	600.00	600.00
	10	2598.77	2668.98	2597.50	2668.25			10	580.00	600.00	600.00	600.00
	11	2706.46	2732.34	2686.99	2693.42			11	590.00	600.00	575.00	600.00
	12	2638.05	2679.35	2638.05	2678.83			12	600.00	600.00	575.00	600.00
	14	2720.53	2795.18	2720.53	2795.18			14	625.00	600.00	600.00	600.00
	17	2830.07	2892.68	2830.07	2889.08			17	600.00	630.00	620.00	620.00
	18	2875.61	2921.53	2869.41	2921.53			18	610.00	630.00	630.00	630.00
	19	2978.86	3007.45	2964.75	2982.60			19	625.00	640.00	600.00	625.00
	20	3018.20	3059.22	2995.25	2995.25			20	625.00	590.00	590.00	590.00
	21	2958.97	3034.94	2958.97	3034.94			21	575.00	600.00	565.00	600.00
	24	3051.28	3071.52	3041.39	3053.12			24	580.00	600.00	570.00	600.00
	25	3020.82	3021.59	2959.41	2959.41			25	570.00	560.00	530.00	560.00
	26	2947.56	2947.56	2864.79	2909.32			26	550.00	525.00	490.00	525.00
	27	2891.99	2998.57	2891.99	2996.98			27	490.00	560.00	550.00	550.00
	28	3013.54	3033.65	3009.77	3031.63			28	550.00	525.00	525.00	525.00
SEPT-92	1	3080.79	3099.40	3070.49	3070.49		SEPT-92	1	540.00	550.00	525.00	525.00
	2	3035.38	3046.17	3017.04	3040.57			2	525.00	550.00	550.00	550.00
	3	3062.69	3099.66	3048.40	3079.53			3	540.00	560.00	560.00	560.00
	4	3080.40	3166.10	3078.72	3166.10			4	570.00	590.00	580.00	580.00
	7	3172.71	3250.02	3172.71	3226.52			7	580.00	610.00	610.00	610.00
	8	3205.32	3205.32	3187.47	3201.46			8	600.00	610.00	580.00	590.00

	9	3192.42	3200.25	3178.81	3198.69			9	580.00	600.00	560.00	580.00
	11	3202.82	3220.18	3193.09	3219.92			11	580.00	590.00	570.00	580.00
	14	3205.67	3274.85	3205.67	3274.85			14	595.00	610.00	580.00	610.00
	15	3365.96	3415.99	3365.96	3410.29			15	630.00	680.00	660.00	660.00
	16	3463.14	3463.14	3404.96	3404.96			16	650.00	700.00	650.00	650.00
	17	3356.09	3386.75	3354.20	3378.18			17	650.00	690.00	625.00	670.00
	18	3385.36	3385.36	3340.76	3383.62			18	670.00	710.00	710.00	710.00
	21	3340.04	3341.60	3263.64	3274.74			21	675.00	720.00	670.00	670.00
	22	3242.79	3305.43	3242.79	3298.75			22	665.00	700.00	700.00	700.00
	24	3286.70	3286.70	3236.07	3246.96			24	680.00	690.00	660.00	675.00
	28	3252.18	3258.60	3231.74	3239.98			28	680.00	735.00	700.00	700.00
	29	3192.96	3224.16	3179.65	3195.75			29	690.00	720.00	680.00	720.00
	30	3226.08	3297.32	3226.08	3294.42			30	720.00	780.00	760.00	760.00
OCT-92	1	3303.93	3329.80	3301.76	3315.72		OCT-92	1	770.00	760.00	740.00	760.00
	6	3234.31	3273.53	3245.67	3247.76			6	750.00	730.00	725.00	730.00
	8	3219.19	3223.20	3201.49	3211.55			8	725.00	730.00	695.00	715.00
	9	3300.25	3304.71	3275.24	3275.57			9	525.00	540.00	500.00	505.00
	12	3223.15	3223.15	3158.29	3166.52			12	500.00	480.00	450.00	480.00
	12	3127.44	3190.28	3127.44	3187.76			12	470.00	495.00	460.00	490.00
	14	3166.50	3168.90	3105.63	3105.63			14	465.00	485.00	480.00	480.00
	15	3081.37	3100.89	3053.04	3086.45			15	470.00	485.00	460.00	480.00
	20	3074.66	3078.41	3045.78	3050.90			20	460.00	490.00	480.00	480.00
	21	2973.71	2987.57	2932.18	2934.66			21	470.00	460.00	440.00	460.00
	22	2982.99	3002.16	2968.45	2987.29			22	470.00	480.00	465.00	470.00
	25	3033.08	3033.08	2987.21	2987.21			25	480.00	490.00	465.00	480.00
	28	2963.28	2963.28	2876.70	2876.70			28	465.00	480.00	460.00	470.00
	29	2873.65	2890.63	2862.15	2862.15			29	470.00	470.00	450.00	470.00
	30	2892.39	2896.62	2825.58	2833.34			30	475.00	450.00	440.00	450.00
NOV-92	3	2867.57	2928.89	2867.57	2928.89		NOV-92	3	450.00	470.00	450.00	460.00
	4	2953.02	2983.00	2917.56	2926.18			4	470.00	460.00	450.00	460.00
	5	2870.59	2889.69	2794.83	2794.83			5	455.00	460.00	440.00	450.00
	6	2760.12	2760.12	2732.77	2756.19			6	435.00	445.00	440.00	440.00
	9	2758.46	2758.46	2682.84	2685.39			9	435.00	440.00	415.00	420.00
	11	2663.31	2663.31	2555.53	2596.53			11	415.00	400.00	380.00	440.00
	12	2645.74	2679.25	2635.71	2641.81			12	400.00	425.00	410.00	410.00
	13	2606.44	2606.44	2574.74	2586.68			13	420.00	420.00	410.00	420.00
	18	2551.98	2551.98	2501.77	2524.71			18	387.50	400.00	385.00	390.00
	19	2506.52	2506.52	2413.62	2423.26			19	400.00	380.00	380.00	380.00
	20	2422.97	2479.56	2418.52	2479.56			20	380.00	400.00	375.00	400.00
	23	2468.92	2545.33	2468.92	2530.47			23	390.00	397.50	397.50	397.50
	24	2523.27	2560.71	2522.48	2546.86			24	375.00	390.00	380.00	380.00
	25	2593.97	2609.35	2555.46	2556.56			25	385.00	410.00	400.00	400.00
	26	2526.09	2526.09	2487.09	2487.11			26	390.00	385.00	375.00	385.00
	27	2462.91	2486.83	2460.80	2486.41			27	375.00	380.00	380.00	380.00
	30	2511.41	2542.55	2511.41	2518.10			30	380.00	385.00	370.00	385.00

DEC-92	1	2522.07	2551.81	2522.07	2547.69		DEC-92	1	370.00	395.00	380.00	380.00
	2	2590.56	2614.04	2586.24	2593.62			2	390.00	410.00	400.00	400.00
	3	2574.86	2627.93	2559.32	2619.90			3	380.00	415.00	410.00	410.00
	4	2696.14	2708.62	2664.49	2696.86			4	425.00	465.00	420.00	465.00
	10	2609.31	2609.31	2550.22	2550.22			10	430.00	430.00	430.00	430.00
	11	2566.34	2575.00	2534.22	2536.87			11	415.00	427.50	410.00	410.00
	14	2537.72	2537.98	2468.58	2469.45			14	410.00	420.00	400.00	400.00
	15	2426.88	2477.27	2430.35	2477.27			15	380.00	380.00	365.00	380.00
	16	2425.87	2425.87	2374.72	2374.72			16	380.00	390.00	370.00	380.00
	17	2366.01	2400.68	2359.34	2400.16			17	370.00	385.00	385.00	385.00
	18	2447.54	2500.43	2447.54	2476.89			18	390.00	400.00	400.00	400.00
	21	2523.79	2550.48	2523.79	2542.10			21	410.00	430.00	420.00	420.00
	22	2587.75	2592.09	2559.71	2562.10			22	430.00	445.00	420.00	430.00
	23	2535.92	2571.72	2523.80	2571.36			23	415.00	425.00	400.00	425.00
	24	2604.83	2626.93	2604.36	2616.37			24	430.00	435.00	420.00	435.00
JAN-93	4	2617.78	2617.78	2539.67	2539.67		JAN-93	4	440.00	460.00	430.00	440.00
	5	2519.45	2520.51	2488.98	2501.52			5	420.00	440.00	435.00	435.00
	6	2473.93	2473.93	2441.38	2447.50			6	410.00	430.00	430.00	430.00
	7	2411.71	2411.71	2389.80	2395.80			7	415.00	430.00	405.00	430.00
	8	2421.23	2426.29	2418.79	2420.67			8	430.00	430.00	415.00	430.00
	14	2425.99	2459.67	2425.99	2459.67			14	440.00	465.00	460.00	460.00
	15	2503.61	2527.89	2494.58	2525.54			15	455.00	480.00	450.00	475.00
	18	2579.51	2588.05	2575.38	2586.05			18	480.00	490.00	475.00	485.00
	18	2597.40	2597.40	2537.65	2545.12			18	495.00	475.00	475.00	475.00
	20	2525.25	2531.61	2505.69	2531.55			20	480.00	475.00	465.00	475.00
	21	2538.34	2553.11	2533.03	2544.23			21	475.00	510.00	495.00	495.00
	22	2520.27	2542.65	2519.33	2542.29			22	505.00	530.00	525.00	525.00
	25	2570.73	2588.50	2555.21	2555.85			25	530.00	540.00	535.00	535.00
	27	2574.87	2595.13	2574.87	2595.13			27	540.00	555.00	550.00	550.00
	28	2611.25	2654.25	2611.25	2654.25			28	540.00	555.00	555.00	555.00
	29	2663.75	2709.71	2662.84	2680.79			29	560.00	535.00	530.00	535.00
FEB-93	1	2667.38	2667.38	2615.44	2634.43		FEB-93	1	540.00	530.00	525.00	530.00
	2	2606.01	2663.09	2605.02	2663.00			2	520.00	535.00	535.00	535.00
	3	2660.31	2676.34	2660.31	2660.75			3	530.00	540.00	535.00	535.00
	4	2632.20	2650.78	2631.73	2638.54			4	522.50	530.00	530.00	530.00
	5	2617.39	2662.05	2616.99	2648.89			5	527.50	545.50	520.00	537.50
	8	2702.03	2721.60	2698.26	2712.56			8	560.00	580.00	576.25	576.25
	9	2758.77	2772.60	2758.77	2771.68			9	575.00	585.00	570.00	575.00
	10	2798.72	2814.08	2800.66	2812.12			10	585.00	577.50	570.00	577.50
	11	2793.97	2803.63	2780.20	2785.83			11	575.00	567.50	565.00	567.50
	12	2771.60	2771.60	2725.06	2745.48			12	565.50	570.00	560.00	565.00
	15	2694.31	2694.70	2634.05	2640.40			15	552.50	565.00	547.50	550.00
	16	2644.36	2648.19	2607.51	2607.51			16	550.00	557.50	540.00	540.00
	17	2614.87	2643.86	2624.87	2638.85			17	545.00	560.00	555.00	555.00
	18	2659.99	2978.11	2659.99	2671.37			18	552.50	565.00	560.00	560.00

	22	2712.15	2725.25	2708.34	2708.34			22	580.00	585.00	573.75	575.00
	23	2714.12	2746.69	2711.90	2741.38			23	570.00	610.00	607.50	607.50
	24	2753.01	2782.50	2753.01	2753.67			24	615.00	622.50	610.00	612.50
	25	2768.66	2804.99	2768.66	2799.35			25	615.00	620.00	605.00	615.00
	26	2832.84	2842.33	2811.39	2813.15			26	620.00	625.00	612.50	615.00
	27+	2817.31	2818.22	2778.56	2783.58			27+	610.00	615.00	600.00	605.00
	27++	2835.39	2893.13	2615.15	2652.40			27++	620.00	670.00	550.00	600.00
MARCH-93	2	2550.25	2550.25	2494.50	2543.32		MARCH-93	2	580.00	585.00	550.00	585.00
	3	2578.64	2579.98	2561.75	2565.32			3	590.00	590.00	570.00	580.00
	4	2533.27	2536.54	2524.21	2532.67			4	570.00	575.00	560.00	570.00
	5	2535.98	2535.98	2459.50	2471.74			5	570.00	540.00	537.50	540.00
	9	2451.20	2451.20	2318.36	2336.96			9	540.00	545.00	505.00	515.00
	10	2326.20	2326.20	2279.74	2287.15			10	510.00	520.00	480.00	510.00
	11	2337.66	2337.66	2308.09	2330.09			11	540.00	525.00	510.00	525.00
	16	2468.71	2477.37	2454.30	2459.85			16	545.00	565.00	555.00	555.00
	18	2417.94	2420.98	2393.58	2393.58			18	530.00	537.50	520.00	530.00
	19	2380.53	2384.71	2371.96	2376.76			19	520.00	530.00	515.00	525.00
	22	2405.48	2405.48	2388.99	2402.02			22	520.00	537.50	520.00	537.50
	23	2385.77	2388.74	2377.43	2378.55			23	522.50	530.00	522.50	530.00
	26	2352.60	2357.97	2339.07	2341.42			26	510.00	525.00	510.00	525.00
	30	2230.70	2230.70	2184.67	2225.08			30	500.00	510.00	480.00	510.00
APRIL-93	2	2294.41	2311.44	2284.57	2311.44		APRIL-93	2	530.00	520.00	505.00	520.00
	8	2347.29	2347.49	2310.91	2310.91			8	525.00	530.00	515.00	530.00
	12	2229.54	2249.08	2222.48	2222.69			12	500.00	515.00	492.50	510.00
	13	2179.01	2235.21	2178.84	2226.84			13	490.00	525.00	490.00	490.00
	16	2262.44	2299.78	2259.71	2299.78			16	430.00	545.00	525.00	540.00
	19	2281.71	2281.71	2262.82	2268.15			19	525.00	535.00	525.00	535.00
	20	2220.99	2220.49	2193.48	2204.91			20	520.00	530.00	510.00	530.00

\+ Before Budget Announcements

++ After Budget Announcements

SOURCE: The Stock Exchange Review, different issues and the Eco. Times

Assignment Questions

Should Mr. Handa recommend TTL to his client? Why?

Discussion Questions

Is the economic outlook favourable?

Is the industry profile alright?

Is the company performance and plans fine?

What is the intrinsic value of TTL equity share?

What do the charts indicate?

What does the moving average analysis of TTL share price movement suggest?

Possible Recommendation:

THE COMPANY IS A GOOD LONG-TERM BUY.

MAJOR POINTS:

ECONOMY:

- Developing at a fast rate
- Improving balance of payment position
- Savings available for productive purpose (ratio high)
- Internationalisation of Indian economy
- Focus on fundamentals
- Expected to do well except under vagaries of monsoon, political instability
- Ultimately survival of the fittest rule will work
- Favourable R.B.I. credit policy
- Deregulation of expansion, diversification, etc.

INDUSTRY:

- Expected to do well
- Abolition of Excise Duty
- Govt. attitude favourable
- Russia once again strong buyer of Indian tea
- Rapid Expansion stage in the life cycle
- Developmental measures proposed in ' ' Perspective Plan
- No threat of product obsolescence
- Permanent industry
- Labour conditions not a problem

COMPANY

- World's largest tea factory
- Professionally managed company
- Reputed business house Tata group company
- Record EPS of Rs. 27.70 for the year 91-92
- Record dividend at 101% for the last two years
- Debt equity ratio is too low (0.19) resulting into long term financial stability and excellent solvency.
- Company related risk which can be easily diversified away
- Always exploring new growth opportunities
- Well diversified with strong R & D.
- Intrinsic value equal to current market price is acceptable
- Clear signal of Buy and Hold as per moving average method.

NOTES

Utter Pradesh
Rajarshi Tandon Open University

PGDFM-03

Security Analysis and Portfolio Management

Block

4

PORTFOLIO THEORY

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BLOCK 4 PORTFOLIO THEORY

This block Comprises four Units. It is aimed to discuss the theory and practice of portfolio management. Unit 10: Portfolio Analysis, explains and illustrates the concepts and measures of return and risk as they apply to individal assets as well as portfolio of assets. This Unit also highlights the process of diversification of risk and introduces the portfolio selection problem and process. Unit 11: Portfolio Selection, explains and illustrates Markowitz's approach and the Sharpe's Single-Index Model for selecting optimal portfolio of assets. This Unit also highlights limitation of these models and point out some alternative models Viz. Multi-Index Model or Goal-Programming approach to portfolio selection. Unit 12: Capital Market Theory, is aimed to introduce general theory of Pricing the capital assets. It discusses in detail the Capital Assets Pricing Model (CAPM), pointing out its basic tenets, assumptions, rationale and mathematics. This Unit also explains Capital Market Line (CML) and the Security Market Line (SML). It also discusses Beta measure of risk and its implications for portfolio selection. This Unit highlights the limination of CAPM and introduces the alternative approach to pricing the capital assets, namely, Arbitrage Pricing Theory (APT).

Unit 13: Portfolio Revision, constitutes the fourth and the last Unit of this block. This Unit points out the meaning and need for portfolio revision. It contrasts 'active' and 'passive' portfolio revision strategies. It also highlights constraints in portfolio revision and explains and illustrates formula plans for portfolio revision, namely – Constant Dollar-Value Plan, Constrant-Ratio Plan and Variable-Ratio Plan. In one word, this block introduces all the aspects of portfolio management, namely, portfolio analysis, portfolio selection, portfolio timing and revision.

UNIT 10 PORTFOLIO ANALYSIS

Objectives

The Objectives of this Unit are to:

- explain and illustrate the concepts and measures of return and risk as they apply to individual assets as well as portfolio of assets
- highlight the concept of diversification of risk
- discuss the portfolio selection problem and the process

Structure

10.1 Introduction
10.2 Inputs to Portfolio Analysis
10.2.1 Return and Risk Characteristics of Individual Assets
10.2.2 Expected Return and Risk of a Portfolio
10.2.3 Diversification of Risk
10.3 Portfolio Analysis and Selection
10.3.1 Portfolio Selection Problem
10.3.2 Selection of Optimal Portfolio
10.4 Summary
10.5 Key Words
10.6 Self-assessment Questions/Exercises
10.7 Further Readings
Appendix-10 A

10.1 INTRODUCTION

To most of us a 'portfolio' means a collection or combination of financial assets (or securities) such as shares, debentures and government securities. And it is not unusual to define a portfolio in such terms since the institutional portfolios insurance companies, pension funds, mutual funds, banks, etc.) do, in fact, consist of such assets. However, in a more general sense the term 'portfolio' may be used synonymously with the expression 'collection of assets', which can even include physical assets (gold, silver, real estate, etc.). What is to be borne in mind is that, in the portfolio context, assets are held for 'investment' purposes and not for consumption' purposes.

With these remarks, we intend to present in this unit a basic framework for portfolio selection. We will begin with the analysis of return-risk characteristics of individual assets and then proceed to examine how individual assets combine into a portfolio to determine its return and risk attributes. Having done so, our next logical step would be to consider the question: how can an investor make a choice when facing an infinite number of possible portfolios? Or, more precisely, how can the investor decide which assets to hold and how much to invest in each? Quite obviously, the ultimate choice of a portfolio will hinge on the investor's attitude towards risk and return.

10.2 INPUTS TO PORTFOLIO ANALYSIS

Portfolio analysis builds on the estimates of future return and risk of holding various combinations of assets. As we know, individual assets have risk return characteristics of their own. Portfolios, on the other hand, may or may not take on

the aggregate characteristics of their individual parts. In this section we will reflect on the assessment of return-risk attributes of individual assets and portfolios.

10.2.1 Return and Risk Characteristics of Individual Assets

For Individual assets, the returns are measured in an intuitively logical way over the predetermined investment horizon (or holding period). For instance, the returns from investment in equity share are measured over a single holding period (t) as follows:

$$\text{Total Return}_t = \frac{\text{Dividends}_t + (\text{Market Price}_t - \text{Market Price}_{t-1})}{\text{Market Price}_{t-1}}$$

Within a multi-period framework, one may even apply discounting model to estimate returns. What an investment analyst essentially endeavours to obtain is the forecasts of return.

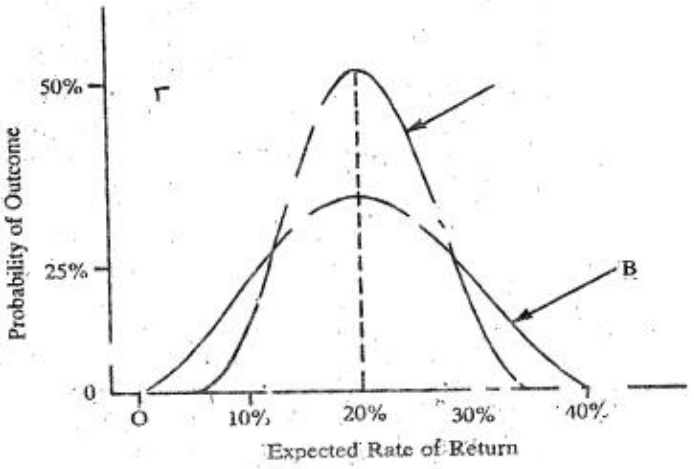
It is axiomatic that return predictions are seldom accurate. So, investment analyst also aims at measuring 'upside' potential and 'downside' danger - that is, the potential that actual returns may exceed the estimate and the danger that the returns may be less than that. In investment parlance, this is known as measuring 'investment risk'.

Usually, an analyst obtains, for a given period of time in the future, a series of possible rates of return with some probability of occurrence for each return estimate. Based on the distribution of these return estimates, he computes two summary statistics, namely 'expected (or mean) rate of return' and the 'variance (o equivalently, its square root, (or the standard deviation) of return distributions'. Th latter, which measures the breadth of the distribution of expected returns from an investment, is considered a measure of the investment risk.

A question with variance as a measure of risk is: why count 'happy' surprises (tho: above the expected return) at all in a measure of risk? Why not just consider the deviations below the expected return (i.e. the downside danger)? Measures that do so have much to recommend them. But if a distribution is symmetric, such as the normal distribution, the result will be the same. Because, left side of a symmetric distribution is a mirror image of the right side. Although distributions of forecaste returns are often non-normal, analysts generally assume normality to simplify thei analysis.

In Block 1 of this course, we had discussed how to compute mean and variance (o standard deviation), so we need not reiterate the procedure here. You may, however, look up appendix 10-A, to quickly revise the concepts of portfolio return and risk. We may now refer to Exhibit 10-1 that depicts the distribution of returns that might be expected for two investments, A and B.

Exhibit 10-1
Possible Outcomes of Two Independent Investments



The mean or expected return, at the vertical dotted line, is the same for both investments. But, investment B is more risky. With investment A, the distribution of returns (or possible outcomes) is more closely grouped about the mean value; in other words, the variance is smaller than that of investment B. Consequently, it can be said with greater degree of accuracy that our forecast will be close to the actual return from investment A.

When we move from evaluating a single asset in isolation to evaluating a portfolio, our return-risk analysis changes. Return is still the expected return, but for a portfolio the return will be the average return from all the assets held in the portfolio. Risk is still the variance (or standard deviation) of the expected returns from the portfolio. The investor is still concerned with upside potential and downside danger. However, the risk of a combination of assets is very different from a simple average of the risk of individual assets. Most dramatically, the variance of a portfolio of two assets may be less than the variance of either of the assets themselves. We will examine all these aspects in the discussion that follows.

10.2.2 Expected Return and Risk of a Portfolio

The return on a portfolio of assets is simply a weighted average of the return on the individual assets. The weight applied to each return is the fraction of the portfolio invested in that asset. Thus,

$$\bar{r}_p = \sum_{i=1}^{n} x_i \bar{r}_i \qquad (10.1)$$

Where

$\bar{r}_p$ = the expected return of the portfolio;

x_i = the proportion of the portfolio's initial fund invested in asset i;

$\bar{r}_i$ = the expected return of asset i; and

n = the number of assets in the portfolio.

To illustrate the application of the above formula, let us consider a portfolio of two equity shares A and B. The expected return on A is, say, 15 per cent and that on B is 20 per cent. Further assume that we have invested 40 per cent of our fund in share A and the remaining in B. Then, the expected portfolio return will be
$40 \times .15 + .60 \times 20 = 18$ per cent.

It may be noted here that portfolio weight can be either positive or negative. In case of securities, the weight will be negative when investor enters into 'short sales'. Usually, investors buy securities first and sell them later. But with a 'short sale' this process is reversed; the investors sell first the securities that they do not possess, and buy them later to cover the sales. Since institutional investors in our country do not enter into such short sales, we will ignore the situation of short sales in the present discussion as well as in our dealing with the subject matter in subsequent units.

Having discussed the computation of expected portfolio return, we now turn to the measurement of portfolio's return variance. As mentioned earlier, assets when combined may have a greater or lesser risk than the sum of their component risks. This fact arises from the degree to which the returns of individual assets move together or interact. It is vital, therefore, to consider covariance of returns in estimating portfolio variance.

To illustrate the point let us consider a portfolioof real life assets over a historical period, The assets include, for example, three equity shares with the following return-risk characteristics:

	Monthly Average Return (%)	Standard Deviation (%)	Proportion Invested (%)
ACC	8.89	19.55	33
Century Textiles	5.12	7.99	33
Hindustan Lever	3.42	6.18	34

Monthly returns here represent average appreciation of share prices estimated on the basis of price movements over 26 monthly intervals during the period 1989 to February 1991. A weighted average of standard deviation of each share returns works out to (.33 × 19.55 + .33 × 7.99 + .34 × 6.18) 11.18 per cent. However, a direct estimation of standard deviation of historical portfolio returns yield a figure of 9.61 per cent. Thus, the portfolio risk, as measured by standard deviation, is less than the sum of component risks. The lower portfolio risk in this case is due to the fac that the returns of the select scrips have not exhibited greater tendency to move together. In fact, the corrrelation co-efficients of returns (we will discuss about covariance and correlation co-efficient after a while) between ACC and Hindustan Lever and that between ACC and Century Textiles were found to be low (.3 and .4 respectively) during the period under consideration.

The computation of the portfolio variance in the above example is based on the following formula:

$$\sigma_p^2 = \sum_{i=1}^{n} \sum_{j=1}^{n} x_i x_j \sigma_{ij} \qquad (10.2$$

where σ_{ij} denotes the covariance of returns between asset i and asset j. An explanation of the formula is now in order.

We start off with the most important element of this formula, namely, covariance. I is a statistical measure of how two random variables, such as the returns on asset i and j, 'move together'. A positive value for covariance indicates that the assets' returns tend to go together. For example, a better-than-expected return for one is likely to occur along with a better-than- expected return for the other. A negative covariance indicates a tendency for the returns to offset one another. For example, a better-than-expected return for one asset is likely to occur along with a worse-than -expected return for the other. A relatively small or zero value for the covariance indicates that there is little or no relationship between the returns for two assets.

Closely related to covariance is the statistical measure known as correlation. The relationship is given by

$$\sigma_{ij} = \rho_{ij} \sigma_i \sigma_j$$

where ρ_{ij} denotes the correlation coefficient between the return on asset i and that on j. The correlation coefficient simply rescales the covariance to facilitate comparison with corresponding values for other pairs of random variables. The coefficient ranges from -1 (perfect negative correlation) to + 1 (perfect positive correlation). A co- efficient of 0 indicates, in our context, that returns are totally unrelated.

Given an understanding of covariance and correlation, next logical step is to know how the double summation of equation (10.2) is performed. Perhaps a more intuitive way to do this is to start with the first summation and to set i at its initial value to i. Then the second summation is performed for j going from i to n. At this point, i in the first summation is set equal to 2. Again, the second summation is performed by letting j go from i to n. The process is repeated till i is set equal to its upper limit n. For a portfolio of three assets, following the process of our double summation (or even otherwise), we will have

$$\sigma_p^2 = \sum_{j=1}^{3} x_1 x_j \sigma_{ij} + \sum_{j=1}^{3} x_2 x_j \sigma_{2j} + \sum_{j=1}^{3} x_3 x_j \sigma_{3j}$$

$$= [x_1 x_1 \sigma_{11} + x_1 x_2 \sigma_{12} + x_1 x_3 \sigma_{13} + x_2 x_1 \sigma_{21} + x_2 x_2 \sigma_{22} + x_2 x_3 \sigma_{23} + x_3 x_1 \sigma_{31} + x_3 x_2 \sigma_{32} + x_3 x_3 \sigma_{33}]$$

Another convenient way to obtain the above results will be to first set up the following 'variance-covariance' martix:

Weight		X_1	X_2	X_3
	Assets	1	2	3
X_1	1	σ_{11}	σ_{12}	σ_{13}
X_2	2	σ_{21}	σ_{22}	σ_{23}
X_3	3	σ_{31}	σ_{32}	σ_{33}

The entries along the digonal (i.e., σ_{11}, σ_{22} and σ_{33}) from the exterme north-west corner to the extreme south-east corner, denote covariance between each asset and itself. In other words, they represent the variances for the individual assets. There are other interesting features of the above variance-covariance matrix that deserve mention. First, such matrices are square and thereby the total number of cells for n assets equals n^2. Second, the matrix is symmetric, i.e., the elements in the cells above the diagonal also appear in the corresponding cells below the diagonal. Consequently, there are $(n^2 - n)/2$ terms of covariance.

Once the variance-covariance matrix is constructed, computing the portfolio variance is comparatively a simple operation. We only require to take each of the entries in the matrix and multiply it by the portfolio weight at the top of the column and then again by the portfolio weight at the left side of the row. For example, in the case of σ_{21} we will compute the product $x_1 \cdot x_2 \cdot \sigma_{21}$ When we add up such products for all the variance-covariance terms of the matrix, the resulting sum is the variance of the portfolio returns.

As an example, consider the following variance-covariance matrix for the equity shares of ACC, Century Textiles and Hindustan Lever:

Weight		.33 ACC	.33 Century	.34 Hind Lever
.33	ACC	382.09	68.73	39.87
.33	Century	68.73	63.82	68.87
.34	Hind Lever	39.87	68.87	38.25

Following the approach just mentioned, we can calculate the portfolio variance as follows:

$$\sigma_p^2 = (.33 \times .33 \times 382.09) + (.33 \times .33 \times 68.73) + (.34 \times .33 \times 39.87) + (.33 \times .33 \times 68.73) + (.33 \times .33 \times 63.82) + (.34 \times .33 \times 68.87) + (.33 \times .34 \times 39.87) + (.33 \times .34 \times 68.87) + (.34 \times .34 \times 38.25)$$

$$= 92.35$$

or $\sigma_p = 9.61\%$

This is the figure we mentioned earlier.

To this point we have only concentrated on determining the expected rate of return and variance of a portfolio based on the return-risk characteristics of the assests we put in the portfolio. We will now focus on the issue of diversification of risk that can be achieved through portfolio investment.

10.2.3 Diversification of Risk

Efforts to spread and minimize portfolio risk take the form of diversification. Most investors prefer to hold several assets rather than putting all their eggs into one basket, with the hope that if one goes bad, the others will provide some protection from extreme loss. Surely enough, there is merit in this approach; although some investors hold a contrary view point that recommends putting all eggs into one basket and then keeping a sharp eye on the basket.

That the overall portfolio risk can be reduced by adding more assets in the portfolio is not difficult to understand. Let us recall equation (10.2) for the portfolio variance. Putting separately the variance and covariance terms, this equation can be rewritten as

$$\sigma_p^2 = \underbrace{\sum_{i=1}^{n} x_i^2 \sigma_{ii}}_{\text{(variance)}} + \underbrace{\sum_{i=1}^{n} \sum_{j=i, j \neq i}^{n} x_i x_j \sigma_{ij}}_{\text{(covariance)}} \qquad (10.3)$$

For convenince and without loss of generality, let us assume that equal amounts are being invested in an assets. The above equation now becomes

$$\sigma_p^2 = \sum_{i=1}^{n} (1/n)^2 \sigma_{ij} + \sum_{i=1}^{n} \sum_{j=1, j \neq i}^{n} (1/n)(1/n) \sigma_{ij}$$

Factoring out 1/n from the first summation and $(n-1)/n$ from the second, we have

$$\sigma_p^2 = (1/n) \sum_{i=1}^{n} \frac{\sigma_{ii}}{n} + \left(\frac{n-1}{n}\right) \sum_{i=1}^{n} \sum_{j=1, j \neq i}^{n} \frac{\sigma_{ij}}{n(n-1)}$$

or, $$\sigma_p^2 = (1/n)\,\bar{\sigma}_{ii} + (n-1)/n\,\bar{\sigma}_{ij}$$

where $$\bar{\sigma}_{ii} = \sum_{i=1}^{n} \frac{\sigma_{ii}}{n}$$

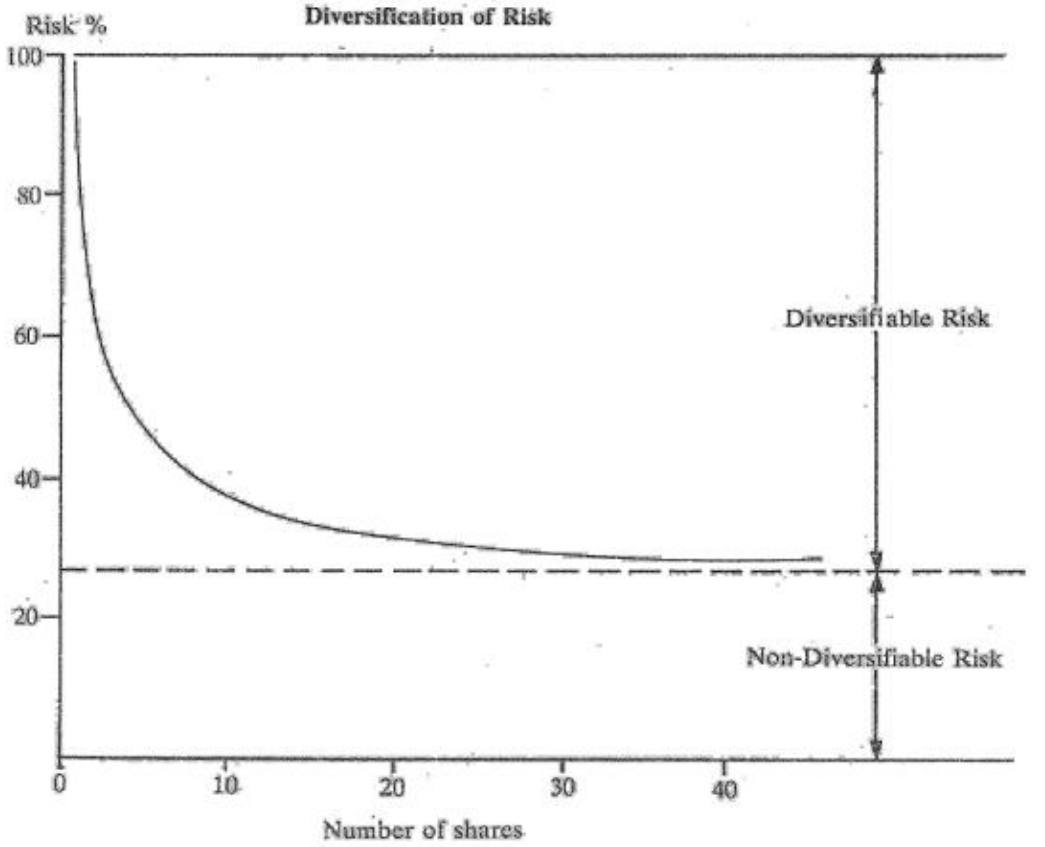
= average variance of the assests in the portfolio; and

$$\bar{\sigma}_{ij} = \sum_{i=1}^{n} \sum_{j=1, j \neq i}^{n} \sigma_{ij}/n(n-1)$$

= average covariance for individual assest with every other asset

As n increases the first term approaches to zero, and the second term converges to the average covariance, $\bar{\sigma}_{ij}$. Thus, individual risk of assests as measured by their variance (σ_{ii}) can be diversified away with the increase in size (n) of the portfolio. But, the individual asset's contribution to the total risk as measured by its average covariance $\bar{\sigma}_{ij}$ can not be diversified away. In fact, the latter puts a limit to the diversification that can be achieved through portfolio investments. This is being illustrated in Exhibit 10.2.

Exhibit 10-2
Diversification of Risk



It may be noted that beyond certain portfolio size, there is no real gain from addition of further assets to the portfolio; the reduction in risk is marginal and insignificant.

We will discuss more about diversifiable and non-diversifiable risk in Unit 12. A word of caution may, however, be urged here. The above discussion would appear to suggest that the overall portfolio risk can be reduced by only increasing number of assets in the portfolio. This is not true. Several empirical studies have indicated that a portfolio comprising a few assets selected carefully for their risk-diversifying characteristics (i.e. nature and degree of variance and covariance), would be less risky than a portfolio of considerably greater size with assets being selected without regard to risk. Thus, what matters in diversification is not the number of assets *per se*, but the right kinds.

Activity 1

a) Define the following terms.

i) Optimal portfolio

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ii) Variance-Covariance Matrix

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b) What is the major point illustrated through Exhibit 10.2.

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10.3 PORTFOLIO ANALYSIS AND SELECTION

Now that we have reviewed all the attributes of combination of assets (namely, return, risk and diversification), we are in a position to examine the portfolio selection process. For the purpose of our analysis, we will assume that rational investors are risk averse and prefer more return to less. With this assumption, let us first state the portfolio selection problem.

10.3.1 Portfolio Selection Problem

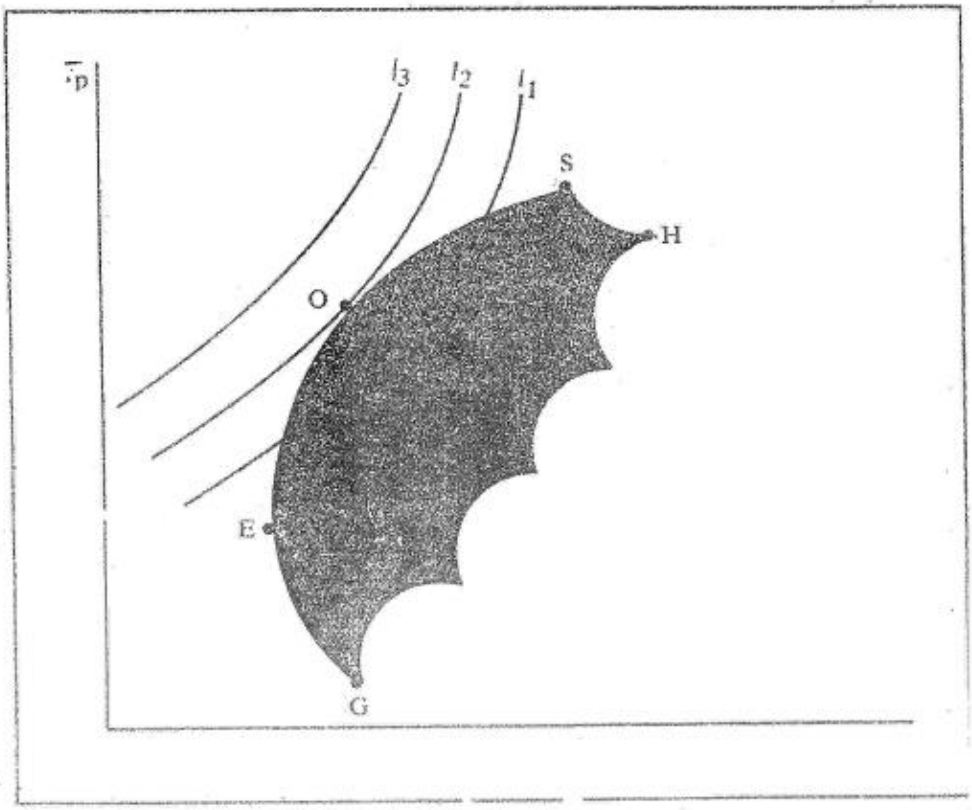
What is the opportunity set of investments or portfolios from which an investor must make a choice? A quick reflection on equations (10.1) and (10.2) would reveal that there are infinite number of possibilities to combine n assets into a portfolio, provided an investor can hold a fraction of an asset if he or she so desires. Each one of these portfolios available for investment corresponds to a set of portfolio weights (i.e., the proportions of fund that investors may allocate to different assets), and is characterised by an expected rate of return and variance (or standard deviation).

Does an investor need to evaluate all the portfolios of 'feasible set' to determine his or her 'best' or 'optimal' portfolio? Fortunately, the answer to this question is 'no'. The investor is required to examine only a subset of feasible set of portfolios.

To understand why the investors need to look at only a subset of the available portfolios, let us consider Exhibit 10-3.

EXHIBIT 10-3

EFFICIENT SET AND SELECTION OF OPTIMAL PORTFOLIO



All the points covered by the shaded area in risk-return space represent the feasible set of investment opportunities or portfolios. The investors would, however, prefer some of them to others. Since the investors are assumed to be risk averse and prefer more return to less, their choice of portfolios will be bounded by the following two criteria:

1. Given two portfolios with the same expected return, prefer the one with the least risk exposure.
2. Given two portfolios with the same risk exposures, prefer the one with the higher expected return.

Not all the portfolios will conform to these criteria. And, hence, an investor's choice set will be reduced from an infinite possible combinations of assets to the set of portfolios meeting the criteria. This set of portfolios is termed as 'efficient set' or 'efficient frontier'.

In Exhibit 10-3, such portfolios are lying on the north-west boundary between points E and S. The portfolios lying to the right of this boundary do not meet the twin criteria of efficient set. For example, there is no portfolio offering less risk than that of portfolio E. In fact, this is the 'global minimum variance' portfolio. The portfolios on the boundary between E and G are not efficient because there are other portfolios on the upper portion of the frontier (E to S) that offer more expected rates of return for the same varying levels of risk. Similarly, no portfolios to the right of S (including those on the boundary between S and H) are worth considering as there are portfolios on the boundary having minimum risk for the same varying levels of expected return. The portfoliio at S promises the maximum return.

In view of the foregone discussion, the portfolio selection problem faced by an investor can now be restated as that of delineating efficient portfolios and then selecting the best option from the set. All other feasible portfolios, which are inefficient, can safely be ignored in the analysis.

10.3.2 Selection of Optimal Portfolio

The actual computational procedure for locating efficient frontier is much more complex than what it might appear to be from our geometric interpretations. We need to employ some optimization technique, and this we will discuss in the next unit. Meanwhile, let us search for an optimal portfolio from the efficient set.

Once the location and composition of the efficient set have been de'ermined, the selection of optimal portfolio by an investor will depend on his or her 'risk tolerance' or 'trade-offs between risk and expected return'. For instance, a risk-averse investor, such as a person nearing retirement, may prefer an efficient portfolio with low risk (as measured by standard deviation or variance), whereas a risk taker may prefer a portfolio with greater risk and commensurately higher returns.

We can graphically plot any investor's trade-offs between risk and return through a series of curves as shown in Exhibit 10-3. Each of the curves (I_1, I_2, I_3) represents different combinations of risk and return but all equally satisfactory for this investor. Such curves are known as 'utility' or 'indifference' curves. An important characteristic of an investor's indifference curves is that each successive curve moving upward to the left represents a higher levels of satisfaction (or utility) Thus, the investor's goal would be to find a portfolio that brings the greatest satisfaction. In pursuing this goal, the investor would like to select a portfolio that lies on the curve that is highest and farthest to the left. This portfolio will correspond to the point 0^* where indifference curve I_2 is just tangent to the efficient set (see Exhibit 10-3). Accordingly, the portfolio composition 0^* will be the

investor's choice of optimal portfolio. At this point, a question may arise whether or not there will exist a tangency point 0^*. The answer to this question is generally 'yes'. This is because of two factors. First, the indifference curves are convex, i.e. moving upward to the left. The convexity, in essence, reflects our assumptions that rational investors are risk averse and prefer more return to less. Second, as long as correlation coefficient between returns on any two assets (comprising the portfolio) is less than +1 but greater than – 1, the efficient frontier will be concave in risk-return space. So, in most cases, one would find a point of tangency that determines an investor's optimal portfolio.

In retrospect, portfolio selection process entails four basic steps:

Step 1: Identifying the assets to be considered for portfolio construction.

Step 2: Generating the necessary input data to portfolio selection; this involves estimating the expected returns, variances and covariances for all the assets considered.

Step 3: Delineating the effecient portfolio.

Step 4: Given an investor's risk tolerance level, selecting the optimal portfolio in terms of: (a) the assets to be held; and (b) the proportion of available funds to be allocated to each.

The portfolio selection process as described above is not something new; the model was presented by Harry Markowitz briefly in 1952 and later in a complete book entitled *Portfolio Selection-Efficient Diversification of Investments* (1959). One important concept that Markowitz emphasised for the first time was that some measure of risk, and not just the expected rate of return, should be considered when dealing with investment decision. Markowitz's approach to portfolio analysis and selection attracted a number of academicians and practitioners, who subsequently began to adjust the basic framework so that practical application could be more readily considered. Another interesting thing happened. Following the presentation of the model, there had been a wide spread realisation of how computers could be utilized in investment decision making. Markowitz's own solution to portfolio selection problem necessitates, as we will see in the next unit, application of computers. As a final remark, we may mention that Markowitz's work marks the beginnings of what is today known as modern portfolio theory.

Activity 2

a) List out four basic steps of portfolio selection process.

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b) Whose work marked the beginning of modern portfolio theory?

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10.4 SUMMARY

This unit describes the basic components of portfolio selection process. Begining with the estimation of a portfoilo's expected return and risk, which in turn in involves estimation of such input data as expected return, variance and covariance for each of the assets contained in the portfolio, we have explained why an investor should consider only the 'efficient set' out of the feasible set of portfolios. Once the efficient portfolios are delineated, the investor will next select the optimal portfolio depending upon his or her 'trade-offs' between return and risk. In terms of graphical analysis, such optimal portfolio will be located at the point where indifference curve that summarizes the investor's risk-return trade-offs, is tangent to the efficient set. In this kind of approach to portfolio selection, it is assumed that rational investors are risk averse and prefer more return to less. Finally, the portfolio selection approach presented here epitomizes the Markowitz model developed in early 1950s.

10.5 KEY WORDS

Portfolio refers to collection of assets (financial or physical or both).
Portfolio weight refers to the fraction of available fund that is being invested in a particular asset in the portfolio.
Expected rate of return is the return on an asset (or portfolio) over a holding period that an investor anticipates to receive.
Standard deviation is a measure of the dispersion of possible outcomes around the expected outcome of a random variable.
Variance is the squared value of the standard deviation.
Covariance is a statistical measure of the relationship between two random variables.
Correlation coefficient is a statistical measure similar to covariance in that it measure the degree of mutual variation between two random variables. The correlation coefficient rescales covariance to facilitate comparison among pairs of random variables. The correlation coefficient is bounded by the values -1 and $+1$.

Variance-covariance matrix is a table which symmetrically arrays the covariance between a number of random variables. Variances of the random variables lie on diagonal of the matrix, while covariance between the random variables lie above or below the diagonal.
Diversification means the spreading of investments over more one asset with a view to reduce the portfolio's risk (i.e. the variablility of expected portfolio returns).
Feasible set (or opportunity set) is the set of portfolios of a given population of assets which offer the maximum possible expected return for a given level of risk.
Efficient set (Efficient frontier) is the set of portfolios of a given population of assets which offer the maximum possible expected return for a given level of risk.
Global minimum variance portfolio is the lowest-variance portfolio achievable, given a population of assets.
Risk tolerance reflects the trade-off between risk and expected return demanded by an investor.
Indifference curve is the locus of portfolios, considered in terms of expected returns and risk, that provide an investor with an equal amount of satisfaction.

Optimal portfolio means the feasible portfolio that offers an investor the maximum level of satisfaction, given his or her own preference for return and risk. This portfolio is located at the point of tangency between the efficient set and an indifference curve of the investor.

10.6 SELF-ASSESSMENT QUESTIONS/EXERCISES

1) The following forecasts have been made for investments A and B

Investment A		Investment B	
Return (%)	Probability	Return (%)	Probability
10	.05	2	.05
15	.20	12	.25
20	.50	20	.40
25	.20	28	.25
30	.05	38	.05

Calculate the expected rate of return and standard deviation. Which investment has more upside potential and downside danger?

2) If a portfolio's expected return is always equal to the weighted average of the expected return of the component assets, why is not portfolio risk always equal to the weighted average of the component assets' variances? Explain.

3) Suppose an analysts has provided you with the following estimates in respect of equity shares of Century Textiles, Escorts and Hoechst:

	Century	Escorts	Hoechst
Expected Monthly Return (%)	5	4	9
Standard Deviation (%)	8	7	17
Correlation coefficients of Returns between			
Century and Escorts			
Century and Hoechst	6		
Escorts and Hoechst	.3		

Assuming that equal amounts of the available fund will be invested in the three scrips, estimate the portfolio's mean return and standard deviation.

4) Consider two securities with the following characteristics:

	A	B
Expected Return ($\bar{r}_p$)	.12	.02
Standard Deviation (σ_p)	.08	.10

Assuming no correlation between the returns on two securities, calculate expected return and standard deviation for each of the following portfolios:

	Portfolio Weights (X_A)				
Security A	1.0	.75	.50	.25	0.0

Plot these portfolios, with expected portfolio returns on x-axis and standard deviation on y-axis. Locate the 'efficient frontier' and the portfolio with least risk o standard deviation.

Can you precisely determine x_A corresponding to the portfolio with minimum

standard deviation? (Hint: Obtain the equation for σ_p with zero correlation between returns on two securities. To find x_A for which σ_p is minimum, set the first order derivative of σ_p with respect to x_A equal to zero, and then solve for x_A.)

5) Explain the following in your own words and using graphs:
   a) diversification of risk
   b) indifference curves
   c) selection of optimal portfolio

6) For a portfolio with the following characteristics, calculate the rate of return and the standard deviation of the rate of return (r_t and σ_P):

Security	X_i (Proportion)	Price Beginning of 1990	Decrease / Increase in price during 1990	Dividend per share in 1990	σ_i
A	.35	Rs. 25/ share	Rs. 3/ share	Rs. 1.5	.05
B	.25	Rs. 63/ share	–Rs. 4/ share	0	.01
C	.40	Rs. 38/ share	Rs. 5/ share	Rs. 3	.10

Correlation matrix

	A	B	C
A	1.0	+ .01	– .2
B	+ .01	1.0	+ .7
C	– .2	+ .7	1.0

7) Consider the data given below:

Security	R_{it}	σ_i
A	20%	5%
B	5%	15%
C	35%	1%

Correlation Matrix

	A	B	C
A	1.0	+ .01	– .2
B	+ .01	1.0	+ .7
C	– .2	+ .7	1.0

   a) Form all possible portfolios consisting of two securities each and calculate the rate of return and standard deviation of rate of return for each one of these portfolios. You may assume that each portfolio has equal proportions of the two securities constituting it.
   b) Out of the set of portfolios formed in Q. 7a, identify the efficient portfolio (s)

8) Refer to the following observations for securities X and Y:

TIME PERIOD	OBSERVED RETURNS	
	X	Y
1	.10	.02
2	.14	– .02
3	.12	.08
4	.08	.17

   a) Compute the sample mean returns for X and Y.

b) Compute sample standard deviations for X and Y.

c) Compute covariance between returns for X & Y.

d) Compute the sample correlation co-efficient between the returns on X & Y.

10.7 FURTHER READINGS

Elton, Edwin J. and Gruber, Martin J., 1987 *Modern Portfolio Theory and Investment Analysis*, John Wiley & Sons.

Alexander, Gordon J. and Sharpe, William F., 1989 *Fundamentals of Investments*, Prentice-Hall, Inc.

ANSWERS

Self-assessment questions

6) $r_t = 13.13\%$

$\sigma_p = 1.77\%$

7a) $r_{AB} = 12.5\%$

$\sigma_{AB} = .63\%$

$r_{AC} = 27.5\%$

$\sigma_{AC} = .06\%$

$r_{BC} = 20\%$

$\sigma_{BC} = .62\%$

7b) Portfolio constituted by securities A and C because it has the highest rate of return and the lowest standard deviation.

8 a) $\bar{r}_X = .11$, $\bar{r}_Y = .0625$

b) $\sigma_X = .0258$, $\sigma_Y = .826$

c) $\sigma_{XY} = -.0017$

d) $\rho_{XY} = -.798$

Appendix-10 A

Rate of return of a portfolio

The rate of return from a portfolio is computed as:

$$r_p = \sum_{i=1}^{N} x_i r_{it}$$

where

r_{pt} = rate of return of portfolio during period t

x_i = proportion, in terms of value, of security i in the portfolio

r_{it} = rate of return of security i during period t

N = number of securities comprising the portfolio

r_{it}, the rate of return of security i during period t is in turn computed as follows:

$$r_{it} = (P_{it+1} - P_{it} + I_{it})/P_{it}$$

where

P_{it+1} = market price of security i at beginning of period t + 1 (or alternatively at the end of period t)

P_{it} = market price of security i at beginning of period t

I_{it} = income in the form of dividends/interest etc. received from holding security i during period t

To illustrate the concept, let us take an example of a portfolio comprising three securities A, B and C. The relavent data is given below:

Security	Price beg. 1990	No. held beg. 1990	Price end 1990	Dividend recd. 1990
A	Rs. 25/ share	100	Rs. 28/ share	Rs. 2/ share
B	Rs. 50/ share	30	Rs. 49/ share	Rs. 4.5/ share
C	Rs. 60/ share	100	Rs. 65/ share	Re. 1/ share

Now, from the above data, we can compute X_A, X_B, and X_C as follows:

$$X_A = (25 \times 100)/((25 \times 100) + (50 \times 30) + (60 \times 100))$$
$$= 2500/(2500 + 1500 + 6000)$$
$$= 2500/10000$$
$$= .25$$

$$X_B = (50 \times 30)/((25 \times 100) + (50 \times 30) + (60 \times 100))$$
$$= 1500/(2500 + 1500 + 6000)$$
$$= 1500/10000$$
$$= .15$$

$$X_C = (60 \times 100)/((25 \times 100) + (50 \times 30) + (60 \times 100))$$
$$= 6000/(2500 + 1500 + 6000)$$
$$= 6000/10000$$
$$= .6$$

Similarly, we can compute r_{A1990}, r_{B1990}, r_{C1990} as follows:

$$r_{A1990} = (28 - 25 + 2)/25$$

$$= 5/25$$

$$= .2\ (20\%)$$

$$r_{B1990} = (48 - 50 + 4.5)/50$$

$$= 2.5/50$$

$$= .05\ (5\%)$$

$$r_{C1990} = (65 - 60 + 1)/60$$

$$= 6/60$$

$$= .1\ (10\%)$$

Now we can compute the rate of return from the portfolio as follows:

$$r_{P1990} = \sum_{i=1}^{n} x_i r_{it}$$

$$= (.25 \times .2) + (.15 \times .05) + (.6 \times .1)$$

$$= .05 + .0075 + .06$$

$$= .1175\ (11.75\%)$$

From the above illustration we can see that the rate of return from a portfolio is a function of the rates of returns from individual securities comprising the portfolio.

Risk of a Portfolio

The most commonly used measure of variability of returns from a portfolio is the standard deviation of the returns of the portfolio and this is computed as follows:

$$\sigma_P = \sum_{i=1}^{N} x_i^2 \sigma_i^2 + 2 \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} X_i X_j \rho_{ij} \sigma_i \sigma_j$$

where

σ_P = standard deviation of returns of the the portfolio

X_i = proportion (in terms of value) of security i in the portfolio.

X_j = proportion (in terms of value) of security j in the portfolio.

σ_i = standard deviation of returns from security i

σ_j = standard deviation of returns from security j

ρ_{ij} = coefficient of correlation between the rates of return of securities i and j

N = the number of securities in the portfolio

To illustrate the concept, let us take the example considered in the earlier section, with some additional data provided as follows:

Security	X_i (as computed above)	σ_i (standard deviation)
A	.25	.1
B	.15	.1
C	.60	.2

The correlation matrix (between the rates of return of securities A, B and C) is given below:

	A	B	C
A	1.0	+.1	+.8
B	+.1	1.0	−.6
C	+.8	−.6	1.0

(It should be noted that the above matrix will have diagonal entries = 1 because $\rho_{AA} = 1$, $\rho_{BB} = 1$, $\rho_{CC} = 1$ and that it is symmetric because $\rho_{AB} = \rho_{BA}$, $\rho_{AC} = \rho_{CA}$, $\rho_{BC} = \rho_{CB}$)

Given this data σ_P is computed as:

$$\begin{aligned}\sigma_P &= (.25)^2 + (.1)^2 + (.15)^2 + (.1)^2 + (.6)^2 + (.2)^2 \\ &\quad + 2 \times .25 \times .15 \times .1 \times .1 \times .1 + 2 \times .25 \times .6 \times .8 \times .1 \times .2 \\ &\quad + 2 \times .15 \times .6 \times (-.6) \times .1 \times .2 \\ &= .000625 + .000225 + .0145 + .0075 + .000075 + .0048 \\ &= .025465 \\ &= 2.5\%\end{aligned}$$

From the above formula it is apparent that the risk of a portfolio which has a high degree of correlation between the returns from its constituent securities would be higher than the risk of a portfolio which has a low degree of correlation between the returns from its constituent securities. Herein lies the crux of portfolio management - in order to reduce the risk of a portfolio, a portfolio manager would have to pick and choose a diversified basket of securities such that the degree of co-movement between their returns is very low.

Though the standard deviation of returns is a well accepted measure of the riskness associated with a security, modern portfolio theories believe that a better index of riskiness would be the "beta" value of a security. While the standard deviation measures the total variability in returns from the security, the beta value is an index of that portion of the variation which can be attributed to market-level factors which are not unique to the firm. Modern portfolio theorists argue that that risk which arises from factors unique to the firm are not that important because they can be eliminated through diversification. The beta value of a portfolio indicates the degree of sensitivity of returns from the portfolio to changes in the returns from the market as a whole and is computed as follows

$$\beta_p = \sum_{i=1}^{N} X_i \beta_i$$

where β_p = beta of the portfolio

X_i = proportion (in terms of value) of security i in the portfolio.

β_i = beta value for security i

N = number of securities comprising the portfolio.

The beta value of individual securities (which indicates the degree of sensitivity of returns from the security to changes in the returns from the market as a whole) is in turn got as follows:

$$\beta_i = \frac{\text{cov}\,(r_i, r_m)}{\text{Var}\,(r_m)}$$

Where

β_i = beta value of security i

Cov (r_i, r_m) = covariance between the returns from security i and returns from the market

Var (r_m) = variance of returns from the market

From the above discussion on the beta value of a portfolio it becomes clear that if we use the beta value as an indicator of the riskiness associated with the returns from a portfolio, and if we wish to minimise this risk, we would have to pick and choose securities which have very low beta values. In other words, in order to reduce the risk of a portfolio we have to choose securities whose returns are fairly insensitive to changes in the returns from the market as a whole.

To illustrate the concept of co-variance, suppose we have two securities A and B. Returns on these securities are as under:

	MONTH				
	1	2	3	4	Mean
Security A	.04	– .04	.08	.04	.03
Security B	0.2	–.04	.06	.08	.03

$$\sigma_{AB}\,(\text{Co-variance}_{AB}) = \sum_{i=1}^{n} \frac{[(r_{A,i} - \bar{r}_A)(r_{B,i} - \bar{r}_B)]}{N-1}$$

$$= \frac{(.04 - .03)(0.02 - .03) + (-.04 - .03)(-0.04 - .03)}{3}$$

$$\frac{+(.08 - .03)(.06 - .03) + (.04 - .03)(.08 - .03)}{3}$$

$$= \frac{(-.0001) + (.0049) + (-.0015) + (.0005)}{3} = \frac{.0038}{3} = .0013$$

$$\rho_{AB}\,(\text{Co-relation Co-efficient}_{AB}) = \frac{\sigma_{AB}}{\sigma_A \cdot \sigma_B}$$

$$= \frac{.0013}{.00599} = 217$$

where (σ_A) and (σ_B) = standard deviation for A and B respectively

and $$(\sigma_A) = \frac{\sum_{i=1}^{n} (r_i - \bar{r})^2}{N-1}$$

Co-variance is a small .0013. This is due to the fact that securities are moving in the same direction in one period and in the opposite direction in the other period. On the other hand, if the co-variance is a large negative value, then we can say tha securities are consistently moving in opposite direction.

Co-relation coefficient of .217 depicts that securities are neither perfectly negatively correlated nor perfectly positively correlated. They are lowly positively correlated.

UNIT 11 PORTFOLIO SELECTION

Objectives

The objectives of this unit are to :

- explain and illustrate the Markowitz's approach to delineating efficient set
- discuss the basic tenets of Sharpe's single-index model and how the model simplifies selection process
- describe other portfolio selection models

Structure

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11.2 Finding the Efficient Set

- 11.2.1 Constrained Minimisation Problem
- 11.2.2 Lag range Multipliers Technique
- 11.2.3 Tracing the Efficient Frontier
- 11.2.4 Limitations of Markowitz Approach

11.3 Single-Index Model

- 11.3.1 The Assumptions and the Model
- 11.3.2 Systematic Risk, Diversifiable (or Residual) Risk and Covariance of Returns
- 11.3.3 Variance of Portfolio Returns
- 11.3.4 Estimating Beta and the Diversifiable Risk Component

11.4 Other Portfolio Selection Models

11.5 Summary

11.6 Key Words

11.7 Self-assessment Questions/Exercises

11.8 Further Readings

11.1 INTRODUCTION

In the previous unit, we noted that an investor's opportunity set of investments or portfolios will be defined by the 'efficient set'. But we left the question of actualy finding the efficient set unanswered. This unit will first provide a logical approac to delineating efficient set. We will then discuss some of the practical problems of implementing this approach, and present another model, known as 'single-index model', that simplifies the portfolio selection process to a great extent. Finally, we will indicate some other portfolio selection techniques.

11.2 FINDING THE EFFICIENT SET

We may recall that an efficient set is a continuous curve (see Exhibit 10-3 in Unit 10) which, in turn, means that there are infinite number of efficient portfolios. This poses a typical problem to the investors. How can one determine the composition (i.e., combination of assets and portfolio weights) of each of an infinite number of efficient portfolios? Markowitz did contemplate this problem and, in a major breakthrough, presented a solution algorithm based on 'quadratic programming technique. While a complete description of the algorithm, which is referred to as Markowitz's 'critical line method', is beyond the scope of this unit, we may give you a rough idea of what is being accomplished by it.

11.2.1 Constrained Minimisation Problem

As we know, an efficient set can be determined by minimising portfolio risk (i.e., return variance) for any level of expected return. If we specify the return at some

level and minimise risk, we have one point (i.e. a portfolio) on the efficient frontier. Thus, we need to solve the following constrained minimisation problem:

$$\text{Minimise variance } (\sigma_p^2) = \sum_{i=1}^{n} \sum_{j=1}^{n} x_i x_j \sigma_{ij}$$

Subject to the constraints:

1) Expected return ($\bar{r}_p$) is equal to some predetermined level $\bar{r}_p$ *)

2) The sum of the portfolio weights for all assets in the portfolio must be equal to 1 ; ($\sum_{i=1}^{n} x_i = 1$).

3) The portfolio weight assigned to any asset should be positive ($x_i \geq 0$, i = 1 , . . , n). In other words, short sales are not allowed.

This is a quadratic programming problem because of the presence of terms like x_i^2 and $x_i x_j$ in the objective function.

11.2.2 Lagrange Multipliers Technique

The above kind of non-linear minimisation problem can be solved by applying Lagrange Multipliers Technique. We will explain the procedure with a three-assets case and using the following example data:

Equity Shares	Monthly Expected Return (%)	Standard Deviation (%)
Ashok Leyland	3.5	11
ACC	9.0	20
Grasim	4.5	12

Variance-Covariance Matrix

	Ashok Leyland	ACC	Grasim
Ashok Leyland	.012	.009	.007
ACC	.009	.040	.014
Grasim	.007	.014	.014

Let us suppose that x_1 , x_2 and x_3 are the portfolio weights corresponding to the equity shares of Ashok Leyland, ACC and Grasim respectively. The portfolio weights must add up to 1, i.e.,

$$x_1 + x_2 + x_3 = 1$$

Let us further assume that our target expected rate of return ($\bar{r}_p^*$) is 5 per cent. With these assumptions, we have:

a) expected rate of return equation (i.e., the return constraint):

$$.05 = .035\, x_1 + .09\, x_2 + .045\, (1 - x_1 - x_2)$$

which on simplification yields

$$.01\, x_1 - .045\, x_2 + .005 = 0$$

b) returns-variance of the portfolio:

$$\sigma_p^2 = .012\, x_1^2 + .04\, x_2^2 + .014\, (1 - x_1 - x_2)^2 + 2 \times .009\, x_1 x_2 + 2 \times .007\, x_1 (1 - x_1 - x_2) + 2 \times .014\, x_2 (1 - x_1 - x_2)$$

which on simplification can be written as

$$\sigma_p^2 = .012\,x_1^2 + .026\,x_2^2 - .014\,x_1 + .004\,x_1\,x_2 + .014$$

Following the Lagrange Multiplier method, we now write the objective function as

$$\text{Minimise } Z = \sigma_p^2 + \lambda\,[\,\bar{r}_p^* - \bar{r}_p\,]$$

$$\text{or Minimise } Z = .012\,x_1^2 + .026\,x_2^2 - .014\,x_1 + .004\,x_1\,x_2 + .014 + \lambda\,[\,.01\,x_1 - .045\,x_2 + .005\,]$$

where λ is known as the 'Lagrangian multiplier'. The expression within the bracket ensures that the return constraint will be always satisfied while minimising the variance.

The values of x_1, x_2 and λ for which Z will be minimum, can be obtained by setting the partial derivatives equal to zero, and then solving the equations simultaneously. This is shown below:

$$\frac{\partial z}{\partial x_1} = .024x_1 + .004x_2 + .01\lambda - .014 = 0$$

$$\frac{\partial z}{\partial x_2} = .004x_1 + .052x_2 - .045\lambda = 0$$

$$\frac{\partial z}{\partial \lambda} = .01x_1 - .045x_2 + .005 = 0$$

Solving the above set of equations, we get

$$x_1 = .445$$

$$x_2 = .210$$

$$x_3 = .345$$

$$\lambda = .248$$

Thus, for a target expected rate of return of 5 per cent, the 'minimum variance' set or 'efficient portfolio' will correspond to an allocation of 44.5 per cent of the fund to Ashok Leyland, 21 per cent to ACC, and the remaining to Grasim. If we plug the portfolio weights into the objective function, we find

$$\sigma_p^2 = .0117$$

$$\text{or} \qquad \sigma_p = .1089$$

So, our minimum-risk portfolio will have a standard deviation of returns of 10.8 per cent.

The value of λ in our solution indicates the incremental change in the value of objective function (i.e. the variance) that one might expect as a result of an infinitesimally small change in the constraint (in this instance, the target expected return). Since the objective function is non-linear, its slope changes continuously and so should λ.

11.2.3 Tracing the Efficient Frontier

The process discussed above can be repeated to find as many points as desired on the efficient frontier, each time starting with a specified target expected rate of return. In actual practice, standard computer packages are available which can find solutions quickly and accurately. For our example case of three equity shares, Table 11-1 shows ten efficient portfolios identified by the application of such a package.

Table 11-1

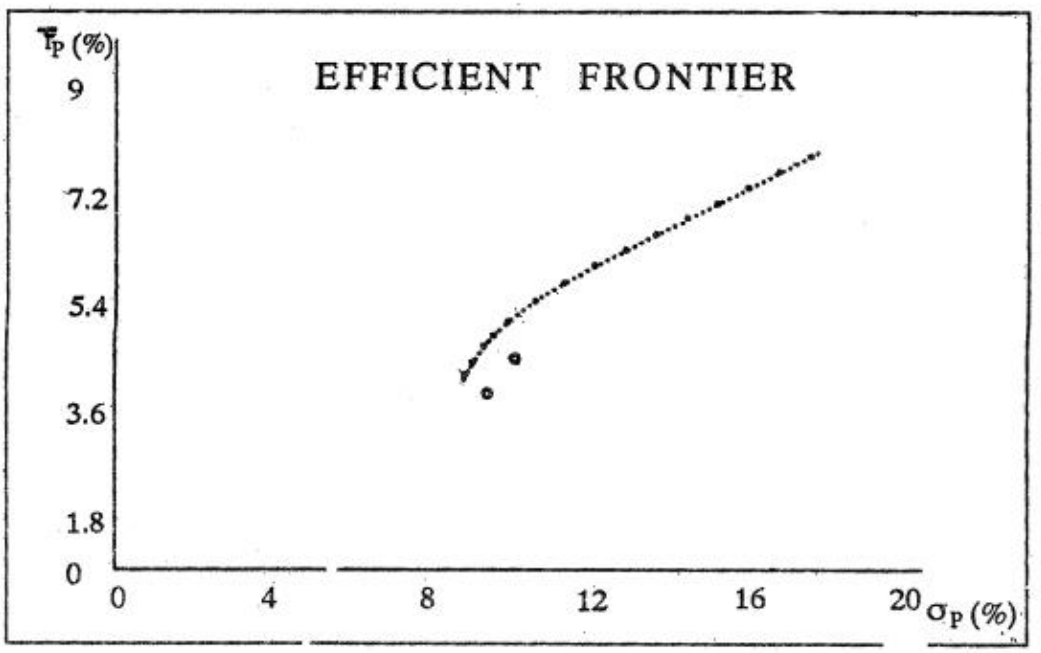
Portfolio No.	1*	2	3**	4	5
Expected Return (%)	3.9	4.5	5.0	5.6	6.2
Standard Deviation (%)	9.9	10.2	10.8	11.7	12.8
Composition (%) :					
Ashok Leyland	58.6	50.4	44.5	37.7	31.3
ACC	0.0	10.7	21.0	33.0	44.2
Grasim	41.4	38.9	34.5	29.3	24.5
Portfolio No.	**6**	**7**	**8**	**9**	**10**
Expected Return (%)	6.7	7.3	7.9	8.4	9.0
Standard Deviation (%)	14.1	15.4	16.9	18.4	20.0
Composition (%)					
Ashok Leyland	24.9	18.5	12.2	5.8	0.0
ACC	55.3	66.4	77.6	88.7	100.0
Grasim	19.8	15.1	10.2	5.5	0.0

* This is the 'global minimum variance' efficient portfolio. No other portfolio offers lower level of risk than this.

** We have already illustrated the determination of this portfolio through the application of Lagrange Multipliers Technique.

Once sufficient number of efficient portfolios are determined, it is a simple matter for the computer, using its capability for graphics, to draw the graph of the efficient set. Exhibit 11-1 shows the graph drawn by the computer package we had mentioned above.

Exhibit. 11.1



In this context, it would be interesting to know the concepts of 'corner portfolios' as introduced by Markowitz. Any set of efficient portfolios can be described in terms of still a smaller sub-set of efficient portfolios, which Markwitz termed as 'corner portfolios'. The distinguishing feature of two adjacent corner portfolios is that: (a) one portfolio will contain either all the assets which appear in the other, plus one additional asset, or (b) all but one of the assets which appear in the other. Thus, while moving along the efficient frontier curve from one corner portfolio to the next, portfolio weights will vary until either one asset drops out of the portfolio or

another enters. The point (or the portfolio) at which a change in the composition of assets takes place marks a new corner portfolio. For instance, portfolios numbered 1 and 4 in Table 11-1, may be considered as corner portfolios.

An important property of corner portfolios is that any combination of two adjacent corner portfolios will result in a portfolio that lies on the efficient set between the two corner portfolios. For example, if an investor puts 30 per cent of his or her available funds in the portfolio numbered 1 and 70 per cent in the portfolio numbered 4 (see Table 11-1), then the resulting portfolio of the following composition (or portfolio weights)

Ashok Leyland	: $.30 \times 58.6 + .70 \times 37.7 = 44.0\%$
ACC	: $.30 \times 0.0 + .70 \times 33.0 = 23.1\%$
Grasim	: $.30 \times 41.4 + .70 \times 29.3 = 32.9\%$

will be another efficient portfolio lying between the corner portfolios 1 and 4. Thus, a computer algorithm may be developed which first determines some successive corner portfolios, and proceeds next to delineate a set of efficient portfolios lying between every two adjacent corner portfolios. Each of these portfolios will correspond to a dot in the return-risk space, which can be finally connected to draw the graph of the efficient set.

11.2.4 Limitations of Markowitz's Approach

It is easy to see that the Markowitz's approach to trace efficient set is extremely demanding in its input data needs and computation requirements. This has been probably best expressed by Markowitz himself : "...it is reasonable to ask security analysts to summarize their researches in 100 carefully considered variances of returns. It is not reasonable, however, to ask for almost 5000 carefully and individually considered covariances". Indeed, while analysts and portfolio managers are accustomed to thinking about expected rates of return, they are much less comfortable in assessing the possible ranges of variation in their expectations, and are, usually, not at all accustomed to estimating covariance of returns among assets.

The problem is made more complex by the number of estimates of covariances (or correlations) required. For a set of 200 shares, for example, we need to compute $[\,200\,(\,200 - 1\,)/2] = 19{,}900$ covariances. It is unlikely that the analysts will be able to directly estimate such a staggering number of inputs.

Obviously, what we need is an alternate formula for portfolio variance, that lends itself to easy computation even when we are dealing with a large set of assets.

Activity 1

Define the following

i) Efficient set

.....

.....

.....

ii) Lagrange Multipliers Technique

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.....

.....

iii) Diversifiable Risk

.....

.....

.....

.....

11.3 SINGLE-INDEX MODEL

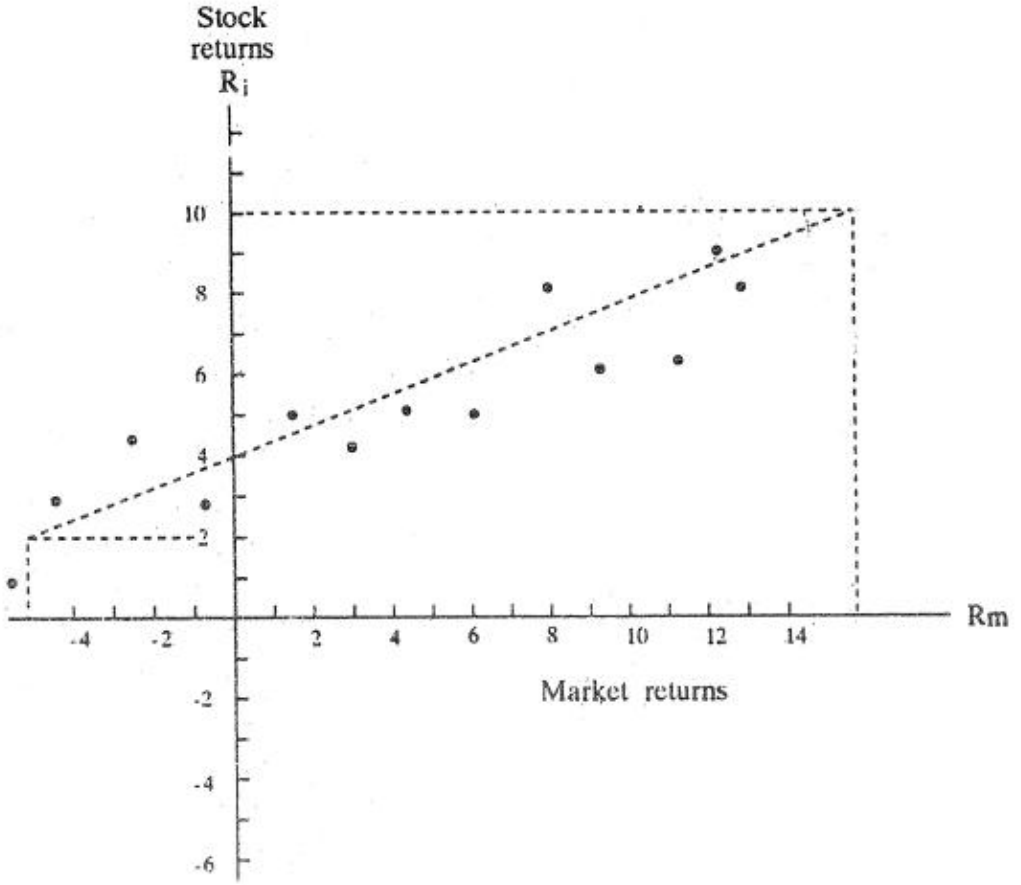
We get such a capability with the single-index model' developed by a student of Markowitz named William Sharpe (1963). In the 1970s, after techniques for estimating the required inputs to this model were perfected, packaged, and marketed as computer software, modern portfolio really took off in terms of practical applications. Now the single-index model is widely employed to allocate investments in the portfolio between individual equity shares, while the original more general model of Markowitz is widely used to allocate investments between types of assets, such as bonds, shares, and real estate. In the discussion that follows, we present the basic tenets of the 'single-index model', with reference to investment in equity shares.

11.3.1 The Assumptions and the Model

Essentially, the single-index model assumes that the returns of various securities are related only through common relationships with some basic underlying factor. In the words of Sharpe, this factor "may be the level of the stock market as a whole, the gross national product, some price index, or any other factor thought to be the most important single influence on the returns from securities". A casual observation of share-price movements, at least, tends to support this line of argument. There is considerable evidence that when the stock market goes down, most shares tend to decrease in price. It appears, therefore, that one reason share returns might be correlated is because of a common response to market changes as measured by the movements in, say, share price index.

To understand the above assumption of the single-index model more precisely, consider exhibit 11-2, where we have related the returns on an hypothetical share to the returns on the market index.

Exhibit 11.2



The broken line running through the scatter points is the 'line of best fit', or an estimate of what is known as a share's 'characteristic line'. Algebraically, the characteristic line can be defined as

$$R_i = a_i + \beta_i R_m \qquad (11.1)$$

where

R_i = the return of security i

a_i = the components of share i's return that is independent of the market's performance–a random variable;

R_m = the rate of return on market index -- a random variable; and

β_i (beta) = the slope of the characteristic line that measures the expected change in R_i given a change in R_m.

It useful to break the term a_i, into two components:

α_i (alpha), the expected value of a_i; and e_i, the random element with a mean value of zero. In terms of graphical presentation (see Exhibit 11-2) e_i's (or 'residuals', as they are frequently referred to) measure vertical deviations from the characteristic line. With this, equation (11.1) can now be written as

$$R_i = \alpha_i + \beta_i R_m + e_i \qquad (11.2)$$

where R_m and e_i (both random variables) are conveniently assumed to be uncorrelated with each other.

It is further assumed that the residuals are not correlated across shares of different companies; that is, e_i is independent of e_j for all values of i and j. This is an important assumption; it implies that the only reason shares vary together, systematically, is because of a common co-movement with the market. Thus, single-index model assumes away all other possible effects on shares' returns, such as industry effects.

11.3.2 Systematic Risk, Diversifiable (or Residual) Risk and Covariance of Returns

With some manipulations of equation (11.2), we get the following important results:

(a) the expected return, $\bar{R}_i = \alpha_i + \beta_i \bar{R}_{mi}$

(b) the variance of share's return, $\sigma_i^2 = \beta_i^2 \sigma_m^2 + \sigma_{e_i}^2$ where σ_m^2 and $\sigma_{e_i}^2$ are variances of the distributions of R_m and e_i respectively; and

(c) covariance of returns between shares i and j, $\sigma_{ij} = \beta_i \beta_j \sigma_m^2$

It is apparent from (a) above that the expected return has two components: a unique or non-market part α_i, and a market related part, $\beta_i \bar{R}_m$. Even though shares have many common characteristics and, as a result, tend to move together, their numerous individual and distinguishing properties cause shares to co-move with the market at different rates. Accordingly, how sensitive a share's price is to changes in the overall market i.e. the value of its 'beta', is of great significance in determining the expected return.

Like the expected return, we can always split the variance of share's returns into two parts, as shown in (b) above. The first component $\beta_i^2 \sigma_m^2$, is called the 'systematic risk' or 'market risk' of the investment. Since σ_m^2 is the same for all shares, systematic risks will differ among different shares according to the magnitudes of their 'betas', β_i. Simply stated, beta measures sensitivity of a share's

price movements compared with those of the market index. Shares having betas less than 1 can be said to be 'defensive'. One per cent increase (decrease) in the market return is likely to be accompanied by a less than one per cent increase (decrease) in the shares' rates of return. The investors are thus defended to some extent against the occurrence of major down fall in the market return. On the other hand, shares with individual beta values greater than one are considered to be more 'aggressive' or more risky, as one per cent increase (decrease) in the market return is likely to be accompanied by an even greater increase (decrease) in the shares' rates of return. A beta of one implies 'average' riskiness ; every one per cent return on the market is associated with one per cent opportunity return on the share. Beta can be negative as well, reflecting that share prices can rise when the market falls and *vice versa*; but this is normally unusual.

The systematic risk is caused by 'macro' events like oil crisis, an unexpectd change in rate of inflation, etc. The macro events are broad and affect nearly all shares to one degree or another, and they may have an impact on the general level of stock market. Thus, one cannot reduce systematic risk by diversifying investment across different shares. That is why the systematic risk is often called 'non-diversifiable' risk.

The second component of variance of share's returns, $\sigma_{e_i}^2$, is known as 'residual variance' or 'unsystematic risk' or 'diversifiable risk'. The source of this kind of risk is 'micro' events, which have impact on individual shares but no sweeping impact on other shares. Examples include the introduction of a new product(s) or the sudden obsolescence of an old one. They might also include labour strike, lockout, or the resignation or death of a key person in the firm, or splitting up of a business family. Since micro events affect only the individual shares under consideration, their impact can be reduced to a great extent by holding a diversified portfolio. It is for this reason that $\sigma_{e_i}^2$ is often called 'diversifiable risk'. We will explain how diversification of risk takes place after a while.

this point, we may recall that under Markowitz model we are required to compute covariance of returns for every pair of assets comprising the portfolio. We have also observed that without having estimates of covariances, one cannot compute the variance of portfolio returns. However, if the single-index model is a valid description of the process generating shares returns, there is no need for direct estimates of the covariances. All that we need to know are the values of share betas and variance of returns on market index; the covariance between any two shares i and j can next be obtained easily by employing the relationship as stated in (c) above. Needless to say that the relationship (c) is much less demanding in terms of estimation procedure and computation time.

What is more amazing to note here is that the single-index model does not require even the indirect estimates of covariances of returns between shares. The model provides a still simpler formula for computing variance of portfolio returns. We will now explain this.

11.3.3 Variance of Portfolio Returns

We begin by restating that the total risk or variance of returns on share i is given by

$$\sigma_i^2 = \beta_i \sigma_m^2 + \sigma_{e_i}^2 \qquad (11.3)$$

Total variance = Systematic Risk + Residual variance

This equation holds for a portfolio of shares as well. Rewriting the equation for a portfolio, we get

$$\sigma_p^2 = \beta_p^2 \sigma_m^2 + \sigma_{e_p}^2 \qquad (11.4)$$

Total Portfolio variance = Portfolio Systematic Risk + Portfolio residual variance

Where the subscript p denotes a portfolio.

It can be further shown that

$$\beta_p = \sum_{i=1}^{n} x_i \beta_i \qquad (11.5)$$

Portfolio Beta = Weighted average of individual share betas

and,

$$\sigma_{e_p}^2 = \sum_{i=1}^{n} x_i^2 \sigma_{ei}^2 \qquad (11.6)$$

Portfolio residual variance = Weighted average of individual residual variances where weights are squared

To illustrate the above formula of portfolio variance, let us consider the following two shares:

Share	Beta	Residual Variance
Ashok Leyland	0.54	98.2
Grasim	1.13	62.7

Suppose, an investor is planning to put equal amounts of his investible fund in these two shares. Then we have

$$\beta_p = 0.54 \times .50 + 1.13 \times .50 = 0.56$$

$$\sigma_{e_p}^2 = 98.2 \times (.5)^2 + 62.7 \times (.5)^2 = 40.2$$

If σ_m^2 is equal to 81.0 per cent, the variance of the returns of the portfolio under consideration will be given by

$$\sigma_p^2 = (.56)^2 \times 81.0 + 40.2 = 65.6$$

$$\sigma_p = 8.1\%$$

Let us now add one more share to the above portfolio, say, the share of ACC with a beta of 1.65 and residual variance of 179.6 per cent. Suppose, the investor decides once again to invest equal amounts. This time σ_p will work out to be 11.7 per cent, whereas $\sigma_{e_p}^2$ will be 37.8 per cent.

It is interesting to note that while the portfolio's systematic risk component (β_p) has increased due to the addition of a more risky share, its non-market related risk component has declined. Given the single-index model's assumption that residuals (e_i's) of different shares are uncorrelated (we have already explained this assumption), it is not difficult to appreciate how a portfolio's residual variance begins to diminish as the number of shares (i) in the portfolio is increased. Assume for a moment that an investor forms a portfolio by placing equal amounts of his funds into each of n shares. Equation (11.6) then becomes

$$\sigma_{e_p}^2 = \frac{1}{n}\left(\sum_{i=1}^{n} \frac{1}{n} \sigma_{ei}^2\right)$$

where the term within the bracket denotes average residual variance of the shares comprising the portfolio. As the number of shares in the portfolio gets large, portfolio's average residual variance falls so rapidly that most of it is effectively eliminated even for moderately sized portfolios.

At this stage, it would be appropriate to contrast the procedure for computing portfolio variance as outlined above with that of the Markowitz model. We have mentioned earlier that for a portfolio of 200 shares, Markowitz model requires 19,900 estimates of covariance. Under the single-index model we need, however, only 200 estimates of beta, 200 estimates of residual variance, and one estimate for the variance of returns on market index. Indeed, this is a dramatic reduction in the input data for computing portfolio variance.

But how accurate is the portfolio variance estimate as provided by the single-index model's simplified formula? If it is the Markowitz formula, we know that the variance number is perfectly accurate, given, of course, the accuracy of the covariance estimates. Besides, the formula makes no assumptions regarding the return generating process. On the other hand, the single- index model assumes that the market factor solely determines the shares' returns and residuals are not correlated across different shares. Thus, the accuracy of the single-index model's formula for portfolio variance is as good as the accuracy of underlying assumptions. Quite obviously, the assumptions are not strictly accurate. Many researchers have found that there are influences beyond the market that cause shares to move together. In addition, empirical evidence suggests that residuals are correlated to some degree, which is not altogether unexpected. After all, if something (good or bad) happens to a company, some other companies, such as its suppliers and competitors, would be affected simultaneously. The residuals that appear for the shares of these other company would not, therefore, be independent of each other. However, one can always expect that the degree of correlation would not be large enough to impair the relative efficiency with which the single-index model estimates the portfolio variance.

11.3.4 Estimating Beta and the Diversifiable Risk Component

The estimation of beta and the diversifiable risk component of a share involves fitting a 'characteristic line' as shown in Exhibit 11-2, such that the vertical deviations of the scatter points from the fitted line are minimised. The statistical procedure for obtaining a line of best fit is known as 'simple linear regression' or 'ordinary least squares method (OLS)'.

Table 11-2 explains the regression procedure using the historical data for the equity share of Baroda Rayon.

Table 11.2

. PRICE DATA (4/3/1989 to 2/3/1991)

BSE NATIONAL INDEX				BARODA RAYON			
SL. NO.	INDEX	SL. NO.	INDEX	SL. NO.	PRICE	SL. NO.	PRICE
1.	656.42	14.	805.90	1.	310.00	14.	875.00
2.	713.60	15	776.11	2.	360.00	15.	842.50
3.	745.94	16	799.50	3.	455.00	16	880.00
4.	708.19	17	896.25	4.	430.00	17.	1030.00
5.	792.17	18.	1061.66	5.	500.00	18.	1100.00
6.	719.61	19	1247.53	6.	525.00	19.	1750.00
7.	729.25	20	1426.90	7.	675.00	20.	1525.00
8.	740.72	21.	1323.00	8.	712.50	21.	900.00
9.	740.11	22.	1196.25	9.	830.00	22.	490.00
10.	712.00	23.	982.35	10.	695.00	23.	421.25
11.	774.58	24.	1071.95	11.	782.50	24.	435.00
12.	684.48	25	1220.41	12.	711.25	25	585.00
13.	691.61			13.	642.50		

B. RETURSN (CAPITAL GAIN/LOSS)

SL.NO.	RETURN (%) [X]	SL.NO	RETURN (%) [X]	SL.NO.	RETURN (%) [Y]	SL.NO.	RETURN (%) [Y]
1.	8.71	13.	16.53	1.	16.13	13.	36.19
2.	4.53	14.	–3.70	2.	26.39	14.	-3.71
3.	–5.06	15.	3.01	3.	–5.49	15.	4.45
4.	11.86	16.	12.10	4.	16.28	16.	17.05
5.	–9.16	17.	18.46	5.	5.00	17.	6.80
6.	1.34	18.	17.51	6.	28.57	18.	59.09
7.	1.57	19.	14.38	7.	5.56	19.	–12.86
8.	–0.08	20.	–7.28	8.	16.49	20.	–40.98
9.	–3.80	21.	–9.58	9.	–16.27	21.	–45.56
10.	8.79	22.	–17.88	10.	12.59	22.	–14.03
11.	–11.63	23.	4.03	11.	–9.11	23.	3.26
12.	1.04	24.	19.42	12.	–9.67	24.	34.48

Note Return (t) = [Price (t)/Price (t – 1) – 1] . 100

C. CALCULATIONS

X	X^2	Y	Y^2	XY
8.71	75.88	16.13	260.15	140.50
4.53	20.54	26.39	696.37	119.59
–5.06	25.61	–5.49	30.19	27.81
11.86	140.62	16.28	265.01	193.04
–9.16	83.90	5.00	25.00	–45.80
1.34	1.79	28.57	816.33	38.27
1.57	2.47	5.56	30.86	8.74
–0.08	0.01	16.49	271.96	–1.36
–3.80	14.43	–16.27	264.55	61.78
8.79	77.25	12.59	158.51	110.66
–11.63	135.31	–9.11	82.91	105.92
1.04	1.09	–9.67	93.43	–10.07
16.53	273.08	36.19	1309.48	597.99
–3.70	13.66	–3.17	13.80	13.73
3.01	9.08	4.45	19.81	13.41
12.10	146.44	17.05	290.55	206.27
18.46	340.62	6.80	46.19	125.43
17.51	306.51	59.09	3491.74	1034.53
14.39	206.73	–12.86	165.31	–184.86
–7.28	53.02	–40.98	1679.66	298.42
–9.58	91.79	–45.56	2075.31	436.44
–17.88	319.73	–14.03	196.86	250.88
4.03	16.25	3.26	10.65	13.16
19.42	377.13	34.48	1189.06	669.65

SUM(X) = 75.10
SUM(X^2) = 2732.93
SUM(Y) = 130.65
SUM(Y^2) = 13483.67
SUM(XY) = 4224.14
N = 24

1) $$\text{BETA} = \frac{N \cdot \text{SUM}(XY) - \text{SUM}(Y) \cdot \text{SUM}(X)}{N \cdot \text{SUM}(X^2) - [\text{SUM}(X)]^2}$$

$$= \frac{(24 \times 4224.14) - (130.65 \times 75.10)}{(24 \times 2732.93) - (75.10)^2}$$

= 1.53

2) ALPHA = SUM (Y)/N – BETA . SUM (X)/N
= 130.65/24 – (1.53 × 75.10)/24
= 0.66

3) STANDARD DEVIATION OF RANDOM ERROR TERM (RESIDUAL)
$= [\{SUM(Y)^2 - ALPHA \cdot SUM(Y) - BETA \cdot SUM(XY)\}/(N-2)]^{1/2}$
$= [(13483.67 - 0.66 \times 130.65 - 1.53 \times 4224.14)/(24-2)]^{1/2}$
= 17.75

4) a. STANDARD ERROR OF BETA

$$= \frac{\text{STD . DEV . OF RANDOM ERROR TERM}}{[SUM(X^2) - \{SUM(X)\}^2/N]^{1/2}}$$

$$= \frac{17.75}{[2732.93 - (75.10)^2/24]^{1/2}}$$

= 0.35

b. t – VALUE = BETA/STD . ERROR OF BETA
= 1.53/0.35 = 4.37

5) a. CORRELATION COEFFICIENT

$$= \frac{N \cdot SUM(XY) - SUM(Y) \cdot SUM(X)}{[N \cdot SUM(Y^2) - \{SUM(Y)\}^2)(N \cdot SUM(X^2) - \{SUM(X)\}^2)]^{1/2}}$$

$$= \frac{(24 \times 4224.14) - (130.65 \times 75.10)}{[\{24 \times 13483.67) - (130.65)^2\}\{(24 \times 2732.93) - (75.10)^2\}]^{1/2}}$$

= 0.68

b. COEFFICIENT OF DETERMINATION (R SQUARED)
= (CORRELATION COEFFICIENT)^2
= $(0.68)^2$ = .46

The share price data shown in Part A of the Table 11.2 represent closing price quotations of the Bombay Stock Exchange (BSE) as on the specified dates, which are approximately a month apart from each other. Thus, the figures in Part B denote monthly returns (more precisely, rates of monthly capital gain or loss). To account for the market index, BSE National Index has been employed as a surrogate.

The values shown for 'beta' and 'alpha' indicate the slope and intercept of the line of best fit to the historical returns series. It should be remembered that 'true' historical beta can not be observed. What we have obtained is an estimated value, with estimation errors (known as sampling errors) being equal to .35. Given a number of assumptions (for example, the true beta did not change during the period 4/3/1989 to 2/3/1991), the chances are roughly two out of three that the 'true' beta was some where between (1.53 – .35) = 1.18 and (1.53 + .35) = 1.88.

The 'standard deviation of the random error' term (or residual standard deviation) for Baroda Rayon is 17.75 per cent. The figure corresponds to the 'unique' or 'diversifiable' risk component of total variance of historical returns.

The value under 'coefficient of determination (R-squared)' provides an indication of how closely the variation of returns on Baroda Rayon were associated with the variation of returns on market index. Thus, the chosen surrogate of market influence accounted for no more than 46 per cent of variation of the share's returns.

Although the above estimation procedure looks quite straight forward, it is fraught with several practical problems. For instance, what should be the length of beta estimation period - two years, three years or more? Or, should we base our calculation on annual return data? There are many shares which are not regularly traded on the stock exchange; accordingly, their price quotations remain unchanged even during a period in which the market as a whole has moved. How can one deal with the case of ill-traded shares? No doubt, the literature on the subject provides some answers to all such questions, but they need be verified empirically in our context. Unfortunately, there is dearth of empirical studies with the Indian shares' data.

Even if we obtain satisfactory estimates of historical data, we still face the problem of estimating future (or ex ante) beta. What is of concern to us is betas for future holding period, and not the historical betas.

Since large-scale expectational data on returns of individual shares as well as of market index are not available, one cannot directly estimate future betas by fitting regression lines. So, the historical beta must be estimated first and then we can make some adjustments to it for deriving the future beta. We will review these adjustment techniques in the next Unit.

Activity 2

i) List out two major points of difference between Markowitz's approach and Sharpe's single-Index Model of selecting optimal portfolio.

.....

.....

.....

ii) List out relevant data for computing beta of an equity share.

.....

.....

.....

iii) Try to compute beta of an equity share of your choice.

.....

.....

.....

11.4 OTHER PORTFOLIO SELECTION MODELS

So far we have considered investment in risky assets like equities only. However, an investor can also invest in 'risk-free assets such as 'treasury bills' or 'government securities'. Besides, in our analysis the investor is not allowed to use borrowed money to invest in a portfolio of assets. This means that the investor is not allowed to use financial leverage . If we take into account these new opportunities to the investor, we will notice a major impact on the shape and location of the efficient set. We shall discuss this situation in the next Unit on Capital Market Theory.

We now take a note of some other portfolio selection models that seem to hold great promises to practical applications. One such model is the 'multi-index model' There are different variants of this model and each of them is developed to capture some of the non-market influences that cause shares to move together (recall that single-index model accounts for only market-related influences). The non-market influences, in essence, include a set of economic factors or industry (or group) characteristics that account for common movement in share prices. While it is easy to find a set of indices that are associated with non-market effects over any period of time, it is quite another matter to find a set that is successful in predicting covariances that are not market related. There is still a great deal of work to be done before multi-index models consistently out perform the simpler one.

Another model that takes into account a wide spectrum of practical considerations in portfolio selection is the goal programming model. In real life, an investor's goals and desires transcend the notion of a trade-off between only risk and return. For example, an investor may prefer to invest some minimum amount in several different shares, but at the same time he or she may not like individual investment to exceed a specified limit. Additionally, he or she may prefer dividend income to capital appreciation. There may also be a desire not to allow the portfolio beta to be either above or below a predetermined level. Apart from holding such diverse goals and desires, the investor may even set the order of their priorities. In this kind of

investment problem situation, the goal programming model is ideally suited to provide an optimal solution. Further goal programming solution can be easily obtained by available computer packages.

11.5 SUMMARY

This Unit has provided some insights into Markowitz's approach to trace the efficient set. The application of Markowitz's model requires estimation of large number of covariances. And without having estimates of conariances, one cannot compute the variance of portfolio returns. This makes the task of delineating efficient set extremely difficult. However, William Sharpe's 'single-index model' simplifies the task to a great extent. Even with a large population of assets from which to select portfolios, the number of required estimates are amazingly less than what are required in Markowitz's model. But how accurate is the portfolio variance estimate as provided by the single-index model's simplified formula? While the Markowitz's model makes no assumption regarding the source of the covariances, the single- index model does. Obviously, the accuracy of the latter model's formula for portfolio variance is as good as the accuracy of its underlying assumption.

In passing, we have also mentioned in this unit other portfolio selection models, such as 'multi-index model' and 'goal programming model' which have high intutive appeal but would require much more work before they outperform the simple ones.

11.6 KEY WORDS

Lagrange Multipliers Technique is a technique of solving non- linear optimisation problems.

Corner Portfolio is an efficient portfolio with the following property: any combination of two adjacent corner portfolios will result in a portfolio that lies on the efficient set between the two corner portfolios.

Single-Index Model purports to explain the covariances which exist between the returns on different assets on the basis of the relationship between the returns and a single index, usually the market index.

Market-Index (or Market Portfolio) refers to the ultimate market index, containing a common fraction of the total market value of every capital investment in the economic system.

Characteristic Line shows the linear relationship between the return on any asset and the return on the market index.

Systematic (or Market) Risk is that part of an asset's total risk which is related to moves in the market index and, hence, cannot be diversified away.

Beta Coefficient refers to relative measure of sensitivity of an asset's return to change in the return on the market index. Mathematically, the beta of an asset is the asset's covariance with the market index divided by the variance of the market index.

Unsystematic (or Diversifiable) Risk is that part of an asset's total risk which arises out of factors unique to the asset. Such risk can be diversified away through portfolio investment.

Simple Linear Regression (or Ordinary Least Squares) refers to a statistical model of the relationship between two random variables in which one variable is hypothesized to be linearly related to the other. This relationship is depicted by a regression line which is a straight line fitted to pairs of values of the two variables, so that the sum of the squarred random error terms is minimized.

Multi-Index Model purports to explain the covariances that exist between assets on the basis of changes over time in two or more indices, such as the market, GDP, or the money supply.

Goal Programming is a technique to solve optimization problems with multiple goals. When no feasible solution exists, the goal programming model permits attaining the goals as closely as possible.

11.7 SELF-ASSESSMENT QUESTIONS/EXERCISES

1) Explain in your own words the following:
   a) Significance of 'corner portfolios'
   b) Major limitations of Markowitz's model
   c) Key assumptions of the Single-Index model
   d) How a portfolio's residual variance begins to diminish as the number of assets in the portfolio is increased

2) Consider the data pertaining to the three-assets case used in this Unit to explain the application of Largrange Multipliers Technique. Assuming a target expected rate of return ($\bar{r}_p$) of 6 percent, determine the minimum-variance portfolio (specify the proportion of funds to be allocated to each share). What is the standard deviation of portfolio return?

3) Monthly return (excluding dividend) data are presented below for each of the three shares and BSE National Index (1983-84 = 100) for an 18-month period (Oct. 1990-March 1992). Compute the return and standard deviation of a portfolio constructed by placing one third of your funds in each share, using
   (a) the single-index model
   (b) the direct method (as is considered under Markowitz's model)

   Do the answers in (a) and (b) above differ? why?

Month	ITC	TataSteel	Britania	BSE National Index
1	9.43	45.57	5.98	7.41
2	0.00	–14.78	–9.68	–5.33
3	–4.31	–5.10	–8.93	–7.35
4	–18.92	–19.35	–13.73	–14.64
5	–6.67	1.67	13.64	1.58
6	28.57	10.66	12.00	15.19
7	20.00	3.11	2.68	5.11
8	2.93	10.92	–0.87	0.76
9	5.25	–6.74	–2.63	–0.97
10	21.45	20.56	17.12	10.44
11	23.13	13.36	15.38	17.47
12	32.83	–3.66	1.33	6.42
13	1.52	–6.33	1.32	–3.13
14	11.99	2.70	16.88	5.42
15	–23.08	7.46	5.56	–2.08
16	6.09	23.27	9.47	10.06
17	44.26	5.63	4.81	17.68
18	56.82	27.74	76.15	29.59

11.8 FURTHER READINGS

Haugen. Robert A. 1990 *Modern Investment Theory*, Prentice-Hall International, Inc.

Alexander, Grodon J. and Sharpe, William F., 1989. *Fundamantals of Investments*, Prentice-Hall. Inc.

UNIT 12 CAPITAL MARKET THEORY

Objectives:

The objectives of this unit are to:

- pinpoint basic tenets and assumptions of capital Asset Pricing Model (CAPM)
- define risk free asset, risk free lending, risk free borrowing and leveraged portfolio
- discuss and illustrate the implications of leveraged portfolio for efficient set and capital market line (CML)
- explain and illustrate 'beta' measure of systematic risk and the Security Market Line (SML) that relates the expected return for an asset to its beta
- highlight limitations of CAPM and describe alternative theory namely Arbitrage Pricing Theory (APT) Structure

Structure

12.1 Introduction

12.2 Concepts of Risk Free Asset, Risk Free Lending and Risk Free Borrowing

12.3 Efficient Set with Risk Free lending and Borrowing

- 12.3.1 Leveraged Portfolio
- 12.3.2 Market Portfolio
- 12.3.3 Capital Market Line

12.4 The CAPM

- 12.4.1 Assumptions
- 12.4.2 Security Market Line
- 12.4.3 Limitations

12.5 Arbitrage Pricing Theory(APT)

12.6 Summary

12.7 Self-assessment Questions/Exercises

12.8 Further Readings

12.1 INTRODUCTION

In this Unit, our endeavour will be to extend the portfolio theory described in the previous two units, to a capital market theory that is concerned with pricing risky assets. In particular, we would like to know if two assets differ with respect to their risk, how will they differ in terms of the price investors are willing to pay or the rate of return investors expect to get from them?

The major implication of the capital market theory is that the expected return of an asset will be related to a measure of risk for that asset, known as 'beta'. (We may recall that the 'beta' concept also underlies Single-Index Model, as described in Unit 11). The exact manner in which expected return and beta are related is specified by the Capital Asset Pricing Model or CAPM, for short, which was developed in mid-1960s. The model has generally been attributed to Willian Sharpe, but similar independent derivations were made by John Linter and Jan Mossin. Consequently, the model is often referred to as Sharpe-Linter-Mossin (SLM) Capital Asset Pricing Model. Although the model has been extensively examined, modified and extended in the literature, the original SLM version of the CAPM still remains the central theme in capital market theory as well as in current practices of investment management.

12.2 CONCEPTS OF RISK-FREE ASSET, RISK-FREE LENDING AND BORROWING

Following the development of Markowitz portfolio model, many wondered what would be the affect on portfolio selection of allowing the investors to invest in risk-free asset and resort to borrowing for investment. As we will see in this Unit, giving investors these new opportunities will have major impact on the shape and location of the efficient set and subsequent portfolio selection. But before we proceed to discuss this aspect, let us get acquainted with the terms like 'risk-free asset', 'risk-free lending' and 'risk-free borrowing'.

Risk-free Asset

A risk-free asset is one for which there is no uncertainty regarding the future returns; that is, if the investor purchases this asset at the beginning of the holding period then investor knows exactly what the value of the asset will be at the end of the holding period. Thus, variance of returns is equal to zero.

The risk-free assets may include government securities, treasury bills or any other security issued by the government. Can corporate debentures be treated as risk-free asset? Certainly not, because associated with them is the risk of default. However, not every government security can qualify as risk-free asset. Only a security with a maturity that matches the length of the investor's holding period, can be considered as risk-free asset. In all other cases, investors will be confronted with 'interest-rate-risk' or 'reinvestment-rate-risk', even though returns from the security at maturity are guaranteed by the government. For instance, if the maturity period of a government security is (say) 15 years, while the investment horizon (or the holding period) of an investor is (say) three-months, then the investor does not really know at what market price he will be able to sell the security at the end of his holding period. Any change in interest-rate structure during the holding period will influence the market price of the security. To give an idea, upward revision of interest rate will have a tendency to lower the market price, such that yield-to-maturity at market-price- based acquisition of the security of given maturity period compares well with the yield-to-maturity of new issue with similar maturity period. This is an example of what is termed as 'interest-rate-risk'.

On the other hand, if an investor is contemplating investment in 90-day treasury bill while his holding period extends beyond 90 days, then he is uncertain about the rate at which the proceeds of the maturing bill can be reinvested for the remainder of the holding period. This is because during the 90-day period the interest rate might undergo changes. Any possibility of downward revision of interest rate constitutes 'reinvestment-rate risk'.

A risk-free asset is not really risk-free in another sense also. What is guaranteed in risk-free asset is the 'nominal' holding- period return, but not 'real' return. So, risk-free asset is also subject to 'purchasing-power risk'.

The rate of return on risk-free asset depends on various economic factors, including long-run real growth rate of the economy. It is also referred to as 'pure interest rate'

What is the co-movement of returns on risk-free asset and risky asset (or portfolio of risky assets)? Interestingly, it is always zero. We may recall that convariance between returns of two assets i and j are given by

$$\sigma_{ij} = \rho_{ij}\, \sigma_i\, \sigma_j$$

where ρ_{ij}, σ_i, σ_j are the correlation co-efficient and standard deviation of returns on assets i and j respectively. If one of this asset is risk-free asset, say asset i, then by definition returns on risk-free asset are certain

such that $\sigma_i = 0$; and, hence, $\sigma_{ij} = 0$.

As we will see later, these two characteristics of risk-free asset, namely, (a) own returns variance = 0 ; and (b)covariance of returns with any other asset = 0, are quite significant in determining the shape of efficient frontier.

Risk-Free Lending and Borrowing

Investing in risk-free asset is frequently referred to as 'risk-free lending'; since investment in such assets tantamounts to giving loan directly to the government.

An investor does not require to depend solely on his own wealth to decide how much to invest in assets. He can borrow and invest, i.e., he can use financial leverage. However, investor will have to pay interest on borrowed funds; and since he knows with certainty about the rate of interest and repayment of loan, the borrowing is deemed as "risk-free borrowing".

Activity 1

What do the following stand for:

CAPM .....

CML .....

SML .....

SLM .....

APT .....

12.3 EFFICIENT SET WITH RISK- FREE LENDING AND BORROWING

We now take up a question: what happens to the average rate of return and standard deviation of returns when a risk-free asset is combined with a portfolio of risky assets such as exists on the Markowitz efficient frontier?

The expected portfolio return ($\bar{r}_p$) is given by

$$\bar{r}_p = x\, r_f + (1 - x)\, \bar{r}_i \qquad (12.1)$$

where,

x = the proportion of the portfolio invested in a risk-free asset;

r_f = risk-free rate of return; and

$\bar{r}_i$ = expected return on risky portfolio i.

Recalling equation (10.2), variance of returns for two-asset portfolio (σ_p^2) is as follows:

$$\sigma_p^2 = x^2 \sigma_f^2 + (1 - x)^2 \sigma_i^2 + 2x(1 - x)\, \sigma_{if} \qquad (12.2a)$$

where σ_f^2 and σ_i^2 are the return variances of risk-free asset and risky portfolio respectively, and σ_{if} is the covariance of returns between risk-free asset and portfolio of risky assets i.

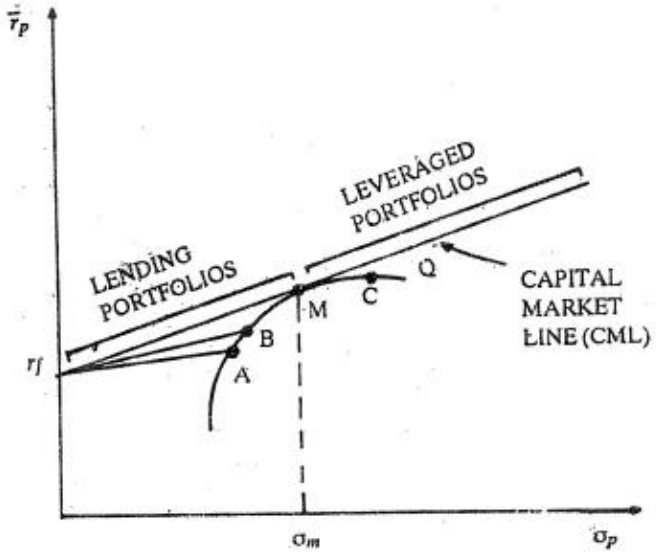
As we have noted earlier, for risk-free asset variance and covariance terms are zero, i.e., $\sigma_f^2 = 0$ and $\sigma_{if} = 0$; and so equation (12.2a) reduces to

$$\sigma_p^2 = (1-x)^2 \sigma_i^2$$

or $$\sigma_p = (1-x)\sigma_i \qquad (12.2b)$$

Because equations (12.1) and (12.2b) are both linear, the returns-risk graph for portfolio possibilities, combining the risk-free asset and risky portfolios on Markowitz efficient frontier, is represented by a straight line. Exhibit 12-1 illustrates the position.

Exhibit : 12.1



Let us consider the line r_f to A. This represents the feasible set of portfolios that can be constructed by combining risk-free asset and the risky portfolio A on the efficient frontier. Each portfolio on this line is characterised by the proportion of fund being invested on risk-free asset (x) and the remainder $(1-x)$ on risky portfolio A. For instance, if $x = 1$ we are at r_f; on the other hand, if $x = 0$, i.e., if we do not invest at all on risk-free asset, we are back to A on Markowitz frontier. It may further be noted that all portfolios on the line r_f to A offer higher returns for the same level of risk than those portfolios on efficient curve below A.

It is possible to draw a number of straight lines from r_f to the efficient frontier at higher and higher points until we reach the point of tangency, which is set at point M. The feasible set of portfolios along the line r_f to M dominates all portfolios below point M and thereby represents the new efficient set. None of the portfolios below M offer higher return, given a level of risk (σ_p).

In other words, of all the lines emanating from r_f, none has a greater slope than the one that goes to M. Furthermore, M is the only portfolio that the curved (or Markowitz) efficient set and the straight-line efficient set have in common. We will discuss more about this tangency portfolio after a while.

The risk-return equation corresponding to the line from r_f through M can easily be obtained from equations (12.1) and (12.2b). Using the subscript "m" to denote the risky portfolio M, we have from equation (12.2b)

$$1 - x = \sigma_p / \sigma_m$$

which when substituted in (12.1) yield, after rearrangement of terms,

$$\bar{r}_p = r_f + \left(\frac{\bar{r}_m - r_f}{\sigma_m} \right) \sigma_p \qquad (12.3)$$

12.3.1 Leveraged Portfolio

In the foregoing analysis it has been tacitly assumed that investors holding portfolios by combining risk-free asset and risky portfolio M, do so with their own funds. This is not a realistic assumption. In the real world, investors often purchase assets with borrowed funds. We now explore the implications of borrowing.

Assume that an investor intends to attain a higher expected return than what is being offered by tangency portfolio M. The investor is, of course, ready to accept higher level of risk, i.e., the investor is willing to hold portfolio with expected standard deviation of returns σ_p greater than σ_m.

One alternative would be to choose a portfolio of risky assets on Markowitz efficient frontier beyond M, such as the one at point C. A second alternative is to borrow money (i.e. add financial leverage) at risk-free rate and invest the same in the risky asset portfolio at M. By doing so, the investor can move from point M to, say, point Q along the extension of r_f to M line. And as is evident from Exhibit 12-1, such portfolios as at Q dominate all portfolios below the line, including the portfolio at C.

To illustrate the point, let us assume that investors can borrow, whatever amount he wants, at a risk-free rate. In other words, we are assuming that risk-free lending and risk-free borrowing rates are the same (we will see the implication of relaxing this assumption later). We may further note that investors would not desire to simultaneously invest in risk-free asset and borrow money at risk-free rate.

Now, suppose that an investor borrows an amount equal to 50 per cent of his original wealth of, say, Rs.10,000. So he has a total of Rs. 15,000 which he proposes to in vest in portfolio M. What is the proportion of fund being invested in M? It is given by

$$1 - x = 15{,}000/10{,}000 = 1.5$$

However, the sum of proportions being invested in risk-free asset and M must still equal one, which means that

$$x = -5000/10{,}000 = -.5$$

The negative sign indicates borrowing, on which there will be interest payment at r_f. Thus, restating equation (12.1), we have

$$\bar{r}_p = -.5\, r_f + 1.5\, \bar{r}_m$$

Assuming that $r_f = 8\%$ and $\bar{r}_m = 20\%$, the return on the leveraged portfolio will be

$$\bar{r}_p = -.5\,(.08) + 1.5\,(.20) = .26 \text{ or } 26 \text{ per cent}$$

which is significantly higher than $\bar{r}_m$, the expected return of 20 per cent on risky portfolio M. Using equation (12.2b), the standard deviation of returns from leveraged portfolio works out to

$$\sigma_p = (1 - (-.5))\,\sigma_m = 1.5\,\sigma_m$$

Thus, our investor could increase return along the line $r_f - M - Q$. Herein lies the advantage of owning a leveraged portfolio, However, leveraging also involves a trade- off; the risk of a leveraged portfolio is always higher than that of tangency portfolio, M (in the instant case it is 1.5 times).

12.3.2 Market Portfolio

It is now time to know more about the portfolio M. The portfolio M represents "optimal combination of risky assets" and is referred to as "market portfolio". It may be explained as follows.

If all investors have homogeneous expectations and they all face the same risk-free lending and borrowing rate (r_f), each one of them will generate the same risk-return graph as depicted in Exhibit 12-1. Everyone would obtain the same tangency portfolio M, and invest in this portfolio in conjuction with risk-free lending or borrowing to achieve a personally preferred overall combination of risk and return. An aggressive investor may prefer a leveraged portfolio which would have a higher risk and return than portfolio M. In contrast, a conservative investor might prefer a lending portfolio which would have lower risk and return than the portfolio M. The decision to hold a leveraged or lending portfolio is purely a "financial decision" based on an investor's risk preference. It has nothing to do with the decision about holding the combination of risky assets (i.e. investment decision) corresponding to the portfolio M. In other words, the composition of risky portfolio M and its inclusion in every investor's portfolio is independent of his or her risk-return preference; this aspect is known as 'separation theorem', introduced by James Tobin in 1958.

Another important feature of the portfolio M is that it represents a 'market portfolio' - a portfolio that is comprised of all risky assets, where the proportion to be invested in each asset corresponds to its relative market value.

Why must the portfolio M include some investment in every risky asset? If a risky asset were not in this portfolio, it would mean that nobody is investing in that asset; obviously, the market price of the asset must fall, which in turn would cause the expected return to rise, until it is being included in the portfolio M. In the market portfolio, each asset is held in the proportion that the market value of that asset represents of the total market value of all risky assets. If, for example, there is a higher proportion of an asset than is justified by its market value, the excess demand for this asset will result in increase in its price until its value becomes consistent with the proportion. Thus, when all the price adjustments are over, i.e., market is brought into equilibrium, tangency portfolio M becomes the market portfolio. Besides, it is the most diversified portfolio, since it contains all the risky assets.

12.3.3 Capital Market Line (CML)

With the identification of M as market portfolio, we may define the straight line from r_f through M, as 'capital market line' (CML). It is the locus of the efficient portfolios given by equation (12.3), and we have already seen how investors, whether aggressive or conservative, will achieve their desired risk-return levels by combining market portfolio with risk-free lending or borrowing along the CML. Let us re-examine the equation (12.3) of the capital market line to make a few more observations at this stage.

The term $(\bar{r}_m - r_m)/\sigma_m$, the slope of capital market line, can be thought of as the market price of risk for all efficient portfolios. It is the extra return that can be gained by increasing the level of risk (standard deviation) on an efficient portfolio by one unit. Thus, the entire second term of equation (12.3) represents that element of expected portfolio return that compensates for the risk level accepted. The first term, risk-free rate (or the intercept of CML), is often referred to as the reward for waiting or the return required for delaying potential consumption for one period.

With these two terms, CML sets the expected return on an efficient portfolio as

(Price of time) + (Price of risk) × (Amount of risk)

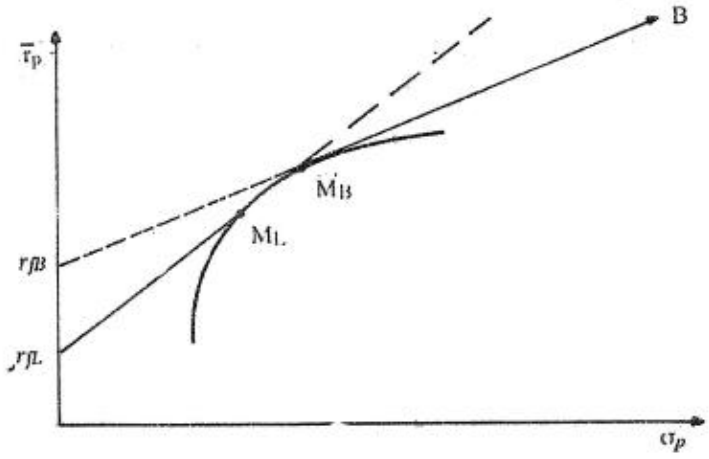
When Risk-Free Rates Are Different

In the foregoing discussion we assumed that risk-free rates of lending and borrowing are the same. We now relax this assumption, and consider that

where the additional subscripts B and L refer to borrowing and lending respectively.

Exhibit 12-2 shows the modified efficient set; it consists of three distinct but connected segments, $r_{fL} - M_L - M_B - B$.

Exhibit : 12.2



The construction of this efficient set can be explained as follows: If $r_{fL} = r_{fB}$, then the resulting efficient set will be given by the straight line from r_{fL} through M_L. On the other hand, if risk- free lending and borrowings rate are the same, but the rate is set at a higher level equal to r_{fB}, then the efficient set of portfolios will lie on the straight line form r_{fB} though M_B. We may note that M_B is at a higher level than M_L on Markowitz's efficient set, since it corresponds to a tangency point associated with higher risk-free rate, r_{fB}.

Now, since the investors cannot borrow at r_{fL}, that part of the line emanating from r_{fL} that extends past M_L is not available to the investors (shown in Exhibit 12-2 by dotted lines) and can be removed from our consideration. Again, since the investors can not invest in a risk-free asset that earns a rate equal to r_{fB}, that part of the line from r_{fB} and going through M_B, but lying to the left of M_B, is not available to the investors; and, hence, can be ignored. On the whole, $r_{fL} - M_L - M_B - B$ becomes the relevant efficient set to investors who can lend at r_{fL} but are required to borrow at higher rate of r_{fB}.

12.4 The CAPM

In this section, we turn to the basic Capital Asset Pricing Model developed by Sharpe, Linter and Mossin. We present here a descriptive model of how assets are priced.

The CAPM builds upon the Markowitz portfolio model and capital market line. Obviously, it presupposes all the assumptions stated earlier at appropriate places (including those stated in the previous two Units). Besides, the model itself adds few more assumptions. So, let us begin our presentation of the CAPM by putting together all the assumptions of the model at one place.

12.4.1 Assumptions

1) Investors evaluate portfolios by looking at expected returns and standard deviations of those portfolios over a one-period horizon.

2) Investors, when given a choice between two otherwise identical portfolios, will choose the one with higher expected return.

3) Investors, when given a choice between two otherwise identical portfolios, will choose the one with the lower standard deviation or risk.

4) Individual assets are infinitely divisible, meaning that an investor can buy a fraction of a share if he or she so desires.

5) There is a risk-free rate at which an investor may either lend money or borrow money.

6) Taxes and transaction costs are irrelevant.

7) All investors have the same one-period horizon.

8) The risk-free rate is the same for all investors.

9) Information is freely and instantly available to all investors.

10) Investors have homogeneous expectations, meaning that they have the same perceptions in regard to the expected returns, standard deviations and covariances of returns between any two assets.

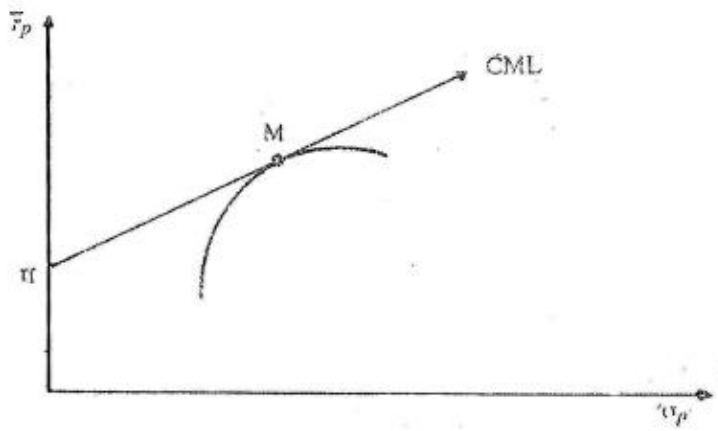
Needless to say, many of these assumptions are unrealistic, and one may very well wonder how useful a model can be that is based on them. But, then assumptions are necessary in building a model, and we should not be so much concerned about the assumptions as we should be about how well the model explains the relationships that exist in the real world. In fact, several authors have shown that many of the above assumptions can be relaxed with minor impact on the CAPM and no change in the overall concept of the model.

12.4.2 Security Market Line (SML)

Given the capital market line (CML) and the dominance of the market portfolio, the relevant risk measure for an individual risky asset is its covariance with the market portfolio, or what is known as its 'systematic risk'. When this covariance is standardised by the covariance for the market portfolio, we obtain the well-known 'beta' measure of systematic risk and a security market line (SML) that relates the expected return for an asset to its beta. Under the CAPM, the postulated relationship is such that higher an asset's beta, the higher its expected return.

To understand this, let us consider any portfolio that consists of the proportion x_i invested in asset i and the proportion $(1 - x_i)$ invested in the market portfolio M. The risky asset (chosen arbitrarily) will always plot below CML, as shown in Exhibit 12.3, since a single risky asset, when held by itself, is an inefficient portfolio.

EXHIBIT 12-3



The expected return of the portfolio will be equal to

$$\bar{r}_p = x_i \bar{r}_i + (1 - x_i) \bar{r}_m \qquad (12.4)$$

with a standard deviation of

$$\sigma_p = \left[x_i^2 \sigma_i^2 + (1 - x_i)^2 \sigma_m^2 + 2 x_i (1 - x_i) \sigma_{im} \right]^{1/2} \qquad (12.5)$$

All such portfolios will lie on a curved line connecting i and M, whose slope can be shown to be equal to

$$\frac{[\bar{r}_i - \bar{r}_m] [x_i^2 \sigma_i^2 + (1 - x_i)^2 \sigma_m^2 + 2 x_i (1 - x_i) \sigma_{im}]^{1/2}}{x_i^2 \sigma_i^2 - \sigma_m^2 + x_i \sigma_m^2 + \sigma_{im} - 2 x_i \sigma_{im}} \qquad (12.6)$$

At M, $x_i = 0$ and equation (12.6) reduces to

$$\frac{(\bar{r}_i - \bar{r}_m) \sigma_m}{\sigma_{im} - \sigma_m^2}$$

Since at M, slope of the curved line i and M is equal to the slope of CML, we have (recalling the slope of CML from equation (12.3)):

$$\frac{(\bar{r}_i - \bar{r}_m) \sigma_m}{\sigma_{im} - \sigma_m^2} = \frac{(\bar{r}_m - r_f)}{\sigma_m}$$

which on rearrangement of terms yields

$$\bar{r}_i = r_f + \left[\frac{\bar{r}_m - r_f}{\sigma_m^2} \right] \sigma_{im} \qquad (12.7a)$$

$$\bar{r}_i = r_f + \beta_i (\bar{r}_m - r_f) \qquad (12.7b)$$

where $\beta_i = \sigma_{im} / \sigma_m^2$

The term β_i, representing covariance of returns between asset i and the market portfolio divided by return variance of market portfolio, is known as "beta coefficient" or simply "beta" for asset.

The equation (12.7b) is the most often written form of the CAPM. Let us now examine some properties of beta.

First, beta is the relevant measure of risk for an asset; it measures what is termed as 'systematic or market risk'. It can be shown that the 'total risk' of the asset, as measured by variance of its return, is of the following form

$$\sigma_i^2 = \beta_i^2 \sigma_m^2 + \sigma_{ei}^2 \qquad (12.8)$$

where σ_{ei}^2 is the variance of return for the asset that is not related to the market portfolio. It is also said to measure 'unsystematic or unique risk'. We know that unique or unsystematic risk can be eliminated in a completely diversified portfolio such as the market portfolio. (Recall our discussion in this regard from the previous Unit). So, unsystematic risk is not relevant to investors, and they should not expect to receive added returns for assuming this risk. It is only in the case of assets with greater market risk or betas that investors should expect higher return.

Second, beta of a portfolio is simply a weighted average of the betas of its component assets (n) where the proportions invested in the assets (x_i) are the weights. Thus, portfolio beta (β_p) is given by

$$\beta_p = \sum_{i=1}^{n} x_i \beta_i \qquad (12.9)$$

We may illustrate this point by taking a stock portfolio comprising seven stocks with their betas and portfolio proportions given as follows:

(1)	(2)	(3)	(4)
Company	Beta	Portfolio Proportions	Weighted Beta
A	1.50	11.7	.175
B	1.36	22.2	.302
C	1.37	15.7	.215
D	1.07	5.3	.056
E	1.17	26.2	.306
F	1.73	13.9	.240
G	1.09	5.1	.055
		100.0	1.349

The beta of this stock portfolio is 1.35 which is obtained by summing up the multiproduct of (2) and (3) above and shown under (4).

It is easy to see the central role played by the beta in the determination of expected return and risk for stocks as well as portfolio and thus in stock selection and portfolio creation and revision.

12.4.3 Limitations

You may be now interested in knowing if security returns are in fact directly related to beta, as the CAPM asserts. Research results suggest that the CAPM does not reflect the world well - at least when tested using ex-post data. Critics have pointed out that the inadequacy of the model is due to its austerity. The market, in principle, includes all stocks, a variety of other financial instruments, and even non-marketable assets such as an individual's investment in education; to which no market index like the SP 500 Index in US or Bombay Stock Exchange National Index (or any other index used to represent the market) can be a perfect proxy. And when we measure market risk using an imperfect proxy, we may obtain a quite imperfect estimate of market sensitivity. Secondly, the CAPM asserts that only a single number-a security's beta against the market - is required to measure risk. The actual returns depend upon a variety of anticipated and unanticipated events. Thus, while systematic factors are the major sources of risk in portfolio return, different portfolios have different sensitivities to these factors. It is the recognition of this phenomenon which lies at the core of an alternative pricing model called Arbitrage Pricing Theory (APT). Let us briefly discuss APT in the following section.

12.5 Arbitrage Pricing Theory (APT)

As noted above, at the core of APT is the recognition that several systematic factors affect security returns. It is possible to see that the actual return, R, on any security or portfolio may be broken down into three constituent parts, as follows:

$$R = E + bf + e \qquad (12.10)$$

where:

E = expected return on the security

b = security's sensitivity to change in the systematic factor

f = the actual return on the systematic factor

e = returns on the unsystematic factors

Equation 12.10 merely states that the actual return equals the expected return, plus factor sensitivity times factor movement, plus residual risk.

The subtler rationale and mathematics of APT are left out here. The empirical work suggests that a three or four - factor model adequately captures the influence of systematic factors on stock- market returns. Equation 12.10 may thus be expanded to:

$$R = E + (b_1)(f_1) + (b_2)(f_2) + (b_3)(f_3) + (b_4)(f_4) + e$$

Each of the four middle terms in this equation is the product of the returns on a particular economic factor and the given stock's sensitivity to that factor. What are these factors and separating unanticipated from anticipated factor movements in the measurement of sensitivities is perhaps the biggest problem in APT. Empirical testing of APT is indeed still in its infancy, and concrete results proving the APT and disapproving the CAPM still do not exist. For these reasons it is useful to regard CAPM and APT as different variants of the true equilibrium pricing model. Both are, therefore, useful in supplying intuition into the way security prices and equilibrium returns are established.

Activity 2:

Difine the following terms:

a) Leveraged Portfolio

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b) Capital Market line

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c) Market Portfolio

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d) Security Market line

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12.6 SUMMARY

In this Unit, we have discussed the basic levels and assumptions of Capital Asset Pricing Model (CAPM). The Concepts of risk free asset, risk free lending, risk free borrowing, leveraged portfolio, market portfolio, Capital Market Line (CML), Security Market Line (SML) and beta have been explained and illustrated at length. This Unit also pinpoints the limitations of CAPM and introduces arbitrage pricing theory (APT) and concludes that till concrete research results become available to the contrary, both CAPM and APT could be regarded useful, at least intuitively, to guide investors and portfolio managers for pricing the risky assets like equities.

12.7 SELF-ASSESSMENT QUESTIONS/EXERCISES

1) Define risk free asset. List out two risk free assets.

2) Compare and contrast Capital Market Line (CML) and Security Market Line (SML).

3) What are the basic assumptions underlying Capital Asset Pricing Model?

4) Define efficient frontier. What happens to the Capital Market Line and the choice of an optimal portfolio if borrowing rate is allowed to exceed the lending rate?

5) Define leveraged portfolio and bring out its implications for capital market line.

6) Compare and contrast CAPM and APT. Which of the two is a better model for pricing risky assets and why?

7) Assume the SML is given as $R_i = 0.05 + .06\,\beta$ and the estimated below on two stocks are $\beta_x = .04$ and $\beta_y = 1.5$. What must be the expected return on two securities in order for one to feel that they are a good purchase?

8) What specifically should a 'true believer' in the CAPM do with her money if she seeks to hold a portfolio with a beta of 1.5?

9) The following data are available to you as a portfolio manager:

Security	Expected Return	Beta	Standard Deviation
A	.30	2.0	.50
B	.25	1.5	.40
C	.20	1.0	.30
D	.18	0.8	.25
E	.15	0.5	.20

   a) In terms of the security market line, which of the securities listed above are undervalued? why?

   b) Assuming that a portfolio is constructed using equal proportions of the five stocks listed above, calculate the expected return and risk of such a portfolio.

10. Compare and contrast standard deviation and beta as measure of stock and portfolio risks.

12.8 FURTHER READINGS

Fischer, Donald E. and Ronald J. Jordon 1987, *Security Analysis and Portfolio Management*, 4th ed., PHI, New Delhi

Nancy, Efficient? chaotic? *What is the New Finance? Harvard Business Review*, March-April, 1993.

UNIT 13 PORTFOLIO REVISION

Objectives

The objectives of this Unit are to:

- point out the meaning and need for portfolio revision
- contrast 'active' and 'passive' portfolio revision strategies
- highlight portfolio revision practices and the constraints in portfolio revision
- discuss and illustrate formula plans for portfolio revision

Structure

13.1 Meaning of Portfolio Revision
13.2 Need for Portfolio Revision
13.3 Portfolio Revision Strategies
13.4 Portfolio Revision Practices
13.5 Constraints in Portfolio Revision
13.6 Formula Plans
  13.6.1 Basic Assumptions and Ground Rules
  13.6.2 Constant-Dollar-Value Plan
  13.6.3 Constant-Ratio Plan
  13.6.4 Variable-Ratio Plan
  13.6.5 Limitations
13.7 Summary
13.8 Self-assessment Questions/Exercises
13.9 Further Readings

13.1 MEANING OF PORTFOLIO REVISION

In the entire process of portfolio management, portfolio revision is as important as portfolio analysis and selection. Keeping in mind the risk-return objectives, an investor selects a mix of securities from the given investment universe. In a dynamic world of investment, it is only natural that the portfolio may not perform as desired or opportunities might arise turning the desired into less than desired. In every such situation, a portfolio revision is warranted. Portfolio revision involves changing the existing mix of securities. The objective of portfolio revision is similar to the objective of portfolio selection i.e., maximising the return for a given level of risk or minimising the risk for a given level of return. The process of portfolio revision may also be similar to the process of portfolio selection. This is particularly true where active portfolio revision strategy is followed. Where passive portfolio revision strategy is followed, use of mechanical formula plans may be made. What are these formula plans? We shall discuss these and other aspects of portfolio revision in this Unit. Let us begin by highlighting the need for portfolio revision.

13.2 NEED FOR PORTFOLIO REVISION

No plan can be perfect to the extent that it would not need revision sooner or later. Investment Plans are certainly not. In the context of portfolio management the need for revision is ever more because the financial markets are continually changing. Thus the need for portfolio revision might simply arise because market witnessed some significant changes since the creation of the portfolio. Further, the need for portfolio revision may arise because of some investor-related factors such as (i) availability of additional wealth, (ii) change in the risk attitude and the utility

function of the investor, (iii) change in the investment goals of the investors and (iv) the need to liquidate a part of the portfolio to provide funds for some alternative uses. The other valid reasons for portfolio revision such as short term price fluctuations in the market do also exist. There are thus numerous factors, which may be broadly called market related and investor - related, which spell need for portfolio revision.

13.3 PORTFOLIO REVISION STRATEGIES

As are there numerous factors motivating revision of portfolio, so are there numerous strategies of portfolio revision. Broadly speaking investors may, depending on their investment objectives skill and resources, follow 'active' or 'passive' strategies for portfolio revision. Active strategy of portfolio revision involves a process similar to portfolio analysis and selection as described in Units 10 and 11, which is based on an analysis of fundamental factors covering economy, industries and companies as well as technical factors as described in Units 6, 7 and 8. As against this, under passive strategy some kind of formula plans are followed for revision. Some popular formula plans are described under section 13.6.

Active revision strategy seeks 'beating the market by anticipating' or reacting to the perceived events or information. Passive revision strategy, on the other hand, seeks performing as the market'. The followers of active revision strategy are found among believers in the 'market inefficiency', whereas passive revision strategy is the choice of believers in 'market efficiency'. The frequency of trading transactions, as is obvious, will be more under active revision strategy than under passive revision strategy and so will be the time, money and resources required for implementing active revision strategy than for passive revision strategy.In other words, active and passive revision strategies differ in terms of purpose, process and cost involved. The choice between the two strategies is certainly not very straight forward. One has to compare relevant costs and benefits. On the face of it, active revision strategy might appear quite appealing but in actual practice, there exist a number of constraints in undertaking portfolio revision itself. Some significant constraints are discussed under Section 13.5.

Activity I

a) Define Portfolio Revision.

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b) Name two broad sets of factors which may motivate portfolio revision.

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c) Distinguished 'active' and 'passive' strategies of portfolio revision

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13.4 PORTFOLIO REVISION PRACTICES

In U.S., both active and passive portfolio revision strategies have been prevalent. Studies about Portfolio revision strategies followed by U.S. investors show that th efficient market hypothesis is slowly but continously gaining believers and these converts revise their portfolio much less often than they were doing previously because of their rising faith in market efficiency. Institutional investors in U.S., or

the other hand, have shown definite tendency in the recent past for active revision of their portfolios. This is said to be motivated by their desire to achieve superior performance by frequent trading to take advantage of their supposedly superior investment skills.

Some research studies undertaken in U.S. about the market timing and portfolio revision suggested as follows:

F. Black (1973) found that 'monthly and weekly revision could be a rewarding strategy though when transactions costs were considered the results were less impressive, but, of course, still significantly positive.

H. A. Latane, et. al. (1974) concluded that complete portfolio revision every six months would have been a rewarding strategy.

Sharpe (1975) wrote: A manager who attempts to time the market must be right roughly three times out of four, in order to out perform the buy-and-hold portfolio. If the manager is right less often, the relative performance will be inferior because of transaction costs and the manager will often have funds in cash equivalents when they could be earning the higher returns available from common stock.

Institutional investors who continue to be dominant in the Indian stock market do not seem to resort to active portfolio revision mainly for statutory reasons. Another feature of their portfolio revision is that they continue to emphasise individual securities rather than portfolio risk-return changes.

13.5 CONSTRAINTS IN PORTFOLIO REVISION

A look into the portfolio revision practices as discussed above highlight that there are a number of constraints in portfolio revision, in general, and active portfolio revision, in particular. Let us indicate some common constraints in portfolio revision as follows:

Transaction cost: As you know buying and selling of securities involve transaction cost including brokers' fee. Frequent buying and selling for portfolio revision may push up transaction costs beyond gainful limits.

Taxes: In most of the countries, capital gains are taxed at concessional rates. But for any income to qualify as capital gains, it should be earned after the lapse of a certain period. In many cases, the period is 36 months. Frequent selling for portfolio revision may mean foregoing capital gains tax concession. Higher the tax differential (between rates of tax for income and capital gains), higher the constraint. Even for tax switches, which means that one stock is sold to establish a tax loss and a comparable security is purchased to replace it in the investor's portfolio, one must wait for a minimum period after selling a stock and before repurchasing it, to be able to declare the gain or loss. If the stock is repurchased before the minimum fixed period, it is considered a *wash sale*, and no gain or loss can be claimed for tax purposes.

Statutory Stipulations: In many a country like India, statutory stipulations have been made as to the percentage of investible funds that can be invested by investment companies/mutual funds in the shares/debentures of a company or industry. In such a situation, the initiative to revise portfolio is most likely to get stiffled under the burden of various stipulations. Government owned investment companies and mutual funds are quite often called upon to support sagging markets (albeit counters) or cool down heated markets, which, puts limit on the active portfolio revision by these companies.

No Single Formula: Portfolio revision is no exact science. Even today there does not exist clear cut answer to the overall question of whether, when and how to revise a portfolio. The entire process is fairly cumbersome and time-taking. The

investment literature do provide some formula plans, which we shall discuss in the following section, but they have their own assumptions and limitations.

Activity 2

a) List out three constraints in portfolio revision.

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b) Define the following:

Wash sale

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Tax switches

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13.6 FORMULA PLANS

As noticed above, the problem of portfolio revision essentially boils down to timing the buying and selling the securities. Ideally, investors should buy when prices are low, and then sell these securities when their prices are high. But as stock prices fluctuate, the natural tendencies of investors often cause them to react in a way opposite to one that would enable them to benefit from these fluctuations. The investors are hesitant to buy when prices are low for fear that prices will fall further lower, or far fear that prices won't move upward again. When prices are high, investors are hesitant to sell because they feel that prices may rise further and they may realise larger profits. It requires skill and discipline to buy when stock prices are low and pessimism abounds and to sell when stock prices are high and optimism prevails Mechanical portfolio revision techniques have been developed to ease the problem of whether and when to revise to achieve the benefits of buying stocks when prices are low and selling stocks when prices are high. These techniques are referred to as formula plans. Constant-Dollar-Value Plan, Constant Ratio Plan and Variable Ratio Plan are three very popular formula plans. Before discussing each one of these, we may point out basic assumptions and ground rules of formula plans as follows:

13.6.1 Basic Assumptions and Ground Rules

The formula plans are based on the following assumptions:

One, the stock prices move up and down in cycles.

Two, the stock prices and the high grade bond prices move in the opposite directions.

Three, the investors cannot or are not inclined to forecast direction of the next fluctuation in stock prices which may be due to lack of skill and resources or their belief in market efficiency or both.

The use of formula plans call for the investor to divide his investment funds into two portfolios, one aggressive and the other conservative or defensive. The aggressive portfolio usually consists of stocks while conservative portfolio consists of bonds. The formula plans specify pre-designated rules for the transfer of funds

from the aggressive into the conservative and vice-versa such that it automatically causes the investor to sell stocks when their prices are rising and buy stocks when their prices are falling. Let us now discuss, one by one, the three formula plans.

13.6.2 Constant-Dollar-Value Plan

The Constant-Dollar-Value Plan (CDVP) asserts that the dollar value (or Rupee Value in Indian Context) of the stock portion of the portfolio will remain constant. This, in operational terms, would mean that as the value of the stocks rises, the investor must automatically sell some of the shares to keep the value of his aggressive portfolio constant. If, on the other hand, the prices of the stocks fall, the investor must buy additional stocks to keep the value of the aggressive portfolio constant. By specifying that the aggressive portfolio will remain constant in dollar value, the plan implies that the remainder of the total fund will be invested in the conservative fund. In order to implement this plan, an important question to answer is what will be the action points? or, in other words, when will the investor make the transfer called for to keep the dollar value of the aggressive portfolio constant? Will it be made with every change in the prices of the stocks comprising the aggressive portfolio? Or, will it be set according to prespecified periods of time or percentage change in some economic or market index or percentage change in the value of the aggressive portfolio?

The investor must choose pre-determined action points, also called revaluation points, very carefully. The action points can have significant effect on the returns of the investor. Action points placed at every change or too close would cause excessive transaction costs that reduce return and the action points placed too far apart may cause the loss of opportunity to profit from fluctuations that take place between them. Let us take an example to clarify the working of constant-dollar-value-plan. Table 13.1 presents the relevant data.

TABLE 13.1 Example of a Constant-Dollar-Value Formula Plan

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Stock Price Index	*Value of Buy-and-Hold Strategy (800 Shares× Col. 1)*	*Value of Conservative Portfolio (Col. 5- Col.4)*	*Value of Aggressive Portfolio (Col. 7 × Col.1)*	*Total Value of Constant Dollar Portfolio (Col.3 + Col.4)*	*Revaluation Action*	*Total Number of Shares in Aggressive Portfolio*
25	Rs. 20,000	Rs. 10,000	Rs.10,000	Rs. 20,000		400
22	17,600	10,000	8,800	18,800		400
20	16,000	10,000	8,000	18,000		400
20	16,000	8,000	10,000	18,000	Buy 100 Shares at 20*	500
22	17,600	8,000	11,000	19,000		500
24	19,200	8,000	12,000	20,000		500
24	19,200	10,000	10,000	20,000	Sell 83.3 Shares at 24	416.7
26	20,800	10,000	10,830	20,830		416.7
28.8	23,040	10,000	12,000	22,000		416.7
28.8	23,040	12,000	10,000	22,000	Sell 69.5 Shares at 28.8	347.2
25	20,000	12,000	8,700	20,700		347.2

*To restore the stock portfolio to Rs. 10,000., Rs. 2,000 is transferred from the conservative portfolio and used to purchase 100 shares at Rs. 20 per share.

In our example, an investor with Rs. 20,000 for investment decides that the constant dollar (Rupee) value of his aggressive portfolio will be Rs. 10,000. The balance of

Rs. 10,000 will make up his conservative portfolio at the beginning. He purchases 400 shares selling at Rs. 25 per share. He also determines that he will take action to transfer funds from aggressive portfolio to conservative portfolio or vice-versa each time the value of his aggressive portfolio reaches 20 per cent above or below the constant value of Rs 10,000. Table 13.1 shows the positions and actions of the investor during the complete cycle of the price fluctuations of stocks comprising the portfolio. Although the example refers to the investment in one stock, the concepts are identical for a portfolio of stocks, as the value change will be for the total portfolio. In this example, we have used fractional shares and have ignored transaction costs to simply the example. In order to highlight the revaluation actions of our investor, we have shown them 'boxed' in Table 13.1. The value of the buy-and- hold strategy is shown in column (2) to enable comparison with the total value of our investors' portfolio [column (5)] as per constant-dollar-value plan of portfolio revision. Notice the revaluation actions (represented by boxed areas in Table 13.1) taken when the price fluctuated to Rs. 20, 24, and 28.8, since the value of the aggressive fund became 20 per cent greater or less than the constant value of Rs. 10,000. Notice also that the investor using the constant-dollar-value formula plan has increased the total value of his fund to Rs. 20,700 after the complete cycle, while the buy-and-hold strategy yielded only Rs. 20,000. Let us now illustrate another formula plan, namely, constant-ratio-plan.

13.6.3 Constant-Ratio Plan

The constant-ratio plan specifies that the value of the aggressive portfolio to the value of the conservative portfolio will be held constant at the predetermined ratio. This plan automatically forces the investor to sell stocks as their prices rise, in order to keep the ratio of the value of their aggressive portfolio to the value of the conservative portfolio constant. Likewise, the investor is forced to transfer funds from conservative portfolio to aggressive portfolio as the price of stocks fall. We may clarify the operation of this plan with the help of an example. For the sake of our example, the starting point and other information are the same as in the previous example. The desired ratio is 1:1. The initial fund of Rs.20,000 is thus divided into equal portfolios of Rs. 10,000 each. The action points are pre- determined at ±.10 from the desired ratio of 1.00. Table 13.2 shows, in boxes, the actions taken by our investor to readjust the values of the two portfolios to reobtain the desired ratio.

TABLE. 13.2: Example of Constant-Ratio Formula Plan

(1) Stock Price Index	(2) Value of Buy-and-Hold Strategy (800 Shares × Col.1)	(3) Value of Conservative Portfolio (Col. 5 -Col.4)	(4) Value of Aggressive Portfolio (Col. 8 × Col.1)	(5) Total Value of Constant Ratio Portfolio (Col.3 + Col.4)	(6) Ratio (4) : (3)	(7) Revaluation Action	(8) Total Number of Shares in Aggressive Portfolio
25	Rs. 20,000	Rs. 10,000	Rs. 10,000	Rs .20,000	1.00		400
23	18,400	10,000	9,200	19,200	.92		400
22.5	18,000	10,000	9,000	19,000	.90		400
22.5	18,000	9,500	9,500	19,000	1.00	Buy 22.2 Shares at 22.5	422.2
20.25	16,200	9,500	8,540	18,040	.90		422.2
20.25	16,200	9,020	9,020	18,040	1.00	Buy 23.7 Shares at 20.25	445.9
20	16,000	9,020	8,910	17,930	.99		445.9
22.4	17,920	9,020	9,920	18,940	1.10		445.9
22.4	17,920	9,470	9470	18,940	1.00	Sell 20.1 Shares at 22.4	425.8
24.6	19,920	9,470	10,430	19,900	1.10		425.8

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
24.6	19,920	9,950	9,950	19,900	1.00	Sell 19.5 Shares at 24.6	406.3
27.0	21,600	9,950	10,950.	20,900	1.10		406.3
27.0	21,600	10,450	10,450	20,900	1.00	Sell 18.5 Shares. at 27.0	387.8
28.8	23,040	10,450	11,170	21,620	1.07		387.8
27.0	21,600	10,450	10,450	20,900	1.00		387.8
25	20,000	10,450	9,670	20,120	.93		387.8

To restore the ratio from .90 to 1.00, total value of the fund, Rs. 19,000, is simply split in two equal segments of Rs. 9,500; and Rs,9500/9,500 =1.00. The Rs. 500 transferred from the conservative portfolio will buy 22.2 Shares at the prevailing price of Rs. 22.50

You may notice that the constant-ratio plan calls for more transactions than the constant-dollar-value plan did, but the actions triggered by this plan are less aggressive. This plan yielded an increase in total value at the end of the cycle compared with the total value yielded under constant-dollar-value plan. It did, however, outperform the buy-and-hold strategy. Let us now explain and illustrate variable-ratio plan.

13.6.4 Variable-Ratio Plan

Variable-ratio plan is a more flexible variation of constant ratio plan. Under the variable ratio plan, it is provided that if the value of aggressive portfolio changes by certain percentage or more, the initial ratio between the aggressive portfolio and conservative portfolio will be allowed to change as per the pre-determined schedule. Some variations of this plan provide for the ratios to vary according to economic or market indices rather than the value of the aggressive portfolio. Still others use moving averages of indicators. In order to illustrate the working of variable ratio plan let us continue with the previous example with the following modifications:

The variable-ratio plan states that if the value of the aggressive portfolio rises by 20 per cent or more from the present price of Rs. 25, the appropriate ratio of the aggressive portfolio will be 3:7 instead of the initial ratio of 1:1. Likewise, if the value of the aggressive portfolio decreases by 20 percent or more from the present price of Rs. 25, the appropriate percentage of aggressive portfolio to conservative portfolio will be 7:3. Table 13.3 presents, in boxes, the actions taken by our investor to readjust the value of the aggressive portfolio as per variable-ratio plan.

TABLE 13.3: Example of Variable-Ratio Formula Plan

(1) Stock Price Index	(2) Value of Buy-and-Hold Strategy (800 Shares × Col. 1)	(3) Value of Conservative Portfolio (Col. 5-Col. 4)	(4) Value of Aggressive Portfolio (Col. 8 × Col. 1)	(5) Total Value of Variable-Ratio Portfolio (Col. 3 + Col. 4)	(6) Value of Stock as % of Total Fund (Col. 4 ÷ Col. 5)	(7) Revaluation Action	(8) Total Number of Shares in Agressive Portfolio
25	Rs. 20,000	Rs. 10,000	Rs.10,000	Rs. 20,000	50%		400
22	17,600	10,000	8,800	18,800	47%		400
20	16,000	10,000	8,000	18,000	44.5%		400
20	16,000	5,400	12,600	18,000	70%	Buy 230 Shares at 20	630
22	17,600	5,400	13,860	19,260	72%		630
25	20,000	5,400	15,760	21,160	74.5%		630
25	20,000	10,580	10,580	21,160	50%	Sell 207 Shares a 25	423
26	20,800	10,580	11,000	20,580	53%		423
28.8	23,040	10,580	12,180	22,760	54%		423
25	20,000	10,580	10,580	21,160	50%		423

You may notice that the increase in the total value of the portfolio after the complete cycle under this plan is Rs. 1160, which is greater than the increase registered under the other two formula plans. The revaluation actions /transactions undertaken are also fewer under this plan compared to other two plans. Variable ratio plan may thus be more profitable comparable to constant-dollar-value plan and the constant-ratio plan. But, as is obvious, variable ratio plan demands more forecasting than the other formula plans. You must have observed, the variable ratio plan requires forecasting of the range of fluctuations both above and below the initial price (or say median price) to establish the varying ratios at different levels of portfolio values. Beyond a point it might become questionable as to whether the variable ratio plan is less complicated than the extensive analysis and forecasting that it was supposed to replace.

Activity 3

a) What is the total value of the portfolios at the end of the complete cycle under Constant Dollar Value Plan, Constant Ratio Plan and Variable Ratio Plan in the examples given above ?

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b) Comment on the differences, if any?

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13.6.5 Limitations

Indeed, none of the formula plans are a royal road to riches. First, as an effort to provide mechanical rules for portfolio revision, they make no provision for what securities should be selected for investment. Second, formula plans by their nature are inflexible. This inflexibility makes it difficult to know if and when to adjust the plan to new conditions emerging in the investment environment. Finally, in the absence of much faith in the market efficiency, particularly in the developing stock markets, there may not be many followers of formula plans for portfolio revision.

13.7 SUMMARY

In this Unit, we have noticed that in the entire process of portfolio management portfolio revision which involves changing the existing mix of securities is as important as portfolio analysis and selection. The portfolio revision strategies adopted by investors can be broadly classified as 'active' and 'passive' revision strategies. This Unit also points out that while both 'active'and 'passive' revision strategies are followed by investors and portfolio managers, 'passive' strategy is followed by believers of market efficiency or those who lack portfolio analysis and selection skills and resources. Major constraints which come in the way of portfolio revision are transaction costs, taxes, statutory stipulations and lack of ideal formula. This Unit also discusses and illustrates three formula plans of portfolio revision, namely, constant-dollar-value plan, constant-ratio plan and variable-ratio plan. Before closing the discussion about formula plans, it is noted that these formula plans are not a royal road to riches. They have their own limitations. The choice of portfolio revision strategy or plan is thus no simple question. The choice will involve cost benefit analysis.

13.8 SELF-ASSESSMENT QUESTIONS/EXERCISES

1) 'In the Indian Context, buy-and-hold is a better strategy compared to any of the portfolio revision strategies.' Comment.

2) Compare and contrast constant-dollar-value plan, constant-ratio plan and variable-ratio plan. You may use imaginary data.

3) 'Formula plans are hardly useful in the Indian Context.' Comment

4) Define the following:
   a) Aggressive portfolio
   b) Conservative portfolio
   c) Action points

5) 'Formula plans are good because they aid the investor in overcoming his emotional involvement with the timing of the purchase and sale of stock.' Comment

6) Critically evaluate the three formula plans and suggest modification, if any, to make them useful for investors in Indian Stock market.

7) 'Formula plans aid the investor in selecting appropriate securities.' Comment

8) What are the ground rules to be followed by an investor who wants to adopt formula plans?

9) Critically examine the basic assumptions of formula plans and comment on their validity in the Indian Context.

10) Why does arise the need for portfolio revision? What are the constraints in portfolio revision?

13.7 FURTHER READINGS

Fischer, Donald E. and Ronald J. Jordon, 1987, *Security Analysis and Portfolio Management*, 4th ed., PHI, New Delhi

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Utter Pradesh
Rajarshi Tandon Open University

Security Analysis And Portfolio Management

Block

5

INSTITUTIONAL AND MANAGED PORTFOLIOS

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BLOCK 5 INSTITUTIONAL AND MANAGED PORTFOLIOS

This block comprises three Units. Unit 14 titled 'Performance Evaluation of managed Portfolio' discusses various concepts and methods of computing portfolio return and distinguishes between performance measurement and portfolio evaluation. This Unit also highlights the concepts of benchmark portfolio and performance attribution for comparison and evaluation of managed portfolio. The problems encountered in the process of performance evaluation of managed portfolio are also pin-pointed. Unit 15, Investment Companies' is focused on portfolio management in investment companies It explains the process of portfolio management in investment companies. This Unit also highlights and describes the type of investment companies operating in India and their portfolio management environment and practices. The discussion in this unit touches upon UTI, LIC and private sector investment companies. Mutual Funds of Commercial Banks is the main focus of Unit 16. This Unit highlights the purpose and concept of mutual funds, their organisational structure, historical evolution, types and investment objectives. It also explains the process of creating, managing and revising portfolio of securities by mutual funds in India

UNIT 14 PERFORMANCE EVALUATION OF MANAGED PORTFOLIO

Objectives

The objectives of this unit are to:

- discuss the various concepts and methods of computing portfolio return viz. Dollar-Weighted Return, Value-Weighted Return, Risk Adjusted Rate of Return;
- distinguish between performance measurement and performance evaluation and the primary components of performance, that is, stock selection and market timing;
- highlight the concept of benchmark portfolio for comparison and evaluation;
- explain why a portfolio earned a certain return over a particular time period, also known as performance attribution;
- pin-point the problems encountered in performance evaluation.

Structure

14.1 Introduction
14.2 Methods of Computing Portfolio Return
  14.2.1 Dollar-Weighted Rate of Return
  14.2.2 Time-Weighted Rate of Return
  14.2.3 Risk Adjusted Return
14.3 Components of Investment Performance
  14.3.1 Stock Selection
  14.3.2 Risk Taking
  14.3.3 Market Timing
14.4 Problems with Risk Adjusted Measures
14.5 Benchmark Portfolio - Concept and Construction
14.6 Summary
14.7 Self-assessment Questions/Exercises
14.8 Further Readings

14.1 INTRODUCTION

Quite frequently small investors feel insecure in managing their own investment in securities because they consider themselves inadequate to perform this delicate task successfully. Often, they feel that they lack education, background, time, foresight, resources and the temperament to carry out the proper handling of their portfolio. The logical step they then take is to turn the job over to a professional portfolio manager. Most often, the portfolio manager chosen takes the form of a mutual fund or investment company. The main reasons for selecting a mutual fund or investment company involves the management, diversification and liquidity aspects. Managers trained in the techniques of security analysis devote their full time meeting the Funds' investment objectives. This permits a constant monitoring of the securities comprising the portfolio. Furthermore, large amounts of money entrusted to the Fund enables it to be diversified in investments across industries and securities to an extent not possibly achieved by the average investor. These institutions are able to obtain lower brokerage commissions than an individual small investor. This diversification evolves as a result of stated objectives of the Fund. The investor, in search of a portfolio manager can shop for a Fund whose objectives are most in line with his/her own. Finally, open-end investment companies represent a liquid type of investment because their shares can be readily converted into cash.

In this and the remaining two Units we will discuss the methods and techniques which are useful to evaluate professional portfolio manager. While the remaining two units would specifically focus on mutual funds and investment companies, in this unit we

shall distinguish between performance measurement and performance evaluation, discuss various methods of computing portfolio returns and components of investment performance and pin point difficulties with risk-adjusted measures of portfolio performance. In this Unit, we shall also explain the concept and method of construction of benchmark portfolio for performance evaluation of a managed portfolio. Let us begin by distinguishing performance measurement and performance evaluation and explaning methods of computing portfolio return.

14.2 METHODS OF COMPUTING PORTFOLIO RETURN

Performance measurement is just an accounting function which attempts to reconcile the end of period with the beginning period values. Performance evaluation on the other hand, addresses the issues of whether:

the past performance was superior or inferior;

such performance was due to skill or luck;

future performance will be similar or not.

Portfolio performance is generally evaluated over a time interval of at least four years, with returns for a number of sub-periods within the interval –like monthly or quarterly, so that there is a fairly adequate number of observations for statistical evaluation. The calculation of portfolio return is fairly simple when there are no deposits or withdrawals of money from a portfolio during a time period. In that case, the market value of the portfolio in the beginning and at the end of the period are determined for computing the portfolio return.

Let us illustrate the three steps involved as follows:

Step 1 : Portfolio Value - Beginning

Shares	No. of Shares	Market Price	Portfolio Value Beginning
A	50	100	5,000
B	100	70	7,000
C	200	40	8,000
D	500	60	30,000
Total (V_0)			50,000

Step 2 : Portfolio Value - End

Shares	No. of Shares	Market Price	Portfolio Value - End
A	50	200	10,000
B	100	40	4,000
C	200	110	22,000
D	500	80	40,000
Total (V_1)			76,000

Step 3 : Portfolio Return $= \frac{V_1 - V_0}{V_0}$

$$= \frac{76,000 - 50,000}{50,000} = 52\%$$

Performance measurement becomes different when a client adds or withdraws money from the portfolio. The per cent change in the market value of the portfolio computed above may not be an accurate measurement of the portfolio's return in the case.

For example, if the beginning value of the portfolio is Rs. 50,000/- and the value at the end of October is Rs. 70,000/- and the client deposits Rs. 30,000/- in cash in early November, the value at the end of the year would be Rs. 1,00,000/-. The portfolio return in this case will be

$$\frac{1,00,000 - 50,000}{50,000} = 100\ \%$$

However, the entire return was not due to the actions of the investment manager. A more accurate measure would be :

$$\frac{(1,00,000 - 30,000) \leq 50,000}{50,000} = 40\ \%$$

In the event of a deposit or a withdrawal occurring just after the start of the period, the return on the portfolio should be calculated by adjusting the beginning market value of the portfolio. In the case of a deposit, the beginning value would be increased by the deposit amount and in the case of withdrawal, the beginning value would be decreased by the amount.

When deposits or withdrawals occur in the middle of the period either the dollar-weighted return (rupee-weighted return) or the time-weighted return should be used. The choice of method will depend on the performance evaluation objectives. If the performance of the Fund is being evaluated, dollar- weighted return would be appropriate as it provides the return from the perspective of the client. If the investment manager's decisions are being evaluated, the time-weighted return would be appropriate as it would exclude the effect of the client's cash flow decisions. Let us explain these methods now.

14.2.1 Dollar-Weighted Rate of Return

The internal rate of return that equates the initial contribution and the cash flows that occur during the period with the ending value of the fund is the dollar-weighted rate of return. Mathematically, this measure of return is the dollar-weighted average of sub-period returns with the dollar weights equal to the sum of the initial contribution and all the cash flows upto the time of the subperiod return.

For example, a portfolio has a market value of Rs. 100 lakh. In the middle of the quarter, the client deposits Rs. 5 lakh and at the end of the quarter the value of the portfolio is Rs. 103 lakh. The dollar-weighted return would be calculated by solving the following equation for r

$$100 = \frac{-5}{(1+r)} + \frac{103}{(1+r)^2}$$

$r = -.98\ \%$ which is a semi-quarterly rate of return.

This can be converted into a quarterly rate of return by adding 1 to it, squaring this value and then subtracting 1 from the square, resulting in a quarterly return of

$[1 + (-.0098)^2 - 1] = -1.95$ per cent

14.2.2 Time-Weighted Return

The time-weighted rate of return is the weighted average of the internal rates of return for the sub-periods between the cash flows and it is weighted by the length of the subperiods.

This method considers the market value of the portfolio just before each cash flow occurs.

The percentage change in the value would be 160% as compared with a change in value of 82%, if there had been no interim cash flow. The time-weighted return of 82% is however more appropriate return for the fund manager.

Cash inflows and outflows can also be adjusted by using the unit value method. When cash inflows occur, new units are issued by the manager to the client, and when cash outflows occur, units are retrieved from the client. Hence, the number of units change when cash flows occur, but the value per unit remains constant.

Let us now make a quick comparison of Dollar-Weighted and Time- Weighted Returns A portfolio of Rs. 50 lakh declines to Rs. 25 lakh in the middle of the quarter at which point, a client deposits Rs. 25 lakh with the portfolio management firm.

	period	
	1st half (six months)	2nd half (six months)
Value before cash flow	50, 000	70, 000
Cash flow	0	30, 000
Amount invested	50, 000	1, 00, 000
Ending value	70, 000	1. 30, 000
Change in value %	40%	85.7%
Change in value over full year %		160 %
Earnest return per period %		
Period 1	$\frac{70,000 - 50,000}{50,000}$	
	40 %	
Period 2	$\frac{1,30,000 - 1,00,000}{1,00,000}$	
	30 %	
Time Weighted Return over periods 1 and 2	1.40 × 1.30 = 1.82 – 1	
	= 82 %	

At the end of the quarter, the portfolio has a market value of Rs. 100 lakh. The semi-quarterly dollar-weighted return for this portfolio would be :

$$50 = \frac{-25}{(1+r)} + \frac{100}{(1+r)^2}$$

$$r = 18.6\%$$

Quarterly dollar-weighted return $= (1.186)^2 - 1 = 40.66$ %. However, its quarterly time-weighted return would be $(1-.5)(1+1)-1 = 0$ per cent. There is a lot of difference in the returns. Each rupee lost half its value in the first half and then the remaining half rupee doubled in value in the second half. Thus assuming that a rupee at the beginning was worth a rupee at the end of the quarter, a time- weighted return is a more accurate measure than the dollar-weighted return. A dollar-weighted return is strongly influenced by the size and the timing of the cash flows (that is deposits or withdrawals) over which the investment manager has no control.

If the return in the first, second, third and fourth quarters are given by r_1, r_2, r_3 and r_4, annual return can be calculated by adding 1 to each quarterly return, then multiplying the four figures and finally subtracting 1 from the resulting product. Thus,

Annual Return $= [(1+r_1)(1+r_2)(1+r_3)(1+r_4)-1]$

This method assumes the reinvestment of both the capital and the earnings at the end of each quarter.

The performance of a mutual fund can be evaluated by using the beginning and the end periods net asset values as follows:

$$R_p = \frac{(NAV_t - NAV_{t-1}) + D_1 + C_1}{NAV_{t-1}}$$

The one period rate of return for a mutual fund (R_p) is defined as the change in net asset value (NAV) plus its cash disbursements (D) and capital gains disbursements (C). Net asset values of the fund are adjusted for bonus and rights. Table 14.1 (please see next page) shows the rate of return earned by selected mutual funds in the U.S., for the three year period *1978-80, using the above formula. The return on Standard and Poor* 500 is also given in the Table 14.1 which is a representative index of 500 shares to *provide a benchmark for performance evaluation.* The funds are ranked in order of performance. The differential return earned could have been due to differential risk exposures of the funds. Hence the returns have to be adjusted for risk before making any comparison. Risk-adjusted return gives an idea of whether the return earned is commensurate with the risk incurred.

Activity 1

i) Between performance measurement and performance evaluation, which one is just an accounting function ?

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ii) Between Dollar-Weighted Return and Time-Weighted Return which one considers the market value of the portfolio just before each cash flow occurs ?

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iii) In order to evaluate the performance of a mutual fund besides the beginning and the end periods net asset values, which other financial variables are relevant ?

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14.2.3 Risk Adjusted Returns

The performance of a fund should be assessed in terms of return per unit of risk. The funds which provide the highest return per unit of risk would be considered the best performer. For well-diversified portfolios in all asset categories,the standard deviation is the relevant measure of risk. When evaluating individual stocks and not so well diversified portfolios, the relevant measure of risk is the systematic or market risk, which can be assessed using the beta co-efficient (β). Beta, as you would recall from Unit 12, signifies the relationship between covariance (stock, market) and variance of market.

Two well-known measures of risk adjusted return are:

Sharpe Ratio

(reward to variability ratio) $\frac{r_p - r_f}{\sigma_p}$

i.e.) realised return on the portfolio (r_p) in excess of risk-free rate (r_f) divided by the standard deviation of the portfolio (σ_p)

Table 14.1

Mutual Fund Rate Of Return (1978-1980)

Fund	Rate of Return
Technology Fund	22.9
Massachusetts Investor,Growth Stock	15.4
Putnam Investors Fund	14.8
Templeton Growth Fund	13.0
National Investors Corp.	12.9
Putnam Growth Fund	12.5
Pioneer	12.3
Dreyfus	11.6
Chemical	11.3
Fidelity Trend	9.7
Massachusetts Investors Trust	9.0
Fidelity Fund	7.8
S & P 500	7.8
Affiliated	7.7
Investment Company of America	7.4
Windsor Fund	6.9
Price Rowe Growth Fund	6.4
Investors Stock	4.5

Treynor Ratio

(reward volatility ratio) $\frac{r_p - r_f}{\beta_p}$

i.e. realised portfolio return (r_p) in excess of risk-free rate (rf) divided by the beta of the portfolio (β_p).

Both these measures provide a way of ranking the relative performance of various portfolios on a risk-adjusted basis. For investors whose portfolio is a predominant representation in a particular asset class, the total variability of return as measured by standard deviation is the relevant risk measure.

The calculation of Sharpe and Treynor ratios for two hypothetical Funds are given below:'

Fund	Return	Risk-free Rate	Excess Return	SD	Beta
1	20	10	10	8	0.80
2	30	10	20	15	1.10

Sharpe Ratio $\frac{20-10}{8} = 1.25$

$\frac{30-10}{15} = 1.33$

Treynor Ratio $\frac{20-10}{0.80} = 12.50$

$\frac{30-10}{1.10} = 18.18$

The ranking on both these measures will be identical when both the funds are well diversified. A poorly diversified fund will rank lower according to the Sharpe measure than the Treynor ratio. The less diversified fund will show greater risk when using standard deviation

Differential Return (Jensen Measure)

Jensen's measure is an absolute measure of performance, adjusted for risk. This measure assesses the portfolio manager's predictive ability. The objective is to calculate the return that should be expected for the fund given the risk level and comparing it with the actual return realised over the period.

The model used is ;

$$R_{jt} - R_{ft} = a_i + \beta_j (R_{mt} - R_{ft}) + e \rightarrow 1$$

The variables are expressed in terms of realised return and risk.

R_{jt} – Average return on portfolio for period t

R_{ft} – Risk-free rate of interest for period t

a_i – Intercept that measures the forecasting ability of the portfolio manager

β_j – A measure of systematic risk

R_{mt} – Average return on the market portfolio

e – Error term.

In both Sharpe and Treynor models, it is assumed that the intercept is at the origin. In the Jensen model, the intercept can be at any point, including the origin.

If the intercept a_i has a positive value, it indicates that the superior return has been earned due to superior management skills.

$a_i = 0$ indicates neutral performance.

This manager has done as well as an unmanaged randomly selected portfolio with a buy-and-hold strategy.

a_i = negative value indicates that managed portfolio did not do as well as an unmanaged portfolio of equal systematic risk.

We may illustrate Jensen's measure as follows:

Actual Returns and Risk

	R_{ft}	R_{jt}	R_{mt}	Beta
Fund A	5	12	15	0.5
Fund B	5	20	15	1.0
Fund C	5	14	15	1.10

From equation 1, return on the portifolio is :

$R_{jt} = R_{ft} + \beta_p \ (R_{mt} - R_{ft})$

$a = r_p - r_{jt}$

Fund A

$R_{jt} = 5 + 0.5\,(15 - 5) = 10$

$a = 12 - 10 = 2\%$ (Excess Positive Return)

Fund B

$= 5 + 1.0\,(15 - 5) = 15$

$a = 20 - 15 = 5\%$ (Excess Positive Return)

Fund C

$= 5 + 1.10\,(15 - 5) = 16$

$a = 14 - 16 = -2\%$ (Negative Return)

Jensen measure not only calculates the differential between actual and expected earnings, but also enables an analyst to determine whether the differential return could have occured by chance or whether it is significantly different from zero in a statistical sense. The (alpha value) value in equation 1 can be tested to see if it is significantly different from zero by using a 't statistic'.

When the (alpha value) value is high and the error in the regression is low, the statistic will be high.

A low (alpha value) value and high regression error results in low t statistic. A t statistic of 2 is significant in a statistical sense. It implies that the probability of the performance due to chance is very low. A t statistic of – 1 indicates that the performance occured due to chance.

The R^2 for the regression of the fund returns with the market returns indicates the degree of diversification of the Fund. Higher the R^2, the more the fund is correlated with the market index; and less the unsystematic risk, the better diversified is the fund.

Activity 2

	January 88-july 91			
	Return	Beta	SD	R^2
Mastershare	39.90	0.81	7.30	96 %
Canshare	32.70	0.91	9.30	78 %

Between Mastershare and Canshare, which one is more diversified? Which one is having greater unsystematic risk in the portfolio ?

14.3 COMPONENTS OF INVESTMENT PERFORMANCE

Portfolio Managers need a clear and relevant method of attributing returns to various activities that compriscs the investment management process viz. investment policy, market timing and stcck selection. Data from 90 Parge U.S. pension plans over the 1974-83 period indicated that investment policy dominates investment strategy (market timing and security selection) explaining on an average 93.6 per cent of the total plan return.

14.3.1 Stock Selection

Various methods have been developed to decompose total portfolio returns and attribute it to each component. Eugene Fama has provided a framework for performance attribution .This is illustrated in Figure 14.1.

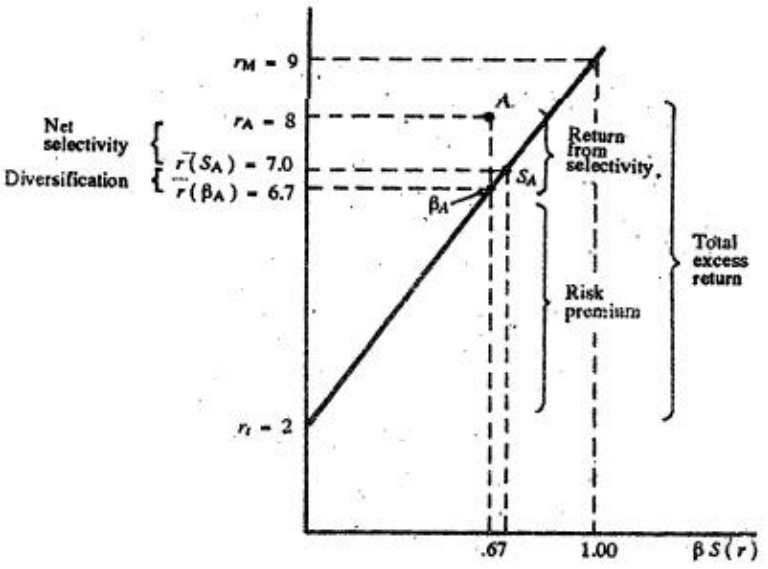


Figure : 14.1 Decomposition of Performance [*Source : Eugene ZF. Fame Components of Investment Performance" Journal of Finance (June 1972), pp.551–567.*]

The vertical axis refers to return, the horizontal axis shows risk in terms of beta. The diagonal line is the Security Market Line (SML). The Security Market Line links the risk-free rate of 2 percent and a market return of 9 per cent. It provides the benchmark for assessing whether the realised return is commensurate with the risk incurred. Fund A had a realised return of 8 percent and a market risk of 0.67. The Fund would have been expected to earn 6.7 percent at the market risk level of β_A. But it actually earned 8% (point A). Hence the excess return of 1.3 per cent ($r_A - r_{\beta A}$) is the incremental return to selectivety. Thus total excess return = selectivety + risk.

$$r_A - r_f = r_A - r(\beta_A) + r(\beta_A) - r_f$$

$$8\% - 2\% = (8\% - 6.7\%) + (6.7\% - 2\%)$$

$$6 = 1.3 + 4.7$$

4.7 per cent represents the premium for risk.

14.3.2 Risk Taking

To earn excess return, portfolio managers bear additional risk. By using the Capital Market Line (CML) we can determine the return commensurate with risk as measured by the standard deviation of return. The standard deviation of the Fund is assumed to be 15 per cent and the standard deviation of the market 21 per cent; risk free rate is 2 per cent. The normal return for Fund A, using total risk would be :

$$r_f + (r_m - r_f)\,\sigma_p/\sigma_m$$

$$\text{i.e. } 2\% + (9\% - 2\%)\,15\%/21\% = 7\%$$

The difference between this normal return of 7% and 6.7% that was expected when only considering market risk is 7 – 6.7 = 0.3 %.

In the figure 14.1 it is the distance from $r(\beta_A)$ to $r(SA)$.

Net selectivity is the overall selectivity less compensation for diversification risk.

$$\text{Net selectivity} = [r_A - r(\beta_A)] - [r(S_A) - r(B_A)]$$

$$= (8\% - 6.7\%) - (7\% - 6.7\%)$$

$$= 1.3\% - 0.3\% = 1\%$$

Any Funds overall performance can be thus decomposed into (i) due to selectivity and (ii) due to risk taking.

14.3.3 Market Timing

Portfolio Managers can also achieve superior performance by picking up high beta stocks during a market upswing and moving out of equities and into cash in declining markets. To study market timing ability, one could calculate the quarterly returns for a Fund and for the market index like Bombay Stock Exchange's National Index of a 5 year period and plot them on a scatter diagram. Then a characteristic line can be fitted.

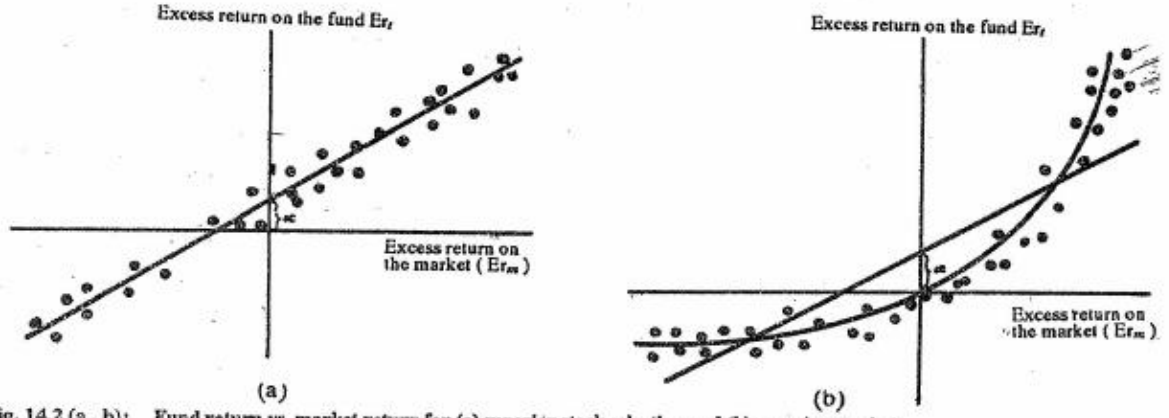


Fig. 14.2 (a , b): Fund return vs. market return for (a) superior stock selection and (b) superior market timing. [Source: J. L. Treynor and K. Mazuy, "Can Mutual Funds outguess the Market?" Harvard Business Review (July-August 1966), pp. 131-136.]

Figures 14.2 A and 14.2 B give the excess return of the fund on the Y axis and the excess return of the market index on the X axis. Both figures reveal positive ex-post alphas. The scatter diagram in Figure 14.2 A shows that all the point cluster close to the regression line indicating that the relationship between portfolio excess return and market excess return is linear. The average beta of the portfolio is fairly constant or the beta of the portfolio was roughly the same at all times. Since alpha is positive, it appears that the excess return is due to his stock selection abilities.

In figure 14.2 B , the points in the middle lie below the regression line and those at the ends lie above the regression line. This suggests that the portfolio consisted of high beta securities when market return was high and low beta securities when the market return was low.

To describe this relationship, we can fit a curve to the points plotted by adding a quadratic term to the simple linear relationship.

$r_p = a + b_{rm} + cr^2 m$, where

$r^2 m$ = return on the market index squared

rp = return on the Fund,

a, b, c = values to be estimated by regression analysis.

The figure indicates that the curve becomes steeper as one moves to the right of the diagram. The Fund movements are amplified on the upside and vice versa. This implies that the Fund Manager was anticipating market changes correctly and that the superior performance of the Fund can be attributed to skill in timing.

The performance of 37 mutual funds was studied by Jack L. Treynor and Kay Mazuy over the period 1953 through 1962. Only one of the funds had a fitted quadratic term that was significantly different from zero, indicating market timing skills. The fitted

relationships for other funds evidenced no curvilinearity, indicating that the funds did not demonstrate any skills in market timing. This entire period was one of rising market.

James Farrel covered market prices in both rising and falling markets (1957 - 1975) and came to the conclusion that Funds as a group do not make substantial shifts in asset positioning to take advantage of market timing.

14.4 PROBLEMS WITH RISK-ADJUSTED MEASURES

It is pertinent to note here three problems which the use of risk adjusted measures are fraught with.

- Use of Market Surrogate - All measures other than reward to variability ratio require the identification of a market portfolio. Whatever Surrogate is used for market portfolio (say a market index like the ET Index) it can be criticised as being inadequate. By making slight changes in the surrogate, performance ranking can vary.
- Choice of Risk-Free Rate - The choice of a risk-free rate has to be appropriate. If the risk-free rate is too low, then the benchmark portfolio based on it may give too high a return, making it difficult for the portfolio to show superior performance against the benchmark.
- Validity of CAPM - reward to volatility measure and differential return measure involve beta, using the Capital Asset Pricing Model. But CAPM may not be the correct asset pricing model in all circumstances. Other asset pricing models are being developed where the risk would incorporate many other factors apart from market related risk.

14.5 BENCHMARK PORTFOLIOS FOR PERFORMANCE EVALUATION

Benchmark portfolio is a tool for the meaningful evaluation of the performance of a portfolio manager. The more the benchmark reflects the manager's stated style, the more accurately the performance due to a manager's skill can be assessed.

Specialised benchmarks are called 'normal portfolios'. They are especially constructed by mutual consent of the client and the manager to reflect the client's needs and the manager's style. Some management firms develop a normal portfolio which they can use for all clients, and some develop it separately for each type of client.

When benchmarks are designed in advance, the portfolio manager knows what the specific objectives are and tailors the portfolio accordingly. The benchmark should reflect the appropriate investment universe in which the manager works.

Without a yardstick for proper comparison, it becomes difficult to distinguish between active management skills and random results.

Rather than using a market index like the Bombay Stock Exchange's Sensitive Index o the Economic Times Index, a benchmark portfolio would use a portfolio with predominantly value-oriented shares for a value manager, growth-oriented shares for a growth manager and small capitalisation shares for a small-cap (size) manager. It is quite possible for an investment manager to perform better than the benchmark, though the benchmark may itself underperform in relation to a market index.

The process of constructing a benchmark portfolio involves:

a) Defining the universe of stock to be used for the benchmark portfolio, and

b) Defining the weightage of the stocks in the universe.

An investment manager's month-end portfolios can be examined for the last five years to get an idea of the average exposure of the manager to various factors (industry, capitalisation, P/E etc.). For example, if an investment manager tends to invest in securities in high capitalisation, low PE, low growth stocks, higher weights can be assigned to these in the benchmark. The more stable the exposure and the investment style, the easier it should be to build benchmarks with appropriate weights.

Performance attribution analysis,as mentioned earlier, is a means of evaluating an investment manager's performance, the return and the sources of return relative to a benchmark portfolio. This analysis looks at an investment manager's total 'excess' return, or 'active management return' (AMR) relative to its benchmark over the given period. It also looks at the components of AMR - stock selection, industry selection and market timing.

The benchmark portfolio return is a 'buy-and-hold' return on a pre-determined portfolio tailored to a manager's style. The cumulative excess return or cumulative AMR is the difference between actual portfolio return and the benchmark return over the evaluation period.

14.6 SUMMARY

In this Unit we have discussed various concepts and methods of computing portfolio return viz. Dollar-Weighted Return, Value-Weighted Return and Risk-adjusted Rate of Return. We have also distinguished between performance measurement and performance evaluation and highlighted the primary components of performance namely stock selection and market timing and also the concept and method of construction of a benchmark portfolio for comparison and evaluation with a managed portfolio. The problems faced in using risk-adjusted measures for portfolio evaluation have also been briefly pointed out in this Unit. In the following two Units, we shall learn about portfolio management practices in investment companies and mutual funds in India.

14.7 SELF-ASSESSMENT QUESTIONS/ EXERCISES

1 Distinguish between performance measurement and performance evaluation of an investment portfolio.

2 Distinguish between Dollar-Weighted and Time-Weighted Returns.

3 Describe the Sharpe, Treynor and the Jensen measures of portfolio returns.

4 How are the returns on managed portfolio attributed to stock selection and market timing ? Discuss and illustrate.

5 What are benchmark portfolios ? How are they used to evaluate the performance of a portfolio manager ? Discuss with suitable examples.

14.8 FURTHER READINGS

G P Brinson, J J Diermier and G G Schlarbaum *"A Composite Portfolio Benchmark for Pension Plans"* - Financial Analyst Journal, March/April 1986.

Eugene Fama, *"Components of Investment Performance"*, Journal of Finance, June 1972.

Michael Murphy, *"Why No One Can Tell Who's Winning"*, Financial Analysts Journal, May - June 1980.

Jack L Treynor, *"How to Rate Management of Investment Funds"*, Harvard Business Review, January - February 1965.

William F Sharpe *"Mutual Fund Performance"*, Journal of Business, January 1966.

Ans. to Activity 2 : Mastershare; Canshare.

UNIT 15 INVESTMENT COMPANIES

Objectives

The objectives of this unit are to:

- highlight different types of investment companies
- discuss the portfolio management process followed by investment companies
- pinpoint the problems faced by portfolio managers of investment companies
- describe the functioning of investment companies in India.

Structure

15.1 Introduction
15.2 Investment Companies
  15.2.1 Categorisation Based on Capitalisation
  15.2.2 Categorisation Based on Investment Objectives
  15.2.3 *Categorisation Based on Types of Assets Held*
15.3 Portfolio Management Process
15.4 Problems of Portfolio Management
  15.4.1 Problems Associated with the Process
  15.4.2 Problems Associated with the Nature of the Financial Markets
15.5 Investment Companies in India
  15.5.1 Unit Trust of India (UTI)
  15.5.2 Mutual Funds of Commercial Banks (MFs)
  15.5.3 Life Insurance Corporation of India (LIC)
15.6 Regulations/Guidelines Governing Investment Policies of Investment Companies in India
  15.6.1 Statutory Regulations Governing UTI Investments
  15.6.2 Statutory Regulations Governing LIC Investments
15.7 Investment Options for Investment Companies in India
15.8 Investment Patterns of Investment Companies in India
  15.8.1 UTI's Investment Pattern.
  15.8.2 LIC's Investment Pattern.
15.9 Private Sector Investment Companies
15.10 Problems Faced by Indian Investment Companies
  15.10.1 Lack of Proper Databases
  15.10.2 Problems Due to Excessive Dependence on Corporate Debentures
  15.10.3 Volatility of the Market
15.11 Summary
15.12 Key Words
15.13 Self-assessment Questions/Exercises
15.14 Further Readings

15.1 INTRODUCTION

Nowhere does the old adage "Do not put all your eggs into one basket" hold truer than in the case of investments in securities like shares, debentures, etc. An investor who puts all his investible resources into the shares of a single company runs the risk of losing all if his chosen company fails to perform satisfactorily. Even if he spreads his resources across various companies, albeit within the same industry, he runs the risk of losing if his chosen industry fails to perform satisfactorily. This means that in order to protect himself against the risk of incurring substantial losses an investor has to spread his resources across various industries, business houses, geographical locations, etc. However, due to limitations of time, money, information and expertise, it may be difficult for an individual investor to invest in a basket of securities spread over various industries, business houses, locations, etc. Individual investors, therefore, may prefer to entrust the management of their investible resources to professionals or groups of professionals who have the requisite resources in terms of time, information and expertise.

In this Unit we shall see how investment companies (comprising of professionals) manage the investible resources of their clients (individual investors) by selecting portfolios(baskets of securities) which are well diversified (spread over large number of industries, business houses, locations, etc.) and which meet the specific objectives of the class of investors comprising their clients.

15.2 INVESTMENT COMPANIES

Investment companies are firms which invite individual investors to subscribe to their capital, combine the capital thus collected into a common pool of investible resources and then seek to accomplish the investment objectives of the investors by investing these resources in an appropriate portfolio of securities.

Investment companies may have a number of different schemes (or "funds" as they are sometimes called; we shall use the terms interchangeably) catering to the specific investment objectives of different classes of investors. These investment schemes, offered by investment companies, can be categorised based either on the nature of their capitalisation or based on their stated investment objectives or based on the types of assets held by them.

15.2.1 Categorisation Based on Capitalisation

Based on the nature of capitalisation there can be two types of funds - the closed-end fund and the open-end fund.

If the period and /or target amount of the fund is definite, the fund is termed a closed-end fund. In other words, closed-end funds have definite lives and also, after the initial offer of equity they do not make subsequent public offers for subscription to their equity capital. Closed-end funds raise specific amounts of money, invest them in securities, operate for a specified period of time and then wind up their operations at the end of this period. Unlike open-end funds which stand ready to buy back (or "redeem") their own shares, closed-end funds do not provide investors this facility. Investors in closed-end funds who want to liquidate their holdings have to sell their shares to other investors, like in the case of any other share, through a stock exchange. But in certain cases, the shares of closed-end funds are not even traded on stock exchanges.

On the other hand, in the case of open-end funds the period and target amount of the fund is indefinite. Open-end funds are called "open-end" because the amount of their equity is not fixed. Typically, each day, open-end funds compute the net asset value per share (the market value of all assets, net of liabilities, divided by the number of outstanding shares) and then offer to either sell new shares or redeem old ones at a price equal to or close to the computed net asset value. Therefore,the total amount of outstanding shares of an open-end fund keeps changing daily. The shares of open-end funds are not traded on stock exchanges for this reason.

15.2.2 Categorisation Basesd on Investment Objectives

Individual investors have widely varying investment objectives. While a young investor may be looking for rapid appreciation in the worth of his investment, an older investor may be looking for a stable income from his investment. There may be still another class of investors who are primarily concerned with reducing their tax burden.

Investment funds try and cater to the investment needs of any one particular class of investors. Investment funds are normally expected to state and adhere to specific investment objectives. Based on these objectives, they can be broadly classified into the following categories:

a) **Growth funds** : such funds seek to provide high capital appreciation at the cost of assuming some risk. ("Risk" here being defined as the uncertainty or variation associated with expected returns)

b) **Income funds** : such funds seek to provide investors with a moderate-to-high income. High yielding but risky securities are avoided.

c) **Balanced funds** : These are conservative funds which divide their holding between fixed income securities and low risk equity shares. In other words, they

try to provide both capital appreciation (at least to a moderate degree) and a steady income, at the same time ensuring that a very low degree of risk is assumed.

15.2.3 Categorisation Based on Types of Assets Held

Investment funds can also be categorised based on the types of assets held by them because there are certain specialised funds which invest in only particular types of assets. Examples are money market funds which invest only in money market instruments; tax-exempt funds which invest only in securities which are tax-exempt; option funds which invest only in options; country specific funds which invest only in the securities of some particular country and so on.

15.3 PORTFOLIO MANAGEMENT PROCESS

Portfolio Management in investment companies is a four stage process comprising the following stages:

Stage 1

Identifying the objectives of, and level of risk acceptable to, the target group of investors and setting goals and objectives for the scheme so as to meet the objectives of this target group of investors.

Stage 2

Evaluating individual securities with respect to their risk return characteristics.

Stage 3

Identifying the set of efficient portfolios and selecting optimal (with respect to the expectations of the target group of investors) portfolio out of this set of efficient portfolios.

Stage 4

Reviewing the portfolio on a continuous basis and re-forming it as and when required.

We shall now elaborate on each of these stages:

Stage 1 : Investor expectations vary from individual to individual. For example while one class of investors may be willing to accept high degree of risks in return for high expected returns, there may be another class of investors who are willing to settle for low-to-moderate expected returns but with a lesser degree of risk.

It is important, therefore, for the investment company to formulate investment objectives for its investment funds which are in tune with the expectations and characteristics of the homogeneous class of investors at whom the scheme is targetted.

Stage 2 : Before forming a portfolio of securities, the fund has to evaluate all available securities. The evaluation of individual securities would focus on their risk-return characteristics.

Stage 3 : Portfolios are formed using all possible combinations of the securities evaluated in Stage 2. This is called the set of feasible portfolios. Out of this set of feasible portfolios, a subset of efficient portfolios is identified. An efficient portfolio is one which has less risk than any other with comparable expected return and /or more expected return than any other with comparable risk. The set of efficient portfolios, therefore, gives a range of portfolios offering the maximum possible returns at given levels of risk or alternatively the minimum possible risk at given levels of return. Superimposing the investors' preferred risk-return characteristics on this set of efficient portfolios, the investment company can choose that portfolio which is optimal from the viewpoint of the investors.

Stage 4 : In a real world situation the risk-return characteristics of individual securities are likely to change, new securities are likely to be introduced in the market and old

ones are likely to disappear. Therefore, an investment company has to constantly review the performance of its portfolio and revise it to meet changing conditions.

In the next section we shall deal with certain problems faced by investment companies while translating the above conceptual framework into a workable portfolio management plan.

Activity 1

a) Does portfolio management process differ for an investment company and an individual investor? Why?

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b) Does an investor derive the same benefits from investing in a company with a diversified range of products as he does from investing in a diversified portfolio of securities spread over various product categories? Why, or why not?

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15.4 PROBLEMS OF PORTFOLIO MANAGEMENT

In the earlier section we have seen various stages of the portfolio management process. Though conceptually sound, it is difficult to translate it into practice, in toto.

15.4.1 Problems Associated with the Process

We said that in the first stage of the portfolio management process the investment company has to determine the level of risk acceptable to the target group of investors (low, moderate or high),identify the objectives of the target group of investors (tax saving, steady income, capital appreciation, etc.) and then tailor the objectives of the scheme accordingly. In practice, however, it is very difficult to find a sufficiently large number of investors with totally homogenus risk-return characteristics.

This makes it impossible for the investment company to perfectly match the objectives of its investment scheme to the expectation and risk-taking characteristics of each of the individual investors investing in the scheme.

Next we said that in the second stage of the portfolio management process,investment companies evaluate each individual security available in the market with respect to risk-return characteristics. In practice, it is impossible for an investment company to evaluate each and every security due to constraints on resources and time. Therefore, in practice, investment companies evaluate only those securities which, prima facie, have a good chance of being included in the final portfolio.

In theory,the optimal portfolio identified in stage 3 of the portfolio management process is represented by the point where the efficient frontier (the curve representing the set of efficient portfolios) is tangential to the indifference curve representing the risk-return trade off of the investors. In practice, however, this point may not exist because (a) the efficient frontier is not continuous due to the fact that (as explained in the earlier paragraph) not all possible portfolio combinations are evaluated and/or (b) the risk-return trade-off curves for the investor group as a whole cannot be drawn due to the non-homogenus nature of their expectations and risk-taking characteristics.

15.4.2 Problems Associated with the Nature of the Financial Markets

Apart from the problem of translating the conceptual portfolio management framework into reality, the funds manager of an investment company also has to deal with the problems associated with the nature of the markets he is dealing in and the characteristics of the securities he is investing in. In the following paragraphs we shall discuss some of these problems. Though these problems exist in most environments these are most acute in the case of less developed/ developing countries.

Availability of suitable investment avenues

The first and foremost problem faced by fund managers of investment companies is that of finding suitable financial instruments in which to invest so as to meet the varied investment objectives of different classes of investors. For example, it may be difficult to identify instruments with the preferred maturity/preferred degree of liquidity/preferred risk- return characteristics/preferred asset class.

Liquidity

In order to be able to revise his portfolio easily, a fund manager should be able to both invest and disinvest in the securities of his choice at the time that he chooses to invest/disinvest. This is possible only if there are large number of traders in the market (who are willing to both buy and sell) covering the entire range of financial instruments available in the market. In other words, liquidity can be ensured only if there are sufficient number of "market-makers" for each type/class of financial instrument available in the market.

Flexibility

While allocating the investible resources at his command among various options available to him, the fund manager may be constrained by the guidelines/stipulations of various regulatory bodies overseeing the functioning of the markets. For example, there may be barriers to entry into certain segments of the market; there may be limits on the level of holdings of certain classes of securities and so on. Therefore, in practice, the fund manager may find it difficult to invest in the theoretically optimum portfolio. At best, he may come very close to it.

Market Inefficiencies

Professional fund managers base their investment decisions on analysis of reliable information. However, the quality of their evaluation of securities may be hampered by :lack of proper and timely information, formation of cartels by a few big players, mis-pricing of securities due to actions of ill-informed/naive investors and so on.

In the following sections,we shall specifically see how the above problems manifest themselves in the Indian context.

15.5 INVESTMENT COMPANIES IN INDIA

By our definition of investment companies (firms which pool the resources of investors and invest them in various financial assets),we can identify quite a large number of investment companies in India. We shall, however, confine our discussion to the activities of the Unit Trust of India (UTI hereafter), Life Insurance Corporation of India (LIC hereafter) and private sector investment companies. Mutual funds of commercial banks will be only touched as they are discussed in detail in Unit 16.

15.5.1 Unit Trust of India (UTI)

The UTI was established in 1964 with the objective of making available the benefits of industrial growth to small savers. The UTI collects investible resources from investors through the sale of securities called "Units". These funds are then invested by UTI in various financial assets. Holders of "Units" receive dividends from UTI. Since its inception, UTI has offered various schemes to cater to the needs of different classes of investors. Most of these schemes are income-oriented though, of late, UTI also offers

growth oriented schemes, It offers both open-ended and closed-ended schemes. Investors can subscribe to the units of open-ended schemes of UTI throughout the year at prices stipulated by UTI. UTI also stands ready to repurchase these units throughout the year at stipulated prices. Subscriptions to the close-ended schemes of UT, however, are open only during a stipulated period of time and investors in these schemes have to lock their funds in the scheme for the period of the scheme. Some closed-ended funds of UTI are traded on the stock markets thus providing liquidity to the investors.

15.5.2 Mutual Funds of Commercial Banks (MFs)

Since 1987, the nationalised commercial banks like Canara Bank, State Bank of India, Indian Bank etc. have been floating mutual fund schemes. Over the years, the merchant banking subsidiaries of these banks have been offering numerous schemes catering to the investment needs of a wide variety of investors. There are both close-ended and open-ended schemes, schemes with re-purchase options and without, schemes which are income-oriented, growth- oriented or tax-saving oriented, schemes with minimum guaranteed returns and without, schemes targetted at small individual investors, large individual investors and corporate investors. In fact,the collective investible resources of these mutual funds put together now rivals that of UTI which till now has been the premier investment institution in India. We shall discuss more about MFs in Unit 16.

15.5.3 Life Insurance Corporation of India (LIC)

The premium collected by the LIC from its insurance policy holders is administered by LIC and invested in the capital markets. LIC has been one of the largest players in the stock market of India. Of late, it has started floating specific investment schemes targetted at different investor groups which provide both an insurance cover and a share in the returns from the investments made by LIC.

15.6 REGULATIONS/GUIDELINES GOVERNING INVESTMENT POLICIES OF INVESTMENT COMPANIES IN INDIA.

In order to protect the interests of small investors, ensure prudent investment practices by investment companies, channelise investments into desired sectors, avoid concentration of power and ensure orderly growth of the capital markets, the government of India and associated regulatory bodies have laid down certain regulations and guidelines to be followed by investment companies while framing their investment policies. In the following paragraphs, we shall see some of those regulations/guidelines.

15.6.1 Statutory Regulations Governing UTI Investments

According to the statutory regulations governing investments by UTI, UTI's investments in a single company should not exceed 5% of the total investible funds of UTI or 15% of the value of securities issued and outstanding of the company, whichever is lower. Again, investments in initial issues of new companies should not be more than 15% of UTI's investible funds.

15.6.2 Statutory Regulations Governing LIC Investments

The investment policy of LIC is subject to regulation under the provisions contained in the Life Insurance Corporation Act, 1956. It stipulates that LIC's funds shall be invested as under:

i) In Central Government marketable securities:

   Not less than 25 per cent

ii) In Central Government, State Government securities including securities in (i) above:

Not less than 50 per cent

iii) In socially- oriented sectors, including the public sector, co- operatives plus (ii) above:

Not less than 75 per cent

Of the balance 25 per cent, about eight per cent would be set aside for loans against policies, about two per cent may be invested in immovable properties and about 10 per cent may be invested in the private corporate sector.

15.7 INVESTMENT OPTIONS FOR INVESTMENT COMPANIES IN INDIA

Given the range of financial instruments available in the Indian financial markets and given the regulations and guidelines governing the investment policies of investment companies in India, the possible investment options open to investment companies in India are restricted to the following: shares of public limited companies, company debentures, public sector bonds, government bonds, treasury bills, money market operations and bills discounting.

Returns from these investments are of two types: (1) Interest/Dividend Income: This is the money received by the investment company while it holds on to the security (2) Disinvestment Income : This is the proceeds from the sale of those securities which the investment company decides to disinvest from time to time. Interest/dividend income is a known sum in the case of fixed-income securities like debentures and bonds, while it is variable and uncertain in the case of shares. The quantum of disinvestment income is always uncertain, especially in the case of shares (the prices of which are very volatile)

Of the investment options available to Indian investment companies, interest/dividend returns are least in the case of investments in treasury bills and government bonds. Public sector bonds and debentures offer a higher return. Dividends from equity shares vary widely from company to company. Disinvestment returns (or "capital appreciation") is normally highest in the case of equity shares. As far as variability/uncertainty of returns (or "riskiness") is concerned, investments in treasury bills and government bonds are considered the safest and the investments in equity shares are considered the least safe.

15.8 INVESTMENT PATTERNS OF INVESTMENT COMPANIES IN INDIA

15.8.1 UTI's Investment Pattern

Because of the low yields , only a very small portion of UTI's funds are invested in government securities. A substantial portion (70-75%) of its investible funds are invested in the corporate sector in the form of equity and debentures. Of its investments in the corporate sector, a fairly large portion (about 60%) is accounted for by investments in debentures. Apart from its investments in governments securities, equity shares and debentures, UTI also invests in preference shares and lends out funds in the form of term loans. The reasons for the marked preference of UTI for corporate debentures are: (i) It has launched many schemes with an assurance of a fixed percentage of dividends and therefore a fixed-income security like a debenture is the most obvious choice. Besides, among fixed income securities available in the Indian markets, corporate debentures offer the highest yield since their coupon rates are high and since they are normally available in the market at a discount from their face value. (2) In the recent years the corporate sector has shown a marked preference for raising funds through debentures rather than through equity shares, thereby increasing the availability of debentures in the primary market.

15.8.2 LIC's Investment Pattern

Bulk of LIC's funds are invested in Central and State Government securities. They constitute about 50% of the total investments of LIC. Investment in corporate securities like equity and debentures accounts for only about 10% of the total investments of LIC. The rest of the investments are made up by term loans to companies, loans for welfare schemes, etc.

Activity 2

a) What do you think is the rationale behind the guidelines putting a limit on UTI's investment in the debenture stock/share capital of a particular company?

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b) What do you think are the reasons for the stipulation regarding minimum investment by LIC in Central Government securities?

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c) Will the fixed income securities-to-equity shares ratio be higher or will it be lower for a balanced mutual fund as compared to a growth-oriented fund? Why?

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15.9 PRIVATE SECTOR INVESTMENT COMPANIES

Till now we have been focussing our discussion on the portfolio management practices of public sector investment institutions in India. However certain commercial banks and private sector investment companies also offer portfolio management services to their client-investors.

The one major difference between the portfolio management schemes of private sector investment companies and the investment schemes of public sector mutual funds/investment institutions is that public sector mutual funds/investment institutions collect money from client-investors, pool these resources, invest them in their (mutual fund's/investment institution's) name, receive the returns from investment and then distribute them among the client-investors. Private sector investment companies on the other hand manage the investible funds of each individual client separately. The investments are made not in the name of the investment company but in the client's name. The returns from the investments are passed on to the client. For managing the funds of the client, the private sector investment company collects a management fee from the client. This fee is normally a percentage of the funds managed.

From the point of view of the fund manager, the advantage of the schemes operated by private sector investment companies is that he (the fund manager) can tailor the investments in securities to meet the investment objectives of individual clients. The disadvantage is that the fund manager does not enjoy the economies of scale (which are present while managing the pooled resources of the investors in mutual funds); a greater

amount of time and energy is spent by him in planning the investment pattern of each client separately and then implementing them.

From the point of view of the investor, portfolio management schemes of private sector investment companies offer them the advantage of personalised service and an attempt to try and meet each individual client's investment objectives separately. The disadvantage is that normally the private sector investment companies are prepared to handle the funds of a client only if the amount to be invested is greater than a minimum prescribed amount. This minimum amount to be invested is in most cases beyond the means of a small investor. Therefore, small investors may not have the access to these schemes. The advent of private mutual funds in India, which is in the offring, is bound to change the scenario.

15.10 PROBLEMS FACED BY INDIAN INVESTMENT COMPANIES

Given the stated objectives of most investment companies in India, the nature of Indian financial markets and the regulations/guidelines governing the operations of investment companies in India, they (the investment companies) face some problems in managing their investible funds. In the following we shall briefly discuss some of these problems.

15.10.1 Lack of Proper Database

As we have seen in the section on basic concepts of portfolio management, measures of risk and return of a portfolio can give fairly good guidelines for forming portfolios. Unfortunately for investment companies in India, reliable and latest data on returns from investments in various securities is not very easily available. Similarly, data on risk measures (like the standard deviation of returns from specific securities, beta values of specific securities or covariance of returns from various securities) which are compiled and published regularly by agencies abroad for their own markets, are non-existent in India. Such data, if available, would have helped fund managers of investment companies in India to take better informed decisions. For example, to build a low-risk portfolio a fund manager, if the data were available to him, could have gone around choosing securities with a low or negative correlation between their returns. Similarly, reliable data on individual securities' returns would help a fund manager choose securities which maximise portfolio return.

15.10.2 Problems Caused Due to Excessive Dependence On Corporate Debentures

As we have seen in earlier sections, a large number of schemes floated by investment companies in India are income-oriented and they invariably guarantee a minimum rate of return. We have also seen that as a result of this, the investment portfolios of most investment companies are heavily weighted towards corporate debentures which are typically available at a discount (i.e. at a price lower than the face value) and which therefore yield high effective rates of return. For example, if a debenture of Rs 100 with a coupon rate (i.e. the rate of interest payable by the issuing company to the holder of the debenture) of 14% per annum is available in the market for Rs. 90 then the effective rate of return to the buyer of the debenture is $\frac{14}{90} \times 100 = 14.44\ \%$

There are, however, certain problems associated with investment in corporate debentures which we shall discuss as follows:

Default Risk : Investing in corporate debentures exposes the investment company to the risk that, issuer (the company which has issued the debentures) may be untimely in interest and principal repayments and/or may default in these payments. This may make it difficult for the investment company to achieve its stated objectives.

Maturity-Mismatch : Most of the schemes floated by Indian investment companies are close-ended ones. This means that at end of a specified period of time, they would have to encash the securities they hold and distribute the proceeds (partly or wholly) among the investors. In order, therefore, to ensure a neat match between the life of the schemes

and the life of the debentures, the investment company would like to look around for debentures which mature around the date of maturity of the fund. However, given the size of the Indian debenture market and given the fact that the secondary market (the market where existing securities are traded) in India for debentures is not very active, this becomes very difficult. The bulk of the debentures invested in by investment companies, therefore, are maturity mis- matched. In other words, the investment companies would have to sell them off at the end of the period of existence of their schemes. Now the problem is that, as mentioned earlier, the secondary market prices for debentures are invariably far below their face values. Therefore, funds which have invested in these debentures may stand to lose when they off-load these debentures at the end of the life of their schemes.

Uncertainty Regarding Future Interest Rates: It is very difficult to accurately forecast future movements of interest rates. At the same time, the market prices of fixed income securities like debentures are to a large extent dependent on the level of interest rates. For example, assume that you had bought a debentures two years ago with a face value of Rs. 100 and a coupon rate of 14% p.a. what would happen today if the coupon rates on new debentures is hiked upto say 15% ? Naturally since you are getting higher interest payments on the new debentures the demand for the old debentures would drop. When the demand for old debentures drop their prices fall. On the other hand, what would happen if the interest rates on debentures and like instruments fall? When you bought your original debentures let us assume you bought it under the assumption that you would be able to reinvest the funds (received as interest payment from your debentures) at a rate equal to 14%. Now if the interest rates fall, the rate of return on the reinvestment of your interest income will be less than what you had originally expected. To summarise, a fund manager who has invested heavily in debentures faces the following problems (i) if the interest rates rise the market value of his portfolio falls but his rate of return on reinvestment of interest income is higher than expected (ii) if the interest rates fall the market value of his portfolio rises, but his rate of return on reinvestment of interest income is lower than expected. Therefore, a fund manager faces the difficulty of predicting the movement of interest rates and their effect on the performance of his portfolio.

15.10.3 Volatility of the Market

We have seen how funds which are income-oriented are confronted with problems due to their predominantly debenture loaded portfolios. In the case of growth oriented funds, the fund manager is likely to invest a large portion of his funds in equity shares to increase the posibility of large increases in the market value (i.e. high capital appreciation). The Indian capital market however is dominated by the equity shares of few large companies. Therefore, equity prices tend to be highly volatile. This makes the task of the fund manager very difficult as he is exposed to the risk of very large fluctuations in the market value of his portfolio.

Activity 3

a) Even if a firm does not actually default in interest/principal payments, can the possibility of default itself adversely affect its debenture investors ? How?

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b) Can you think of some possible ways in which issuers of debentures can protect their investors against the risk arising due to fluctuating interest rates ?

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15.11 SUMMARY

An investor in securities (transferable financial instruments) can reduce his investment risks by spreading his resources across a wide variety of securities. However, due to lack of adequate resources like time, money, information and expertise, an investor may entrust the task of managing his investments to an investment company.

Investment companies are of various types and can be classified based on the nature of their capitalisation, investment objectives and types of assets held.

While the return earned from a portfolio is a function of the returns from individual securities comprising the portfolio, the risk of a portfolio is a function of the risk of individual securities comprising the portfolio as well as the degree of correlation between the returns of these securities.

The portfolio management process is a four stage process comprising the following stages: setting of portfolio objectives; evaluation of individual securities; identification of an efficient set of portfolios and choosing an optimal portfolio out of this; reviewing of folio and re-forming it. However while translating this conceptual portfolio management framework into practice, portfolio managers face numerous problems.

In India, the functioning of investment companies like the Unit Trust of India,and the Life Insurance Corporation of India are governed by various statutory regulations and other guidelines. Investment companies in India can invest in shares, debentures, bonds, government securities and in money market operations. However,due to the income-oriented nature of most funds in India and due to the high effective rates of return earned on them, corporate debentures are the most popular avenue of investment for investment companies in India. Due to this excessive dependence on corporate debentures investment companies in India are exposed to risks of default, maturity-mismatch and movements in interest rates. Lack of proper databases and volatile nature of the markets also make the task of the portfolio managers in India more difficult.

15.12 KEY WORDS

Balanced Funds : Investment funds which aim at providing investors with both a steady income and a moderate capital appreciaition.

Closed-end Funds : Investment funds for which the period and/or target amount are fixed.

Default Risk : Uncertainty in returns arising out of the possibility that the issuer of a security may default in principal/interest payments.

Diversification : Process of distributing investible funds across a wide range of securities in order to reduce risk.

Efficient Portfolios : Porfolio which have less risk than any other with comparable expected return and/or more expected return than any other with comparable risk.

Growth Funds : Investment funds whose primary aim is to provide investors with substantial gains through capital appreciation.

Income Funds : Investment funds whose primary aim is to provide investors with a steady income.

Investment Companies : Firms which invite investors to subscribe to their capital, pool these resources and then invest them in securities and distribute returns generated by them.

Open-End Funds : Investment funds for which the period and target amount are not fixed.

Optimal Protfolio : Efficient portfolio which is optimal vis a vis an investors's risk-return characteristic.

Portfolio : A basket (or a collection) of securities.

Rate of Return : Return in the form of dividends/interest and capital appreciation which an investors earns from investing in a security.

Risk : Variability (or degree of uncertainty) associated with the exdpected return from a seciruty.

15.13 SELF-ASSESSMENT QUESTIONS / EXERCISES

1) Why is there a need for investment companies? What are the functions of an investment company?

2) How can investment companies be classified?

3) Why cannot the shares of open-end funds be traded on stock- exchanges, like any other share?

4) Show, through an example , that the rate of return from a portfolio can also be measured as:

$$R_t = (P_{t+1} - P_t + I_t)/P_t$$

where

P_{t+1} = aggregate market value of all the securities of the portfolio put together, at the end of the period t (or alternatively, at the beginning of the period t + 1)

P_t = aggregate market value of all the securities of the portfolio put together, at the beginning of the period t

I_t = aggregate income received in the form of dividends/interest from all the securities held in the portfolio during period t

5) Describe briefly the four-stage portfolio management process. In practice, which stage do you think would be the most critical and why?

6) In what way will access to advanced technology, like use of computers, help the portfolio manager?

15.14 FURTHER READINGS

Dobbins, R & Witt, S.F. ,1983, *Portfolio Theory and Investment Management*, Oxford: Martin Robertson.

Francis, J.C. ,1988, *Management of Investments* : McGraw Hill, N.Y.

Haugen, R.A. ,1986, *Modern Investment Theory.* : Prentice- Hall, N.J.

Sharpe, W.F. ,1986, *Investments.* : Prentice-Hall N.J.

UNIT 16 MUTUAL FUNDS

Objectives

The objectives of this unit are to:

- highlight the purpose and the concept of a Mutual Fund
- pinpoint the organisational structure and the jobs involved in floating a Mutual Fund
- describe the historical evolution of Mutual Funds
- point out the basic investment objectives of Mutual Funds
- explain the process of creating, managing and revising portfolios of securities in terms of laid down objectives of Mutual Funds

Structure:

16.1 Concept of Mutual Fund (MF)
16.2 Advantages of Investing in Mutual Funds
16.3 Types of Mutual Funds
16.4 History of Mutual Funds
  16.4.1 Indian Scenario
  16.4.2 Types of Mutual Fund Schemes in India
16.5 Organisation of Mutual Funds
16.6 Creation of a Portfolio.
  16.6.1 Regulatory Environment Relating to Creation of Portfolio of Various Securites
16.7 Portfolio Revision
16.8 Systems and Controls
16.9 Summary
16.10 Keywords
16.11 Self-assessment Questions/Exercises
16.12 Further Readings

16.1 CONCEPT OF MUTUAL FUND

Mutual Fund has been defined by various authors in different ways. According to Pierce, James L., it is a nondepository or nonbanking financial intermediary which acts as an "important vehicle for bringing wealthholders and deficit units together directly."

Weston, J.Fred and Brigham, Eugene F, in their book "Essentials of Managerial Finance", state that Mutual Funds are corporations which accept dollars from savers and then use these dollars to buy stock, long term bonds, short term debt instruments issued by business or government. These corporations pool funds and thus reduce risk by diversification.

Mutual Fund is essentially a mechanism of pooling together the savings of a large number of small investors for collective investment, with an avowed objective of attractive yields and capital appreciation, holding the safety and liquidity as prime parameters.

The concept of Mutual Fund is not new. In USA and UK,Mutual Funds have been in vogue since the 30's. However, Unit Trust of India was, till recently, the only Mutual Fund in India. Only in the late 80's, Life Insurance Corporation of India, and some banks like State Bank of India, Canara Bank, Punjab National Bank set up their own Mutual Funds.

16.2 ADVANTAGES OF INVESTING IN MUTUAL FUNDS

By investing in various Mutual Fund schemes, small investors or middle income investors seek the following advantages compared to other types of investments:

i) Investment variety and spread in different industries

ii) Capital appreciation without having to watch the upward or downward performance curves of different scrips

iii) No impulsive decision making regarding purchase or sale of share/securities, since the funds are managed by expert, professional fund managers who have access to latest detailed information regarding the stock market and individual scrips

iv) Liquidity through buy back arrangements of the mutual fund or listing on some stock exchanges after a certain lock-in period

v) Even the smallest dividend or capital gain gets reinvested, thus enhancing the effective return

vi) Freedom from paper work

vii) Tax benefits on invested amounts/returns or dividends/capital gains

16.3 TYPES OF MUTUAL FUNDS

There are several types of mutual funds. Depending on the objectives, the funds can be classified as follows:

Income Oriented funds

These funds offer a return much higher than the bank deposits but with less capital appreciation. The emphasis being on regular returns, the pattern of investments is also oriented towards fixed income yielding securities like non-convertible debentures of consistently good dividend paying companies, etc.

Growth Oriented Funds

These funds do not offer fixed regular returns but provide substantial capital appreciation in the long run. The pattern of investment in general is oriented towards shares of high growth companies.

Balanced Funds or Income and Growth Oriented Funds

These offer a blend of immediate average returns and reasonable capital appreciation in the long run. The investment portfolio of these kinds of funds are evenly distributed among fixed income bearing corporate securities and common stock with growth potential.

Area Funds

These are the funds which are raised in other countries for providing access to foreign investors. The India Growth Fund and the India Fund raised in the US and U.K respectively are examples of area funds.

Specialised Funds Or Industry Funds

These funds are invested in a particular industry like cement, steel, jute, power or textile, etc. These funds carry high risks with them as the entire fund is exposed to a particular industry. Money Market funds are another kind of specialised funds. These funds invest in money market instruments only.

Tax Relief Funds

These funds are raised for providing tax relief to those investors whose income comes under taxable limits. Equity Linked Savings Scheme, under Section 80 CCB of the Income Tax Act, 1961, floated by SBI Mutual Fund, PNB Mutual Fund, LIC Mutual Fund and Canbank Mutual Fund in the month of Feb. 1991 are such kinds of funds. These funds provide direct deductions from taxable income upto a certain limit (Rs. 10,000/- under Sec. 80 CCB of Income Tax Act).

Mutual Funds can also be grouped as under:

1) **Open Ended Funds**

In open ended funds, there is no limit to the size of the funds. Investors can invest as and when they like. The purchase price is determined on the basis of Net Asset Value (NAV). NAV is the market value of the fund's assets divided by the number of outstanding shares/units of the fund.

2) **Close Ended Funds**

These funds are fixed in size as regards the corpus of the fund and the number of shares. In close ended funds, no fresh units are created after the original offer of the scheme expires. The shares/units of these funds are not redeemable at their NAV during their life as are in the case of open ended funds. The shares of such funds are traded in the secondary market on stock exchanges at market prices that may be above or below their NAV.

16.4 HISTORY OF MUTUAL FUNDS

Mutual Funds originated in Britain in the 19th century but developed in the U.S.in the late 19th and early 20th century in principal money centres of North East. These funds were primarily close ended and used to finance growth in U.S.A. after the Civil War. However, the crash of stock markets in 1929 led to the demise of these close-ended funds. The enactment of Securities Act of 1933, Investment Company Act of 1940 and Investment Advisors Act 1940 led to the revival and regulation of Mutual Funds in U.S.A. A chart showing the growth of Mutual Funds during the last 50 years (1940-1990) is placed as Exhibit-I. Today U.S. Mutual Funds are worth $ 1 trillion. In 1940, U.S. had about 68 funds; currently this has exceeded 3000. More significantly, in the year 1965 there were only 2 to 3% of U.S. households who owned fund shares. Today one-fourth of all U.S.households invest in Mutual Funds. In 1965, U.S. Mutual Fund annual sales were $4.4 billion; today, its monthly sales are twice that level. U.S. Mutual Funds now deal with over five crore shareholder accounts. The secret behind the U.S. success story is that their fund managers have developed mutual funds for all economic seasons and for every investment need. A bar chart showing the position of various kinds of Mutual Funds during the year 1984 and 1989 has been shown in Exhibit II. This chart shows that during the 80's Mutual Funds showed phenomenal growth in terms of their numbers in the U.S. However, not only the U.S. but some other countries of the world also saw the unprecedented growth in this industry. Italy's Mutual Fund Industry witnessed a growth of 2000%, Japan 600%, U.K. 350% and Germany 330%. Countries like Canada, Australia, Mexico and many South American countries too recorded enormous growth during the decade.

16.4.1 Indian Scenario

The concept of Mutual Fund is gaining practical relevance in India, and a large number of funds have been floated in the recent past. The impetus to this growth has basically come from the following factors: (i) banks were earlier unable to tap the capital market for funds, or to invest their deposits in the market; (ii) individual investors, lacking risk bearing capacity and unsure of the capital market behaviour, were not keen on investing any substantial amount directly in the market instruments; (iii) banks working under Reserve Bank of India (RBI) guidelines could not provide growth with better yields to the investing public and were losing out in the competition with innovative new market instruments which had better yields compared with savings and fixed deposit interest rates.

The securities market in India has witnessed changes on an unprecedented order over the last few years. New institutions, new instruments and the emergence of a liberalised regulatory framework have all helped in adding depth and maturity to the market. In this new favourable environment, Mutual-Funds have found their own niche. mutual funds, as such, are not something new in the market. The country's largest Mutual Fund, UTI is already 25 years old, operating 29 schemes with around Rs. 11000 crores investible funds.

Though UTI has been operating many schemes since its inception, it was conceived as a mutual fund in the real sense only in 1986 when it floated its Master Shares in October 1986 for residents and 'The India Fund' in August 1986 for non- esidents. Master shares collected around Rs. 150 crores and yielded 8% return in 1986-87; 13% in 1987-88 and 18% in 1988-89. For Master share holders, UTI also made an offer of rights in 1989 in the ratio of 1:2 at a premium of Rs. 2 per share.

Exhibit - I

Number of Mutual Funds Classified by investment Objective

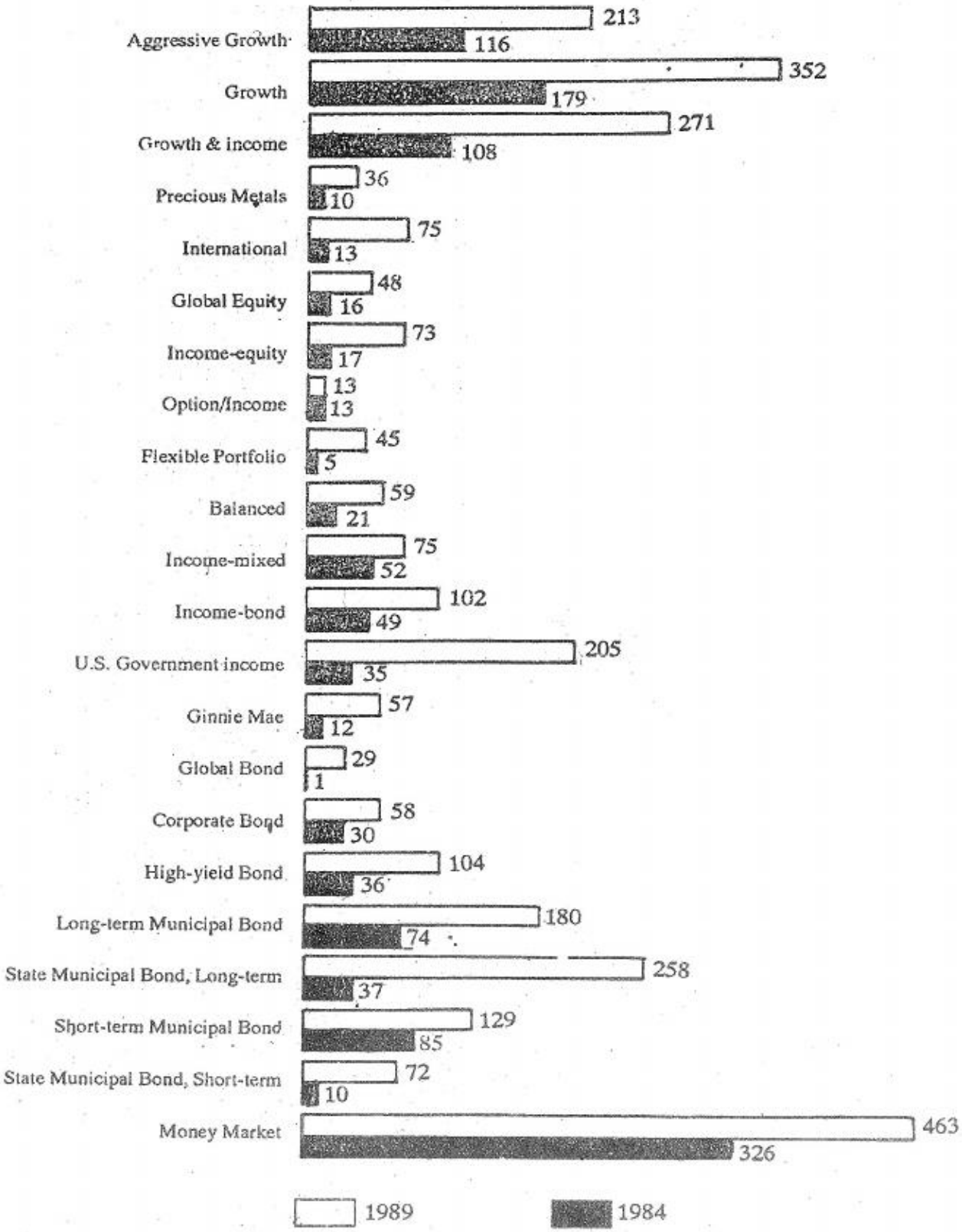
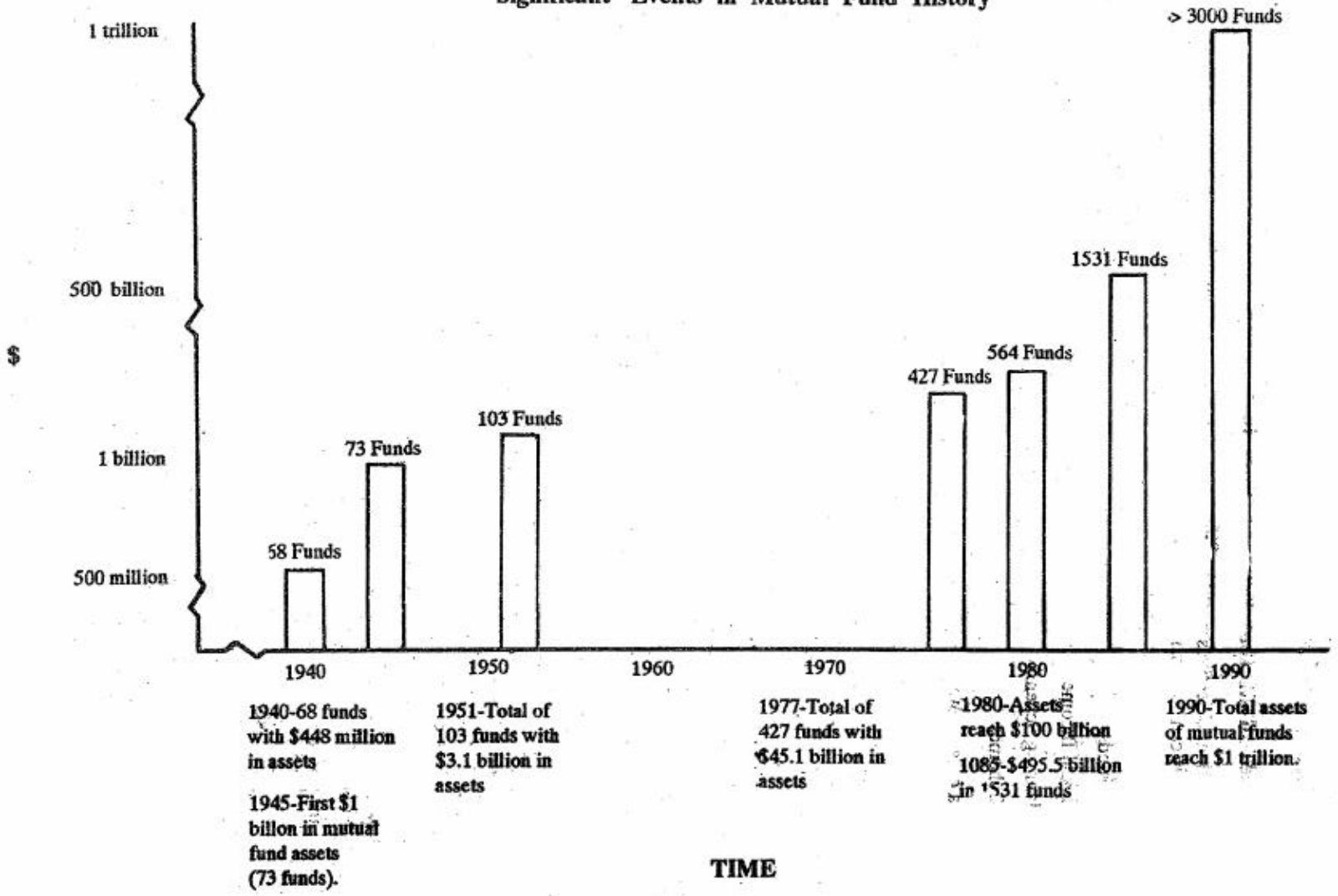


Exhibit - II

Significant Events in Mutual Fund History



* Note-Not to scale

Information excerpted from *FACS of the Week*, February 12, 1990.

Until 1987, UTI had a monopoly in the market. It is only with the favourable developments in the market and after mutual funds business was made lawful for banking companies to engage since June 1987 the other mutual funds have enterred into the fray. The monopoly of UTI was first broken by State Bank of India and later by Canara Bank. At present there are about eight mutual funds operated by UTI, SBI, Canara Bank, Bank of India, Punjab National Bank, Indian Bank, LIC and GIC and their subsidiaries.

16.4.2 Types of Mutual Fund–Schemes in India

Depending on their objectives, pattern of investments and returns etc, the Mutual Fund schemes in India can be classified into five broad categories:

a) Growth Funds

b) Income Funds

c) Growth and Income Funds

d) Tax Planning Schemes

e) Other Schemes

Let us take a quick view of the important features of these schemes as follows:

Growth Funds

i) **Objective**: Generating substantial capital appreciation.

ii) **Investment Pattern**: Nearly all in equity shares.

iii) **Duration** : Seven years

iv) **Investment Risk**: High risk in reinvestment schemes or normal risks of equity investment for periodic capital gains schemes.

v) **Returns**: No assured return but high returns expected.

vi) **Liquidity**: No repurchase facility except at the end of the scheme.

Listing on stock exchanges after certain lock in period from the date of allotment.

Transfer of Units is allowed.

vii) **Target Investors**: Individuals in higher tax brackets interested in getting higher gains to beat taxation.

Some Examples of Growth schemes

Scheme	Issued by
a) Master Share, Master Share Plus, Master Gain, UGS-200	Unit Trust of India
b) Magnum Express, Magnum Multiplier	SBI Mutual Fund
c) Canshare, Canstar Cap, Cangrowth, Canbonus	Canbank Mutual Fund
d) Ind Ratna, Ind Sagar, Ind Moti	Indbank Mutual Fund

Main Advantages

(a) Generally high returns due to capital gains

(b) Easy liquidity due to listing on stock exchanges and transferability as also bank loan facility

(c) Tax exemptions on income as also on long-term capital gains

Disadvantages

High risk, No assured returns

Income Funds

i) **Objective:** Assured minimum income and safety of capital

ii) **Duration : 5-7 years**

iii) **Investment Pattern:** Bulk (75-80%) of funds invested in fixed income securities like government bonds, company debentures, etc. and rest in equity shares.

iv) **Investment Risk:** Absolute safety.

v) **Return:** 14.75% p.a. upwards payable monthly or quarterly plus mid scheme bonus and end of the scheme appreciation (minimum 2%).

vi) **Liquidity:** No listing on stock exchanges and Units are not transferable Repurchase facility after initial lock-in period of three years.

Bank loan facility upto 75% of the Unit's face value

Main Advantages

a) Safety of investment and assured minimum income

b) Reasonable liquidity due to availability of bank loan facility

c) Income/dividend eligible for exemption upto Rs. 10,000/-under section 80L of Income Tax Act.

Disadvantages

a) Extraordinary gains not possible.

Some Examples of Income Fund:

a)	Units Scheme of 1964, Growing Income Unit Scheme of 1987	Unit Trust of India
b)	Magnum Monthly Income Schemes	SBI Mutual Fund
c)	Rising Monthly Income Scheme	BOI Mutual Fnd
d)	Swarna Pushpa	Indbank Mutual Fund
e)	GIC Safe-1991, GIC-Rise-1991, Big Value	GIC Mutual Fund
f)	PNBRIPS	PNB Mutual Fund

Growth And Income Funds

These are 'No Guaranteed Return' schemes of either all equity fund type or balanced fund type.

All Equity Fund Schemes

i) **Objective:** High income combined with growth

ii) **Duration:** 7 years

iii) **Investment Pattern:** Almost all in equity shares

iv) **Investment Risk:** Risky investment Capital, value can go up or down

v) **Returns:** No assured return. Annual distribution of minimum 80% of the Trust's net income from dividends, interest etc. Good capital appreciation expected at the end of the scheme

vi) **Liquidity:** No repurchase facility except at the end of the scheme

Listing on stock exchanges

Transfer of Units allowed

Bank loan upto 75% of the face value of Units allowed

Main Advantages

(a) Good annual returns (though not assured) with good capital appreciation at the end of the scheme

(b) Tax saving on capital gains

Some Examples of All Equity Funds

	Scheme	Issued by
i)	Canstock, Can double	Canbank Mutual Fund
ii)	PNB Premium Plus-91	PNB Muual Fund

Balanced Funds

i) **Objective** : Income and growth with reasonable safety

ii) **Duration** : seven years

iii) **Investment Pattern** : About 50% in equity and the rest in debentures etc

iv) **Investment Risk** : Moderate risk

v) **Returns** : No assured return, but steady income due to annual distribution of minimum of 80% of the Trust's income by way of dividends, interest etc. Reasonably high capital appreciation also expected

vi) **Liquidity** : Repurchase facility after initial lock-in period of three years

No listing on stock exchanges

Transfer of Units permitted

Units can be pledged to banks for loans

Main Advantages

(a) Reasonable return with possibility of reasonable capital appreciation

(b) Tax exemptions on income as well as capital gains

Some Examples of Balanced Funds

	Scheme	Issued By
i)	MRIS' 87, 89, 90	SBI Mutual Fund
ii)	Cancigo, Cangi	Canbank Mutual Fund

Tax Planning Schemes

The investments made under these schemes are deductible from the taxable income upto certain limits, thus providing substantial tax relief to the investors.

Examples of Tax Planning schemes :

a) MTSS' 89, 90, 91 and Magnum GIFTS of SBI Mutual Fund

b) Can 80CC and Canstar 80L of Canbank Mutual Fund

c) Ind 88A of Indbank Mutual Fund

(Here tax rebate is available on investments as in the case of investments in LIC, Provident Fund, NSC, etc)

i) Equity Linked Savings Schemes (ELSS)

MELS - 91	SBI Mutual Fund
Can Pep - 91, 92	Canbank Mutual Fund
Ind Shelter	Indbank Mutual Fund
MEP - 91, 92	Unit Trust of India
BOINANZA 80 CCB	BOI Mutual Fund
PNB ELSS	PNB Mutual Fund

ELSSs are 10 year schemes and the withdrawals (by repurchase) are permitted after an initial lock-in period of three years but the entire withdrawn amount again becomes taxable. As such these are only tax deferment schemes.

Main Advantages

(i) Substantial tax saving/deferment

(ii) Possibility of reasonable capital gains

Main disadvantages

(i) No liquidity during lock in period

(ii) Withdrawn amounts are again taxable

(iii) Units are not transferable

Other Schemes :

These include schemes of 10-15 years duration which offer multiple benefits. For example:

	Scheme		Benefits
a)	Unit Linked Isurance Plan of UTI	i)	Contribution eligible for tax deduction under Sec 88-A of IT Act -providing tax rebate of 20% of the Contribution
		ii)	Insurance Cover upto target amount
		iii)	Reasonable income by way of dividend
		iv)	Liquidity: withdrawal from the scheme any time on a month's notice permitted
		v)	Safety of capital
b)	Dhanaraksha, Dhansahyog Dhanavriddhi Schemes of LIC Mutual Fund		These offer some or all of the following benefits:
		i)	Life Insurance cover
		ii)	Accident insurance cover
		iii)	Reinvestment of annual dividends or reasonable dividend
		iv)	Safety of capital
		v)	Reasonable capital appreciation
		vi)	Liquidity : Repurchase facility after initial lock-in period of three years
		vii)	Units are not transferable but bank loan facility is available
		viii)	Tax exemption on dividends under section 80L and tax benefits under long term capital gains are available

Open-ended schemes

Some examples of open ended schemes are (i) Unit Scheme 1964; (2) Unit Linked Insurance Plan Scheme 1971; (3) Capital Gains Scheme 1983; (4) Children's Gift Growth Fund Unit Scheme 1986; (5) Parent Gift Growth Scheme 1987 - all of Unit Trust of India.

Close-ended schemes

Some examples of closed ended schemes are (1) Master Share, Master Gain Schemes, Growing Income Unit Schemes of 1986, 1987, etc. of UTI. (2) Canshare, Canstar etc. schemes of Canbank Mutual Fund. (3) Ind Ratna, Ind Jyoti etc. of Indbank Mutual Fund.

Although Unit Trust of India has been around for over 25 years, the other Mutual Funds in India have sprung up only recently, within the last 5-6 years. They are all in the public sector-being floated by either the public sector banks or financial institutions like LIC of India and General Insurance Corporation of India. However, during this short period most of them have performed well through a variety of schemes. Some of the

mutual fund schemes like Master Share, Master Gain of UTI, Canshare and Canstar of Canbank mutual fund have been run away successes in the matter of public support and subscription. This has certainly enhanced the interest of investors in Mutual Fund schemes,thereby enabling them to mobilise huge amounts running into thousands of crores from the public. The mutual funds have now become dominant players in the Indian stock markets.

The mutual fund schemes are generally open ended but, in India, a large number of closed ended funds have been floated. Another peculiar feature is that fixed returns are being promised on the Units, which is against the basic concept of mutuality. However, this factor alone has been responsible for the great popularity of schemes such as the Magnums of SBI Mutual Fund and Monthly Income Schemes (with bonus and growth) 1990 and 1991 of Unit Trust of India.

GIC Mutual Fund has recently introduced an innovative scheme called 'GIC Big Value'. Its most innovative feature is the linking of returns to the National Index (of stocks). The fund offered a one percent rise in the dividend payable, over and above the targetted 15 per cent payable per quarter, for every 100 points rise in the National Index at a base of 2018.60 as on April 2, 1992, the annual ceiling being 5 percent. However, after the stock market crash, the fund has revised its base to 1600. The fund proposed to invest 40% of its funds in equity and 60% in instruments like non-convertible debentures and public sector bonds. The fund hopes to give a return of as much as 18% p.a.

Compared to USA and UK, our mutual fund culture is still in its infancy. In USA, where capital formation is high and investment literacy is considerable, there are as many as 1600 Mutual Funds whereas in India, where illiteracy is high and capital formation low, we have only few mutual funds, which can be counted on the fingertips. This clearly indicates the vast scope for more mutual funds in India.

The common features of the existing Indian mutual funds are a minimum assured dividend, liquidity via encashment after one year at least at par and servicing through a large branch network. The LIC and GIC Funds offer an added insurance cover. However, the different funds are not at par with regard to tax concessions and income distributions. Income from mutual funds set up by the banks have got exemption from income tax upto Rs. 10,000/- along with other savings while in case of UTI an additional Rs. 3,000/- can be deducted. Further, banks, by law have to ensure that a maximum 80% of their annual earning are disbursed to shareholders. UTI, LIC and GIC are under no such obligation. Mutual Funds in India conceptually offer two basic inducements to the investing public. Firstly, government sponsorship which is important in view of the general lack of confidence in markets. Secondly, Indian mutual funds do not attract any income tax and they also do not deduct any tax at source while distributing income or dividend to the Unit holders.

Activity 1

a) Which kind of mutual fund registered the highest growth in the U.S. during the period 1984 to 1989 ?

b) Which kind of mutual fund in the U.S. did not register any growth during the period 1984-1989 ?

16.5 ORGANISATION OF MUTUAL FUNDS

A Mutual fund can be constituted either as a corporate entity or as a trust. In India, UTI was set up as a corporation under an Act of Parliament in 1964. Indian banks when permitted to operate mutual funds were asked to create trusts to run these funds. The basic difference between a corporation and a trust is that in the case of the former, the liability is limited whereas in case of the later it is unlimited. Also a corporation enjoys the status of a separate legal entity who can act on its behalf. A trust has to work on behalf of its trustees. Indian banks operating mutual funds had made a convincing plea before the government to allow their mutual funds to constitute them as 'Asset Management Companies'. The Department of Company Affairs, Ministry of Law, Justice and Company Affairs has issued guidelines in respect of registration of Asset Management Companies (AMCs), in consultation with Securities and Exchange Board of India, as follows:

(a) Approval of AMC by SEBI

As per guidelines, AMC shall be authorised for business by SEBI on the basis of certain criteria and the Memorandum and Articles of Association of the AMC would have to be approved by SEBI. Accordingly, no company can register an AMC under the Comapnies Act 1956 without the Memorandum and Articles of Association being approved by SEBI.

(b) Authorised capital of AMC

The primary objective of setting up of an AMC is to manage the assets of the mutual funds and other activities which it can carry out, such as, financial services consultancy which do not conflict with the fund management activity and are only secondary and incidental. That being so, it may not be practical to expect a company to be set up with a paid up capital of Rs. 5 crores to carry on only incidental activites, without any assurance of its receiving an approval from SEBI to act also as an Asset Management Company for a Mutual Fund. There should, therefore, be not any objection in registering an AMC if the authorised capital of such a company is approved by SEBI. Major players who help in running a Mutual Fund are as follows:

a) **Registrars and Transfer Agents**

Their major responsibilites include:

i) Receiving and processing the application form of investors

ii) Issuing of Unit/Share Certificates on behalf of Mutual Fund

iii) Maintain detailed records of Unit holders transactions

iv) Purchasing, selling, transfering and redeeming the Unit/Share Certificates

v) Issuing of income/dividend Warrants, broker Cheques etc.

vi) Creating security interest on Units/Certificates for allowing loans against them

b) **Advertiser**

Major responsibilites of an advertiser include:

i) Helping mutual funds organisers to prepare a media plan for marketing the fund

ii) Issuing/buying the space in newspapers and other electronic media for advertising the various features of a fund

iii) Arranging for hoardings at public places

c) **Advisor/manager** : It is generally a corporate entity who does the following jobs :

i) Professional advice on the Fund's investments.

ii) Advice on Asset Management Services.

d) **Trustees** : Trustees provide the overall management services and charge management fee.

e) **Custodian** : A custodian which is again a corporate body does the following functions:

i) Holds securities

ii) Receives and delivers securities

iii) Collects income/interest/dividends on the securities

iv) Holds and processes cash

Besides the above, other players are as under

i) Fund Administrator;

ii) Fund Accounting Services;

iii) Legal Advisors;

iv) Fund Officers;

v) Underwriters/Distributors;

vi) Legal Advisors.

All the above agencies play a major role in any mutual fund organised in the US and other European countries as they are separate agencies/corporations independent of the mutual fund. However, in India so far mutual funds have taken the services of the following outside agencies:

a) Registrars and Transfer Agents

b) Advertisers

c) Legal Advisors

d) Custodians

Other services are organised inhouse and a Trustee's job is undertaken by the bank who promotes the mutual funds. Figure 16.1 shows important players who help to organise and operate a mutual fund.

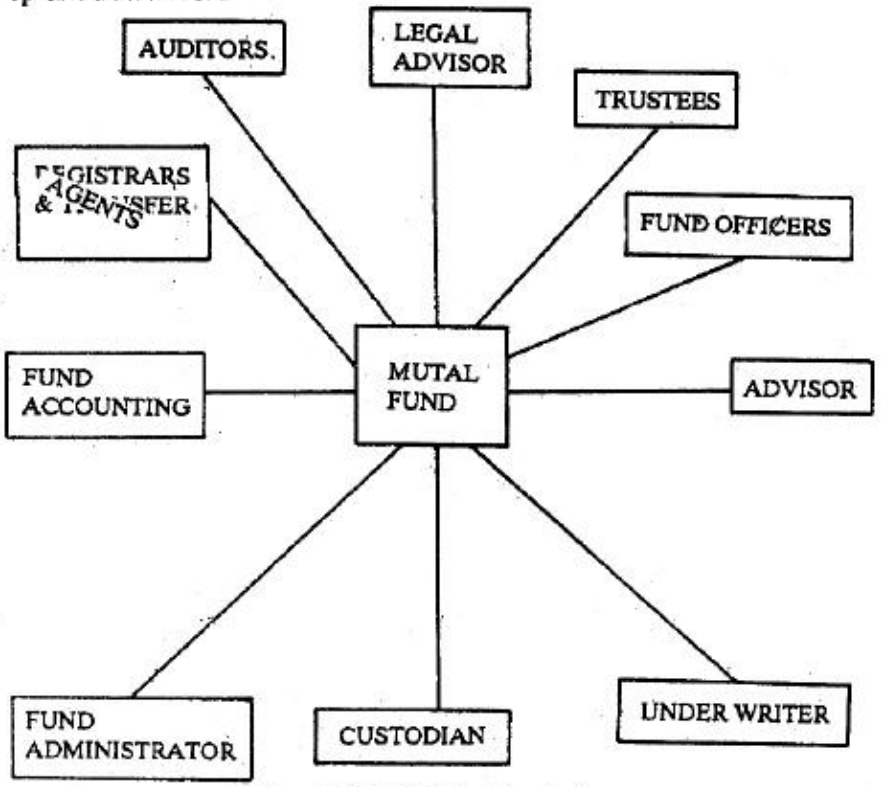


Figure 16.1: Mutual Fund Organisations

The basis of payment to various players for their services in organising a mutual fund is given below :

	SERVICES	COST	BASIS
i)	Registrar & Transfer Agents	Registrar & Transfer Agents fee	Number of Unit holders / Certificate holder accounts Service fee; Number of transactions; Standard out puts and standing charges for maintaing records
ii)	Advertiser	Advertiser servi e fees	Percentage of the total budget of advertisement
iii)	Custodian	Cus dian fee	Number of transactions in terms of amount
iv)	Trustee	Management fee	Average net assets,
v)	Advisor	Advisory fee	Average net assets
vi)	Administration	Adminstrative fee	Average net assets
vii)	Fund Accounting Agent	Fund Accounting fee	Average net assets with a minimum and a mixmum

viii)	Underwriters	Underwriters fee	Total offering
ix)	Legal Advisor	Legal fees	Actuals
x)	Auditors	Audit fees	Actuals
xi)	Fund Officers	Fnd Officer's fees	Actuals

In the US, Mutual Funds hire all the above agencies and pay them accordingly. However, in India so far only the first four agencies are engaged from outside and paid as per the above method. The rest of the work is organised inhouse by employing officers and they are paid salaries. The Securities and Exchange Board of India has issued detailed guidelines for the establishment and operation of mutual funds in India on 14-2-92. These are reproduced as Appendix 16.1.

Activity 2

Registrars processed 42149 applications of 10 Units each of investors who subscribed to a scheme launched by a Mutual Fund. He was to be paid as follows:

Processing of one application: Rs. 1.50

Printing of one certificate: Rs. 2.00 per certificate of 10 Units each.

professional charges for despatching of one letter: eight Paise

Additional paper five paise each

The registrar alloted Units on all applications and one certificate for 10 Units was issued. Calculate the fee payable to the registrars. You may assume that the registrar sends two papers (one forwarding letter and one Unit certificate) in one envelope.

16.6 CREATION OF A PORTFOLIO

The portfolio of a mutual fund depends on the objectives of each scheme/fund floated by a mutual fund. For example, the objective of an income oriented scheme is to provide regular monthly income to its shareholders. The portfolio of such a fund should consist of fixed income bearing securities so that the fund can achieve its objective. It has been learnt from Indian experience that the portfolio of such a fund consists of mainly the following securities:

Non Convertible Debentures (NCD's) - 75 to 90%

Call Money - 10 to 25%

A portfolio of income cum growth oriented fund consists of mainly NCD's upto 70% of the portfolio, approximately 25% of equities and 5% of money market instruments. On the other hand, a pure growth or equity fund creates a portfolio of share/stock of growth or blue-chip companies.

The fund manager of a mutual fund is the person responsible for buying these securities in such a way that the fund is able to achieve its objectives. A fund manager tries to create a well diversified portfolio of securities so that unsystematic risk is reduced significantly and returns expected on individual securities and on portfolio is directly related to 'market risk' or systematic risk. A fund manager has thefollowing investment options in terms of buying securities from the Indian market :

	Securities	Returns
1	Call Money	Average returns 15%
2	Bills	13 to 14%
3	Treasury Bills	10 %
4	Govt. Bonds	11.5%
5	Public Sector Bonds	13 %
6	Company Debentures	15% to 16.5% (yield to maturity)
7	Dividend/Return on equity shares	2–3 %
8	Capital Gains	Uncertain

The expected returns from a mutual fund are higher than what is provided by bills, treasury bills, Govt. or P.S. bonds. Hence mutual funds concentrate on NCD's, equities and to some extent call money which provide good returns along with liquidity. While buying these securities, the fund manager takes into consideration the following norms for each kind of security.

Non-convertible Debentures

i) Asset Cover or Security Cover:

A company must maintain a minimum asset cover. This cover is calculated on the basis of secured borrowings and debentures charged to fixed assets, whereby fixed assets should be in general more than one time of the total such existing borrowings and debentures secured by equitable mortgage on fixed assets. The movable fixed assets are generally excluded from the calculations.

ii) Interest Cover:

PBIDT (profit before interest, depreciation and taxes) should be around two times the existing interest liability plus the interest liability on the proposed debentures so as to protect the payment of interest on the debentures. This cover is to be calculated on the basis of the average of the preceeding three years profit figures.

iii) Company must have paid dividend for the last three or minimum two preceeding years.

iv) Net worth of the company should be around Rs. One Crore.

Small variations in the above norms are accepted provided the company is otherwise very sound and the rate of return is higher than normal.

Equity Shares (Common Norms For Primary As Well As Secondary Market):

Management: First and foremost emphasis is placed on quality of management because unless the management is efficient and professional even a good project can fail.

Industry: The industry in general should be growth oriented, expanding and modernising etc. Mutual Funds avoid seasonal and declining industries.

Government Policy: A fund manager constantly studies the economic and fiscal policies of the government and analyses their impact on the companies.

Analytical Studies: A fund manager studies the full details of the past performance of companies including turnover, profitability, earnings, track record and financial strength. He also compares it with the industry in which the company falls. He works out projections based on news reports and discussions to assess the future prospects. He studies the expansion, diversification and other plans of the companies to assess their future outlook and potential.

Market Study: A fund manager also assesses the standing of the company, its general reputation, its market share and the competition it is likely to face. Besides, factors like the demand and supply of the product and import and export policy which have a bearing on the growth prospects of the company are also looked into.

Studies Of Industries: A mutual fund undertakes the studies of the industries to find out the outlook as well as the problems faced by the industries and in turn the units in the said industries.

Besides studying the above fundamental factors, for both primary and secondary market operations, a fund manager uses the following additional tools to decide the timing for entering into secondary market operations.

a) **'PE' Ratio (Price Earning Ratio)**

i) Average 'PE' ratio for the industry.

ii) Average 'PE' ratio of the company based on the last three years.

iii) Earnings per share of last year x Average 'PE' ratio of the company. However, this is not a rigid formula.

b) **High And Low Price**

A fund manager is also aware that the market fluctuates as a normal pattren 3-4 times in a year and these movements are watched for proper opportunities. For this purpose, a chart showing the trends in price movements for the previous year is prepared.

c) **Break Up Value**

A mutual fund calculates the break up value (less revaluation reserves) and compares it with the market price. If the market price is twice or thrice the break up value, the share is over priced or if this price is less or equal, the share is called under priced.

Besides the above, the Fund Manager looks into 'Bonus Prospect' of a share, intermediate prices since it is virtually impossible to sell at peaks and buy at bottoms, booking of profits when the objective is fullfilled and trying to buy or sell shares on a reaction as against when there is a steep rise or vice versa..

16.6.1 Regulatory Environment Relating To Creation of Portfolio of Various Securities

We have discussed that a Fund Manager creates a diversified portfolio of securities whereby unsystematic risk is almost eliminated and systematic risk is analysed to provide optimum return. However, to protect general investors' interest the Securities and Exchange Board of India has placed certain restrictions on the investment by mutual funds in India as follows:

1) No individual scheme of the Mutual Fund should invest more than 5 per cent of its corpus in any one company's shares.

2) No Mutual Fund under all its schemes should own more than 5 per cent of any company's paid up capital carrying voting rights.

3) No Mutual Fund under all its schemes taken together should invest more than 10 per cent of its funds in the shares or debentures or other securities of a single company.

4) No Mutual Fund under its schemes taken together should invest more than 15 per cent of its funds in shares and debentures of any specific industry (such as cotton textiles, tea, tyres, etc.) except where a scheme has been floated for investments in one or more specified industries..

5) Privately placed debentures, securitised debt and other unquoted debt instruments holdings shall not exceed 10 per cent in case of growth funds and 40 per cent in case of income funds.

16.7 PORTFOLIO REVISION

There are two broad aspects of portfolio management, namely, effective investment planning and constant review and revision of Investment.

While we have already discussed the first aspect under 16.6, let us discuss the second aspect hereunder.

Constant review and revision of investment requires:

i) Continuous monitoring of the quality of management of the companies in which investment has already been made.

ii) Continuous financial analysis and trend analysis of the companies' balance sheets/profit & loss accounts to choose sound companies and off-load investment made in companies where the performance is slackning.

iii) Continuous analysis of the securities market trends.

Whereas a Funds Manager takes into consideration all fundamental and technical analysis while making initial purchases of securities, continuous monitoring jobs are done generally by a research cell of the mutual funds in India. The research cell

undertakes on a continuous basis all kinds of analysis of securities existing in the portfolio and does further analysis of newer securities in all classes of securities and compares them with the existing securities and suggests changes in the portfolio for maintaining good returns or higher returns with the same risk as perceived in the existing portfolio. Thus measurement of risk involved in the expected rate of return is very essential before diversification of any portfolio can be undertaken by a mutual fund. A research executive measures the risk by taking variance and standard deviation of return. A large variation around the average would indicate great uncertainty regarding the expected return.

16.8 SYSTEMS AND CONTROLS

For managing a portfolio, it is not only the creation, re- creation and regrouping of various securities which is important for achieving the desired rate of return, but various kinds of systems and controls are needed. A Mutual Fund generally provides the desired controls through its accounting and custodian system. We shall discuss each of them and how these help to manage a portfolio.

Accounting System

An accounting system must clearly disclose:

i) The policy in respect of recognition of revenue and income from investment.

ii) The policies relating to valuation of investments.

iii) The aggregate carrying value and market value of non performing assets under each type of investment.

iv) Provision to be made for depreciation/loss in the value of non performing investments.

v) Per unit Net Asset Value (NAV) at various intervals and at the end of the accounting year.

All the above accounting policies if pursued consistently help to maintain a clear picture about all investments in a portfolio and thus provide the true picture of the portfolio.

Custodian System : A custodian system should provide/ensure:

i) Timely receipt and delivery of cash and securities;

ii) Delivery of securities only upon receipt of payment and payment only upon receipt of securities;

iii) Timely resolution on discrepancies and failures;

iv) Segregation of assets by the custodian and regular inventory verification;

v) Regular reconciliation of assets to accounting records;

vi) Securities are properly registered;

vii) Proper nomination and record of declared dividend and other corporate actions.

All the above accounting policies and custodian system if pursued by Mutual Funds help them to maintain a clear picture of all investment and their performance in a portfolio.

16.9 SUMMARY

The history of Mutual Funds in India is not very old. It started with the establishment of the Unit Trust of India in the year 1964. However, the real take off started when public sector banks entered into this area in the year 1987. Today India occupies the 10th position in the world. But the total fund raised from the capital market is just .7% of household savings and individual investors still do not form a large percentage of mutual fund resources. Experience of other countries shows that with the development of the capital market more household savings are channeled into the secondary market through institutions like mutual funds. This is quite visible from the growing popularity of mutual funds in India.

Mutual Funds have proved to be an attractive investment for many investors, the world over, since they give them a mixture of liquidity, return and safety in accordance with their performance. Further, the investor gets these benefits without having to directly invest in a arge number of scrips. Only by investing in one fund he gets the benefits of a diversified portfolio which is handled by specialists. The interest of various investors are generally protected through mutual funds. As individual investors they may not hold much clout in companies whose shares they hold but by being part of institutional investors like mutual funds, their bargaining power is enhanced.

16.10 KEY WORDS

Advisor: The organisation employed by a mutual fund to give professional advice on the Fund's investment and asset management practices.

Custodian: The organisation that keeps custody of securities and other assets of mutual fund.

Transfer Agent : The organisation employed by a mutual fund to prepare and maintain records relating to the accounts of its unit holders.

Unit holder/ Shareholders : An investor who subscribes to the fund/scheme of a Mutual Fund.

Share/Unit : It is a kind of paper issued by the mutual fund to investor as a proof of his investment.

Hoarding : It is an advertisement for marketing the fund/scheme of a Mutual Fund made at common places by displaying boards etc.

Systematic Risk : The expected sensitivity of share price to changes in general stock market is known as the 'market risk' or systematic risk.

Unsystematic Risk: The Changes in the prices of shares related to company or industry developments are referred to as unsystematic risk or specific risk.

PE Ratio: $= \frac{\text{Market Price of share}}{\text{Earning per share}}$

16.11 SELF-ASSESSMENT QUESTIONS / EXERCISES

1) Discuss briefly the concept of mutual fund and explain how far mutual funds have been successful in India.

2) Compare various types of instruments issued by Mutual Funds in U.S and India.

3) Describe various types of schemes issued by various Mutual Funds in India.

4) Discuss the role of the Registrars, Transfer Agents, Custodian and the Fund Manager in a Mutual Fund.

5) Why Indian Mutual Funds in general guarantee a minimum return to investors whereas this is not the practice in US and other countries ?

6) Discuss major variables that a Fund Manager considers before buying fixed income securities, say NCD's.

7) When the co-relation coefficient of two securities is (-1), what does it tell to the Fund Manager?

8) Consider Stock B, which has possible returns + 50% , 0% and – 50%. The three possible returns are equally probable. What is the expected return and standard deviation for Stock B.

9) Systems and Controls are as important as creation of portfolio of securities in managing a portfolio by a Mutual Fund. Discuss this statement and bring out the role played by accounting and custodian system in portfolio management by a mutual fund.

16.12 FURTHER READINGS

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MUTUAL FUNDS: *BUSINESS WEEK* JUNE 11, 1990

PTI CORPORATE TRENDS

Appendix 16.1

Guidelines for Mutual Funds (issued on 14 February, 1992)

Mutual Funds have become a major vehicle for mobilisation of savings particularly from the small and household sectors for investment in the stock market. In view of their growing importance in the capital market, their expanding investor base and the decision to allow mutual funds to be set up in the joint and private sectors it has become necessary to evolve a comprehensive set of prudential guidelines for the all round development and regulation of mutual funds and for ensuring investor protection. These guidelines are laid down below:

1 Scope

1.1 These guidelines shall be applicable to all mutual funds which invest primarily in the capital market and also partly in money market instruments subject to the following:

a) Money Market Mutual Funds that would invest exclusively in money market instruments would be regulated by the Reserve Bank of India on the basis of specified guidelines to be laid down by the Reserve Bank of India (RBI). However, money market schemes of other mutual funds would be regulated by the Securities and Exchange Board of India . These regulations will be in conformity with the guidelines to be issued by the Reserve Bank for Money Market Mutual Funds investing exclusively in money market instruments.

b) Offshore Funds which have non-resident investors and are regulated by the provisions of the countries where these are registered shall be outside the purview of these guidelines. These funds shall continue to be governed by the rules and procedures laid down for the purpose of approving and monitoring their performance by the Department of Economic Affairs, Ministry of Finance and the Government's/RBI's directives on this subject.

c) Mutual Funds with special characteristics, e.g., funds dealing with assets other than securities, may be specifically exempted by the Government from the purview of these guidelines.

1.2 Existing mutual funds should conform to these guidelines within a period of six months from the date of issue of these guidelines.

2 Establishment

2.1 Mutual Funds shall be authorised for business by the Securities Exchange Board of India (SEBI).

2.2 Mutual Funds shall be sponsored by the registered companies with a sound track record, general reputation and fairness in all their business transactions.

2.3 Mutual Funds shall be established in the form of Trusts under the Indian Trusts Act. The sponsoring institution will be free to work out the details regarding the constitution of the Trust.

2.4 The Trust shall then be authorised to float one or several different schemes under which units shall be issued to the investors.

2.5 Mutual Funds shall be operated only by separately established Asset Management Companies.

3 Asset Management Company (AMC)

3.1 *Authorisation for business*

3.1.1 AMC shall be authorised for business by SEBI on the basis of the following criteria:

a) AMCs which are already existing should have a sound track record, General reputation and fairness in all their business transactions.

b) The Directors of AMCs should be persons of high repute and standing having at least 10 years of professional experience in the relevant fields such as portfolio management, investment analysis, financial administration, etc.

c) At least 50 per cent of the Board of AMC should be independent Directors not connected with the sponsoring organisation.

d) The AMC should at all times have a minimum net worth of Rs. Five crores.

3.1.2 SEBI shall approve the Memorandum and Articles of Association of the AMC.
3.1.3 The name of the directors and any subsequent changes must be intimated to SEBI.
3.1.4 SEBI may lay down additional selection crieteria or change them from time to time for regulating the expansion of mutual funds in the larger interest of mutual funds industry and healthy growth of the capital market.
3.1.5 Except in the case of bank-sponsored AMCs where the prior concurrence of RBI would be required, SEBI may withdraw the authorisation granted to any AMC if it is found to be not serving the best interests of investors or of mutual funds industry or of capital market. The Board of Trustees of a mutual fund in such cases should reappoint another AMC or liquidate the mutual fund as may be necessary within three months of withdrawal of authorisation of the existing AMC and distribute the proceeds to unit holders.

3. 2 Restrictions on business activities

3.2.1 AMC should not be allowed to act as the Trustee of a unit Trust. In other words, the AMC and the Trustee should be two separate legal entities.
3.2.2 AMC should not be permitted to undertake any other business activity than management of mutual funds and such other activities as financial services consultancy, exchange of research and analysis on commercial basis as long as these are not in conflict with the fund management activity itself.
3.2.3 An AMC or its affiliate acting for a fund cannot act as the AMC for any other fund. For this purpose, a company is considered as an affiliate if it is a company:

a) Which directly or indirectly, and by itself or in combination with other persons exercises a significant control over the AMC.

b) Over which the AMC, directly or indirectly, and by itself or in combination with other persons exercises a significant control.

c) Over which significant control is exercised directly or indirectly by person or persons or the relatives of such person or persons whether by themselves or in combination, as are the same person or persons or the relatives of such person or persons whether by themselves or in combination who exercise significant control over the AMC.

d) In which any director, officer or employee of the AMC is a director, officer or employee.

e) Without prejudice to the generality of the above restriction, significant control shall be deemed to exist:

   i) In relation to a company where any person or combination of persons directly or indirectly own, control or hold with power to vote three per cent or more of the voting shares of such company;

   ii) In between two companies if the same person or combination of persons directly or indirectly own control or hold with power to vote three per cent or more of the voting shares of each of the two companies.

3.2.4 No person should be a Director of more than one AMC.

3.2.5 No person who is a Director of an AMC should hold the position of a Trustee, or Director in a Trust company, of funds operated by the same AMC.

3.2.6 No person should be a Director/Trustee in more than one Trust Company/Board of Trustees.

4 Trustees and Trust Companies

4.1 Trusteeship functions should be carried out by separately established Trust Companies. Until such companies are formed, existing debenture trustees, banks and financial institutions may be allowed to act as mutual fund trustees, or a separate Board of Trustees consisting of individuals of sufficient repute and experience may act as mutual fund trustees.

4.2 At least 50 per cent of the Board of Trustees shall be independent outside members. They shall not have any affiliation with the sponsoring institution or any of its subsidiaries.

4.3 The Trust Company and/or the composition of the Board of Trustees including the eligibility of each member should be intimated to SEBI.

4.4 The trustees should have the responsibility to ensure that managers comply with the Guidelines and report periodically to the investors in the fund that this is the case. This should entail, inter alia, the following checks:

That investments are of the permitted kind and within set limits;

- That the fund's assets are duly protected;
- That transaction in units are properly executed by the manager which may include spot checks on–

Pricing of units;

Payments into and out of the fund;

Internal controls (e.g. for capital adequacy);

- That income due to the fund is properly accounted for;
- That all expenses and charge to the fund are as permitted;
- That distributions from the fund are properly made.

4.5 In order to effect these checks the Trustees should have the right to obtain from the AMC all information concerning the operations of the Trust.

4.6 The AMC should submit a quarterly report on the functioning of the mutual fund to the Trustees. The Trustees in turn should submit a six-monthly report to the SEBI, and an annual report to the investors in the fund.

5 Trust Deeds

5.1 The sponsor should submit the Trust Deed to SEBI for prior approval.

5.2 The Trust Deed should include all safeguards considered to be essential for investor protection.

6 Custodian

6.1 The Mutual Funds shall use the services of a custodian registered with SEBI.

6.2 It should be ensured that the custodian should be totally delinked from the AMC.

7 Schemes

7.1 Each authorised unit trust should be allowed to float different schemes as long as the concerned AMC meets the required capital adequacy criteria and whose authorisation has not been withdrawn by SEBI for any reason whatsoever.

7.2 Each scheme floated by a mutual fund should have prior registration with SEBI. The AMC should prepare a prospectus/letter of offer for each scheme and should get it vetted by SEBI before inviting public participation. SEBI shall decide each proposal within 30 days of its receipt failing which the scheme may be floated by the fund presuming SEBI's clearance.

7.3 Mutual Funds should be allowed to start and operate both close- end and open-end schemes.

7.4 The closed-end schcems shall be considered for approval as per the progedures appliuble to capital issues be companies.

7.5 For each closed-end scheme, the mutual fund should be required to raise at least Rs. 20 crores and for each open-end scheme, at least Rs. 50 crores. The entire subscription should be refunded to the investors, if:

a) The minimum amount of Rs. 20 crores or 60 per cent of the targeted amount, whichever is higher, is not raised for a closed-end scheme, or

b) The minimum amount of Rs. 50 crores or 60 percent of the targetted amount, whichever is higher, is not raised for an open-end scheme.

7.6 Mutual Funds should not be permitted to keep close-end schemes open for subscription for more than 45 days. For open-end schemes, first 45 days of the subscription period should be considered for determining the target figure or minimum size.

7.7 Mutual Funds should provide continuous liquidity. Closed-end schemes should be listed on exchanges. For open-end schemes, mutual funds shall sell and repurchase units at pre-determined prices based on Net Asset Value and such prices should be published at least once in a week.

7.8 Each scheme under the same management should have a clearly identified and responsible fund manager.

8 Investment Limitations

8.1 Mutual funds will be allowed to invest only in transferable securities either in the money market or in the capital market, including any privately placed debentures or securitised debt.

8.2

a) Privately placed debentures, securitised debt and other unquoted debt instruments holdings shall not exceed 10 per cent in case of growth funds, and 40 per cent in case of income funds.

b) All debt instruments must have been rated as investment grade by an approved credit rating agency. If not rated, the specific approval of the Board of AMC should be taken to become eligible for holding in the portfolio.

8.3 Mutual funds should not be allowed to give term loans for any purpose.

8.4 No individual scheme of the mutual funds should invest more than five per cent of its corpus in any one company's shares.

8.5 No mutual fund under all its schemes should own more than five per cent of any company's paid up capital carrying voting rights.

8.6 No mutual fund under all its schemes taken together should invest more than 10 per cent of its funds in the shares or debentures or other securities of a single company.

8.7 No mutual fund under all its schemes taken together should invest more than 15 per cent of its funds in the shares and debentures of any specific industry (such as cotton textile, tea, tyres, etc.). This provision will not, however, apply to a scheme which has been floated for investments in one or more specified industries and a declaration to that effect has been made in the offer Letter.

8.8 No scheme should invest in or lend to another scheme under the same AMC.

8.9 Mutual Funds must take delivery of scrips purchased and give delivery in the case of scrips sold and in no case shall engage in short selling or carry forward transactions or badla finance. The scrips purchased should be transferred to the Funds's name and scheme also.

8.10 Transfers from one scheme to another in the same mutual funds should be allowed only, if-

a) Such transfers are done at the prevailing market price for quoted instruments on spot basis.

b) The securities so transferred would be in accordance with the investment objective of the transferee scheme.

c) Transfer of unquoted instruments should be done only with specific approval of the Board of Trustees.

d) The registration and accounting of the transaction is completed and is ratified in the next meeting of the Board of Trustees.

9 Winding up

9.1 Each closed-end scheme should have a duration fixed in number of years, at the end of which it should be wound up or extended with the permission of SEBI.

9.2 An open-end scheme shall be wound up if the total number of units outstanding after repurchases at a point of time falls below 50 per cent of the originally issued number of units.

10 Expenses

10 1 The Asset Management Company may charge the mutual fund with Investment Management and Advisory Fees which should have been disclosed fully in the prospectus subject to the following ceiling:

a) 1.25 per cent of the weekly average net assets outstanding in the current year for the scheme concerned, as long as the net assets do not exceed Rs. 100 crores, and

b) 1 per cent of the excess amount over Rs. 100 crores, where net assets so calculated exceed Rs. 100 crores

10.2 In addition, the Asset Management Company may charge the mutual fund with the following expenses

a) Initial issue-cost of sponsoring the fund and its schemes.

b) Recurring expenses including

(i) Marketing and selling expenses including Agents's Commission, if any;

(ii) Brokerage and transaction costs;

(iii) Registrar Services for transfer of shares sold or redeemed.

10.3 The Asset Management Company should be expected to meet all its expenses and be responsible to provide the following

a) Office space, supplies and personnel including security analysts and portfolio managers.

b) Regulatory compliance and reporting services.

c) Preparation and distribution of the fund's prospectus, annual and periodic reports and other investor communications.

d) Advertising, and other sales material

e) Accounting services and preparation of tax returns.

f) Insurance coverage and other services.

10.4 The fees payable to the Trustees shall be charged to the mutual fund.

10.5 The fees payable to the custodian for safe keeping of fund assets and related matters shall be charged to the mutual fund.

10.6 The initial issue expenses should not exceed 6 per cent of the funds raised under each scheme.

10.7 In any case, the total of all the expenses charged to the fund except the initial issue expenses should not exceed 3 per cent of the weekly average net assets outstanding during the current year and the same should be disclosed through advertisements, accounts, etc.

10.8 All expenses should be clearly identified and appropriately attributed to individual schemes

11 Income distribution

All mutual funds must distribute a minimum of 90 per cent of their profits in any given year

12 Rights of the parties

12.1 The Asset Management Company can be changed by either the Trustee company/Boary or by 75 percent of the investors in the fund.

12.2 If a change in the Asset Management Company is recommended by the Trustee Company/Board it should be subject to secrutiny and approval of SEBI.

12.3 If the sponsorer of a mutual fund recommends change of the Trustee is should be subject to the secrutiny and approval of SEBI.

12.4 SEBI should have the right of review of a mutual fund's role in takeover.

13. Accounting requirements

13.1 Mutual Funds should be required to segregate their earnings into current income, short-term capital gains and long-term capital gains.

13.2 Accounting for all the schemes should be required to be done for the same year-ending.

13.3 For all quoted instruments, mutual funds calculate weekly NAV at the last available closing market prices. For quoted investments, the valuation may be done once weekly either at cost or by any other method authorised by SEBI. For investments considered doubtful the directors' best estimate may be accepted, subject to the auditors' certificate of reasonability.

14 Disclosures and reporting

14.1 SEBI will have the right to call for any information regarding the operations of the Mutual funds and any of its schemes from the Mutual fund, Asset Management Company, Custodian, Sponsor or any other person associated with the mutual fund.

14.2 SEBI will require from every mutual fund at least the following periodic reports, in addition to any others it may seem fit.

a) Copies of the duly audited annual statements of accounts including the balance sheet and the profit and loss account for the fund and for each scheme, once a year.

b) Six-monthly unaudited accounts as above.

c) A statement of movements in net assets for each of the schemes of the fund, every quarter.

d) A portfolio statement, including changes from the previous periods,for each scheme, every quarter.

14.3 SEBI shall also lay down the accounting policies to be complied with by all mutual funds and the format and contents of the financial statements and other reports.

14.4 SEBI shall require all mutual funds to adopt a written code of ethics designed to deal with the potential conflicts of interest that may arise from transactions by the affiliated persons or companies. The SEBI shall require a quarterly report from the interested persons of companies, disclosing all reportable transactions as determined by SEBI in a format prescribed by SEBI.

14.5 SEBI shall lay down a common advertising code for all mutual funds to comply with.

14.6 All mutual funds will be expected to submit to SEBI the texts of the marketing literature and advertisements issued to the investors.

14.6 All mutual funds will be expected to submit to SEBI the texts of the marketing literature and advertisements issued to the investors.

14.7 The marketing and publicity brochures for each scheme shall properly disclose the investment objectives, the method and periodicity of valuation of investments, the exact method and periodicity of valuation of sales and purchases and other details considered by SEBI to be essential for investors.

14.8 SEBI can after due investigation impose penalties on mutual funds for violating the guidelines as may be necessary. However, for case of penalties of suspension or deauthorisation of mutual fund entities, prior concurrence of RBI and Government shall be taken.

15. Appeals against decisions of SEBI lie to the Department of Economic Affairs, Ministry of Finance.

NOTES