CHAPTER - I

INTRODUCTION

1.1 GENERAL BACKGROUND

This is the era of globalization. Rapid developments in information technology and the advancement in transportation facilities have made the world as narrow as a village. Due to globalization of economies and market, present world economy has been more competitive and complicated. Every sort of change occurring in one sector of the world affects the other. A healthy economy is dependent on efficient transfers of funds from people who are net savers to firms and individuals who need capital. Without efficient transfers; the economy simply could not function. And economic efficiency is simply impossible without a good system for allocating capital within the economy. Nepal has predominantly a subsistence agricultural economy, which contributes about 40 percent of GDP and provides employment to more than 80 percent of the economically active population.

As the Nepalese economy is in developing phase, so in order to speed up this pace of development, financial sectors have crucial roles, as they can pool scattered savings for capital formation. Capital formation is ultimate function of a capital market. It transfers funds from those who have surplus funds to invest to those who need funds to invest in tangible assets, (fabizzu & Modigliani, 1992:12). Since capital market mobilizes unproductive savings to productive investments, it plays very important role in the advancement of growing economy. If the investors are confident in their investment in capital market the task of capital formation becomes much easier. Unless the market is efficient, the investors' confidence cannot be gained. Efficient market is that where the securities are traded on their true intrinsic value and liquidity among the securities is very high.

If a market is efficient a native investor with passive investment strategy can earn a normal rate of return in his investment. Moreover if the market is efficient, a well-diversified portfolio cannot be outperformed by any actively managed fund. A native investor is generally individual who does not possess skill to manage investment efficiently as does a professional manager. General savers are native investors as they have fund to invest but they may not have skill to manage investment. Since the passive investment strategy is relatively easier which does not require frequent analysis and change in holding position, a common (native) investor generally takes this strategy. If the market is efficient the passive investment strategy works well to earn maximum possible return in the market. But the passive investment strategy, which is relatively easier, does not work in an inefficient market. In an inefficient market frequent change in stock price creates opportunity for those who actively participate in the market. Moreover, inefficient market is much similar to speculative market where the chances of abnormal gain and loss are very high. In an inefficient market a professional investor with active investment strategy can easily earn far better return than a native investor. Since one‘s gain is the loss of another, active investor’s gain is the loss of passive investors. Therefore a native investor cannot be confident in the investment in inefficient market. If investors were not confident that they could shift from one financial asset to another, as they may deem necessary, they would naturally be reluctant to buy any financial assets. But the vital source of fund is the saving of the general public (native investors). Thus efficient market is quite important to develop capital market for this competitive age.

Every business enterprise requires short-term, intermediate term and long-term capital funds for the smooth operation and expansion of organizational activities. Among such funds, long-term funds are highly significant for future growth and prosperity. Most of the organizations generate these types of funds from financial market. The purpose of financial market is an economy is to allocate savings efficiently during the period of time –a day –week or quarter-to parties who use funds for investment in real assets or for consumption (Vanhorne, 2003:448). Financial markets facilitate the transfer of funds from savers to those who wish to invest in capital goods. For instance, companies that

wish to undertake investment projects offer financial instrument to savers I exchange for funds to finance the projects.

A society improves its welfare through investments. Business owner need outside capital for investment because event projects of moderate sizes are beyond the reach of most wealthy individuals. Governments also need funds for public investments. Much of that money is channeled through financial markets from savers to borrowers. In so doing, the financial markets provide a link between saving and investment and between the present and the future. As a consequence, savers can earn higher returns from their savings instead of hoarding them, borrowers can execute their investment plans to earn future profits, and both are better off. As a result the economy also benefits by acquiring better productive capabilities. Financial markets therefore facilitate real investments by action as the sources of information.

Financial markets can also be defined as the centers or arrangements that provide facilities for buying and selling of financial claims and services. And the role of financial system in economic development has been a much-discussed topic among economists. Financial markets perform four important economic functions. First, they enable individuals to choose more effectively between current and future consumption. Borrowing enables individual to consume more, whereas leading enable them to postpone consumption. The economic units that have a surplus (investors) invest in those that have deficit (borrowers). This provides capital to companies in excess of those generated out to business income.

Second, the interaction between buyers and sellers in a financial market determines the price of the assets, or alternatively, the return demanded by investors to invest in the company. Firms can raise further capital if the return on their investments exceeds the return demanded by investors.

Third, financial markets provide liquidity to investors. That is, the owner of the financial asset can sell off the asset in the marketplace to realize cash whenever required. The

degree of liquidity may vary from asset to asset and market to market. Fourth, financial markets can discipline under–performing managements. The prevailing stock price of a company reflects the opinion of all market participants regarding the outlook for the company under the current management. In the main, financial market chiefly refers to money market and capital market.

Money market may be defined as short-term financial assets market, which facilitates liquidity and marketability securities. Actually it is the market for short-term market instrument having less than one-year maturity period. The fluctuation of money market interest rates reflects the demand and supply of funds in competitive market. The development of an efficient money market requires the development of institutions, instruments, and operating procedures that facilitate widening and deepening of the market and allocation of shot-term resources with minimum transaction costs and minimum of delays (I.M Pandey, 1997:878). Thus, the money markets are the markets for short –term, highly liquid debt securities.

Capital market plays a vital role in the national economy. It renders very valuable services to the community by increasing the productive capacity of the country & there by accelerating the ace of economic development. In short, the growth of economy is tied with the growth of capital market in the country. Capital market facilitates the allocation of funds between saver and borrowers. This allocation will be optimum if the capital market has efficient pricing mechanism. If the capital market is efficient, the current share prices of companies fully reflect available information and there is no question of share price being under- priced and over-priced. The phenomenon of under or over-valuation of shares is possible only in an inefficient capital market.

As the capital market is concerned with long- term fiancé, in the widest sense it consists of series of channels through which the saving of the community are made available for industrial and commercial enterprise and public authorities. It is mainly concerned with those private savings, individuals as well as corporate; those are turned into investments through new capital issues and also new public loans floated by government and semi

government bodies. In the capital market demand comes from agriculture, industry trade and government while supply comes from the individual or corporate savings, intuitional investors and surplus of governments. It comprises the savers- individuals and institutions and bodies through which these savings are mobilized. The saving instructions like banks, investment companies' specialized financial corporations and stock exchange are some of the important constituents of capital market.

An efficient capital market is an essential pre-requisite of economic development and the development of capital market in a country is dependent upon the availability of savings, proper organization of intermediary institutions to bring the investors and business ability together for mutual interest, regulation of investment etc.

In an efficient capital market, liquid will channel quickly and accurately where it will do the community best. Such efficient market provides ready financing for worthwhile business ventures and drain capital away form corporations, which are poorly managed, or producing obsolete products. It is essential that a country should have efficient capital markets if that country is to enjoy highest possible level of wealth, welfare and education for its population (V. K Bhalla, 1997:393). Growth of industrial enterprise in a country is limited by the availability of savings. A well-developed capital market presumes the existence of not only the investors – individual and institutional, but more significantly the existence of a network of specialized institutions and agencies, which are always on the look – out for investment in new ventures.

1.1.1 SECURITIES MARKET

In simple sense, securities market is a place where people buy and sell financial instruments. These financial instruments may be in the form of government bonds, corporate bonds or debentures, ordinary shares, preference shares etc. So far securities market is concerned; it is an important constituent of capital market. It has a wide term embracing the buyer and sellers of securities and all the agencies and intuitions that assist the sale and resale of corporate securities (Patric. D. Rugh, 1966:50).

Although securities market is concerned in few locations, they refer more to mechanism rather than to place designed to facilitate the exchange of securities. Thus securities market can be defined as a mechanism for bringing together buyer and sellers of financial assets in order to facilitate trading. in order to allocate capital efficiently, and to maintain higher degree of liquidity in securities, the securities market should be efficient enough in pricing the share solely by economic consideration based on publicly available information. Efficiency in the stock market implies that all available information regarding a given stock is instantly reflected in its price. An efficient market is one where the current price of share gives the best estimate of its true worth.

Thus, the securities market is a place where share of listed companies are traded or transferred from one hand to another at a fair price through the organized brokerage system. The major function of securities market is to provide ready and continuous market for purchases and sales of securities at a competitive price thereby, importing future market ability and liquidity to then. Thus, it is a medium through which scattered saving and scarce resource transferred into productive areas that ultimately help to the economic development and industrialization of the nation.

As a vital part of economic development and activities, securities market encourage saving, help channel saving into productive investment and encourage entrepreneurs to improve the efficiency of investment, the discipline of corporate management through competitive selection in the market for corporate control.

Further, stock market liquidity may influence economic development. Many profitable projects require a long-term venture capital to finance. Most investors tend to avoid the risk and are often reluctant to tie their savings into long-term commitment. Liquid stock market makes the investment less risky and more attractive. It encourages savers to invest in the long –term projects, because they can sell the securities quickly and easily if they want to get back their savings before the project matures. While at the same time, companies receive easy access to capital through new issuance of shares. Stock market

liquidity is positively and robustly. Correlated with contemporaneous and future rates of economic growth, capital accumulation and productivity growth.

1.1.1.1 Primary Market

Primary markets denote the market mechanism for the original sale of securities by an issuer to the public. The volume of new issues in the primary market, particularly of common stock, is directly related to market conditions. When the market is rising, the number of new issues being offered to public rises and when the market is falling, the number declines (Surya Chandra Shrestha, 1999: 2-3).

It is the market in which securities are sold at the time of their initial issuance. In other words, a market for newly issued securities is called primary market. Corporations and governmental bodies issue new securities in primary market. These securities can be offered by method of public flotation and private placement. The term primary market can also be defined as the market in which corporations raise new capital. The corporation selling the newly created stock receives the proceeds form the sale in a primary market transaction.

Securities available for he first time are offered through the primary securities market. The issuer may be a brand new company or one that has been in business for many years. The securities offered might be a new type for the issuer or additional amounts of a security-used frequently in the past. The key is that these securities absorb new funds for the coffers of the issuer (Donald, e, fisher & Ronald. 2000:19).

All the securities whether in the money of capital markets are initially issued in the primary market. This is the only market in which the corporate or government issuer is directly involved in the transaction and receives direct benefit from the issue. That is, the company actually receives the proceeds from the sale of securities (Lawrence, j Gitman, 2000:33-34).

1.1.1.2 Secondary market

A secondary market is the market in which securities are traded that has been issued at some previous points of time. In other words, where outstanding securities are traded is referred to as the secondary or more popularly, the stock market. Thus, secondary market deals with previously issued shares mainly traded through stock exchange, over the counter market or direct dealing.

Secondary market in simple, are markets in which existing, already outstanding, securities are traded between investors. It is the market that crates the price and allow for liquidity. If secondary market did not exist, the investors would have no place to sell their assets without liquidity many people would not invest at all. The corporations whose securities are being traded are not involved in secondary market transaction and, thus, do not receive any funds from such a sale (Eugene F. Brigham, Louis C Gapenski & Michael C Ehrhardt, 2001:115). The function of the secondary market is to provide liquidity for the securities purchased in the primary market.

1.2 FOCUS OF THE STUDY

Public companies obtain funds from the public investors through financial market. The long run objective of every firm is to maximize shareholder wealth position whereas the investors invest their money with the hope of getting good return in the future.

In the Nepalese context, there is the lack of wider investment opportunities, which provide good return. So, there has still been a huge amount of unutilized saving funds with public. But most of the public investor's i. e. existing and potential are not well knowledgeable about the real financial strength and weakness of the public companies in which they are investing or going to invest their funds. Further they cannot well analyze and interpret the real financial position of a company on the basis of available data and information to reach the right conclusion.

This study may help investors to think about restructuring their investment portfolio. Similarly potential investors may take better timely investment decision on the basis of the findings of the study.

1.3 STATEMENT OF THE PROBLEM

Past decades has witnessed several new practices in Nepalese capital market. During this period a number of initial public offering (IPOs) were made. Many new stocks have been listed in NEPSE. By now a newly established banking industry emerged as the largest partner in stock market. This industry holds more than 80% of total market capitalization (Shrestha, 2001). So whenever Nepalese stock market is taken into consideration, the deliberation of banking industry cannot be ignored. Market efficiency results from the correct valuation of individual stocks trading in the market.

Capital market investment in this present context plays the major role in the economic development of the country. Having the sensitive nature, economic, social, and political interference would directly affect on it. The stage of development of capital market in any country and its effective growth is depended upon the aggregate economic condition, saving and investment opportunity etc.

Although there are various institution involved in capital market, they have not been able to show good performances according to the expectation of investors. At the same time there is no denying in the fact that investors are responsible for not having self-control, self-judgment in the choice of securities for investment. Thus having lack of adequate knowledge about the securities of certain in companies, investors are haphazardly investing in shares.

Similarly most of the organizations are found ignoring investor's preference and are also indifferent about secondary market like information dissemination system and transparency in operation. Not only that there is a lack of co- ordination among concerned authorities, market players and other individuals. Similarly, insufficient skilled

manpower and development of human resources are also problems in the capital markets. Again low price and low trading volume of the companies have directly related to market value of firm. Thus, the investors whether professional or amateur, should analyze the securities in terms of price and volume before investing on them.

Regarding the share price movement in the market, one approach assumes that market is inefficient in pricing of shares. In which the technical analysis they argues that the analysis of the historical prices and trading of stocks provides meaningful information, which provides a picture of future price movements to the investors. It attempts to explain and forecast changes in security prices by studying the market data rather than information about a company or its prospects (V.K.Bhalla, 1997:358). Fundamental analysis theory argues that at any point of time, there exists an intrinsic value of the stocks, which helps to select the right stock at a time.

On the other hand, efficient market theory argues that market is efficient in pricing the shares. In a situation where stock price movement follows random walks and at every point in time actual prices represent good estimate of its intrinsic values, general investors tend to select any security randomly to form his/her optimum portfolio (Eugene Fredaric, Fama, 1965:40). As the best investment strategy in such market will be random selection of securities the investment decision is easier. In essence in a random walk market, the security analysis problem of the average investors is greatly simplified.

1.4 OBJECTIVES OF THE STUDY

The prime objective of the study is to analyze the performance of stock market and the behavior of share price of listed commercial banks. However, the specific objectives of the study are as follows:

1. To provide a glimpse of the present to Nepalese stock market.
2. To analyze the share price behavior of the commercial banks listed in NEPSE

3. To examine the risk involved in the common stock investment of the sampled commercial banks.
4. To evaluate return and risk proportion of investments on stock of sampled commercial banks.

1.5 LIMITATIONS OF THE STUDY

Due to various reasons this research work is not able to study the whole Nepalese capital market in detail. For the sake of ease this tries to study its subject matter by concentrating on some important variables and ignoring others. That is why this research is also not free from limitations. The major limitation of the study is presented below:

1. The core of this study is based on the secondary sources of information. Hence any incorrectness in the key information like NEPSE index gathered form the secondary sources might affect the accuracy of the outcome of the study.
2. The study has been designed (to concentrate on some of the banking sector, which is a part of total capital market). So the conclusion cannot be generalized on the total capital market.
3. For the purpose of study only common stocks or ordinary stocks are taken.
4. There might be various techniques and method to perform the study on stock price movement, but the study is focused only on the run test, correlation and regression analysis, risk and return analysis, sensitivity analysis and some ratios analysis.
5. The study is done for the particular fulfillment for MBS degree in management, so it is not a comprehensive study.

1.6 ORGANIZATION OF THE STUDY

The study has been divided into five chapters namely:

Chapter 1: Introduction

This chapter includes background of the study, introduction, statement of problem, objectives, significant of study, limitation of study, chapter plan itself.

Chapter 2: Review of Literature:

In this chapter includes conceptual framework and related different studies.

Chapter 3: Research Methodology

This chapter includes research design, data collection, and method of analysis and research variables.

Chapter 4: Data Analysis and Presentation

Data processing, data analysis and interpretation are given in this chapter.

Chapter 5: Summary, Conclusion and Recommendation

The last chapter contains the findings of whole study after which major conclusion and recommendations are specified.

CHAPTER - II

REVIEW OF LITERATURE

2.1 INTRODUCTION

The over half a century debate in the financial community regarding the pricing of securities has intensified over the last decade. As early as the 1970s, the theory of market efficiency became the accepted model within most academic circles. The theory suggested that security prices fully reflected all currently available information and the history of stock prices seemed to furnish little or no predicative power over future price fluctuations. Furthermore, Jesen (1968) demonstrated that the prices of securities appeared to absorb new information so quickly and efficiently that randomly selected portfolio showed returns comparable to, if not in excess of, the returns generated by portfolios managed by professional managers. Much of the earlier work by Kendall (1953), Osborne (1959), Alexander (1961), and Moore (1964) indicated that there was practically no correlation between stock returns over time.

This chapter provides some glimpses on the literature that is available in the topic. Specially, it covers those studies conducted outside the country by academicians and scholar. Similarly, some of the available relevant studies done inside the country are also included in this chapter.

The first section of this chapter introduces a brief description on the theories of the share price behavior and the second section is devoted to describe theoretically the behavior of share prices. It includes the fundamental analysis, technical analysis and efficient market theory. The second section of this chapter is confined to review of those related literature carried out previously in the foreign contest as well as in he Nepalese context.

2.2 THEORETICAL

The over half a century debate in the fundamental community regarding the pricing of securities has intensified over the last decade. As early as the 1970s, the theory of market efficiency became the accepted model within most academic circles. The theory suggested that security of stock prices seemed to furnish little or no predicative power over future price fluctuations. Furthermore, Jesen (1968) demonstrated that the prices of securities appeared to absorb new information so quickly and efficiently that randomly selected portfolios showed returns comparable to, if not in excess of, the returns generated by portfolios managed by professional managers. Much of the earlier work by Kendall (1953), Osborne (1959), Alexander (1961), and Moore (1964) indicate that there was practically no correlation between stock returns over time.

In this present context, the investment sector is getting flourished in recent years as other economic sectors. To day most of the developing countries are boosting their economic development through the contribution of this investment sector. Business cycle theorists felt that tracing the evolution of several economic variables over time would clarify and predict the progress of the economy through boom and bust periods.

Security analysis is one of the steps preformed in the investment process. It involves examining several individual securities (or group of securities) within the broad categories of financial assets. One reason to examine securities is to identify those that seem miss-priced. In the case of behavior of stock market prices, there are mainly two approaches i. e. classical approach and efficient market theory approach. Classical approach considers the market as inefficient whereas the efficient market theory argues that there exists the efficient market.

2.2.1 CONCEPTUAL FRAMEWORK

2.2.1.1 Common Stock

The main elements of the capital structures are ordinary shares, preference shares and debenture. Among them, the most important form is equity share, ordinary share or common stock. Common stock is the first security of a corporation to be issued and in case of bankruptcy, the last to retired. Common stock represents an ownership share in the firm. So they have the power to elect the board of directors. The common stock holders invest on the firm with the expectation of return in the future. They have the lowest-priority claim on earning and assets of all securities issue. So, the chance of a common stock holder getting anything back from a bankrupt firm is minimal. But common stock has unlimited potential for dividend payments and price appreciation. When investors buy common stock, they can obtain certificates as proof of their parts as owners of the firm. (Stock certificate states the number of shares purchased, the new owner and the number of share bought are noted in the stock purchased their par value and usually the transfer agent. When stock is record book the transfer agent (Jack Clark Fransis & W. Richard Taylor, 1991:50).

2.2.1.2 Security Market

Security market exists in order to bring together buyers and sellers of securities. It means the market where the securities are treated. In such market, buyers and sellers are mechanisms created to facilitate the exchange of financial assets. It can be distinguished as:

- Primary and Secondary Market
- Money and Capital Market

Primary Market (NIM)

Securities available for the first time are offered through the primary securities markets. The issuer may be a brand new company or one that has been in business for many years. The key is that securities absorb new funds for the coffers of the issuer. It is also known as New Issue Market (NIM)

Secondary Market

The Secondary Market is not keeping pace with the growth of the primary market. This is mainly due to lack of the needed efforts on the concerned authority to devise suitable package of measure to encourage the growth of brokers networks in the country's growing stock exchange (Manohar K. Shrestha 1992:18).

Money Market

Money Market is also called short term financial market which is the set of supplying short term debt or working capital needed for industries, business or incorporated etc.

Capital Market

Capital Market is the market where the transaction of long-term finance is made. The funds collected in this market are raised and traded by long-term financial instruments such as equities and bonds .

2.2.1.3 Financial Intermediaries

Financial intermediaries are also known as financial intuitions. They are organizations that issue financial claims against themselves and they use the proceeds from this issue financial claim against themselves and they use the proceeds from this issuance to purchase primarily the financial assets of others.

2.2.1.4 Market Price of Shares

Market price of Shares as the output of the demand and supply interaction is the most influencing factor in determining the price of the stock (Ackerman 1980:10). In relation to the interacting forces of demand and supply i.e. Market Price is determined at given time and the prices and volumes of its past transaction are meaningful indication of probable relationship of future supply and demand pressure. And such relationship is the most important element in determining the probable direction of the price movements. If the demand exceeds the supply, the price will rise and if the supply exceeds the demand the price will fall.

2.2.1.5 Buying and Selling of Stock

Various people are likely to be involved, when a stock is sold and bought. Although it is possible for two investors to trade with each other directly, usually the brokers, dealers and markets provide the service (William F. Sharpe, Alexander & Bailey, 1996:21). When buying or selling the common stock, the investor places an order involving a round lot, an odd lot, or both. Generally, round lot means that the order is for 1000 shares or multiple of 100 shares. An odd lot orders generally are for 1 to 99 shares.

2.2.1.6 Market Size

Relative's market capitalization and the number of listed companies can measure stock market size. The market capitalization ratio is determined by dividing the value of all shares listed on a national exchange by the host country's Gross domestic product (World Bank Policy Research Bulletin 6 (2)1995).

2.2.1.7 Market Liquidity

Liquidity-or-the ability to buy and sell securities is indicated by the two measures. One is the total value of share traded on the stock exchange divided by GDP. The second measure of liquidity is the turnover ratio, the value of total shares traded divided by market capitalization (Ibid).

2.2.1.8 Market Concentration

Concentration is determined by computing the share of market capitalization for the largest stocks on the exchange (Ibid).

2.2.1.9 Market Capitalization

Market capitalization is the market value of listed shares. In other words, it is the product of closing market. Price and the number of listed share of a company of companies.

2.2.1.10 Volatility

Volatility is indicated by 12 month rolling standard deviation estimate based on the market returns. Although volatility is not necessarily a sign of more or less stock market development, lower volatility generally reflects a more developed stock market (Ibid).

2.2.1.11 Profit Maximization or Wealth Maximization

Actually Profit Maximization is the objectives of any business firms. But, in the modern age, it has been explained as a traditional concept. This concept states that action that increase profits should be under taken and those that decrease profits are to be avoided. It means, it prefers to a situation where output exceeds input. New approach: wealth maximization or value maximization becomes the long-run objectives of business organization due to its own limitation. It takes into consideration the time value of money and satisfies suitable operational objectives of financial courses of action i.e. quality of benefits, timing of benefits and exactness. So, it emphasis to maximize the shareholders

wealth or to create value of the company. Generally the value or wealth can be expressed more explicitly in following ways (M. Pandey 1991:56).

$$W = \frac{A1}{(1+K)} + \frac{A2}{(1+K)2} + \frac{A3}{(1+K)3} + \ldots\ldots\ldots\ldots + \frac{An}{(1+K)n} - C$$

$$= \sum_{t=1}^{n} \frac{A1}{(1+K)2} - C$$

Where,

A1, A2…A3 = stream of benefit expected to occur a course of action is adopted.

C = cash out lay or cost of action

K = Discount rate.

W = Value or worth

But the value of the company does not increase itself; there are a number of factors that may contribute to increase the value. The value is represented by the market price of the company's common stock, which in turn reflects the firm's investment strategy, and dividend decisions. So, to maximize of the stock, the financial manager should consider following factors.

- Project earning per share
- Timing of the earning stream.
- Use of debt
- Dividend policy

Hence, the wealth maximization principal implies that the fundamental objective of a firm should be to maximize the market value of its shares.

2.2.1.12 Stock Valuation

Financial managers use different analytical techniques for valuing common stock. The stockholder expects regular earnings in the form of dividends and capital gain by upward movement of the stock price. To maximize the stock price stock valuation model can be used as important tools. Mainly three basic models are used to value stock. (Richard Pike and Neale 1996:76)

***Table*-1**

Stock Valuation Model

S. No	**Model**	**Valuation Model**
1	NAVM	NW=TA-(CL+LTD)
2	DVM	$Po = \sum_{t=1}^{n} \frac{D1}{(1+Ke)}$
3	EVM	Po = P/E ratio x EPS

Source: Richard Pike and Neale (1996). 'Corporate Finance and Investment decision and Strategies' India: Prentice Hall.p.76.

Where,

NVAM = Net Asset Value Model

DVM = Dividend Value Model

EVM = Earning Valuation Model

NW = Net Worth

TA = Total Asset

CL = Current Liabilities

LTD = Long Term Debt

Po = Value of the stock today

Do = Dividend Expected in nth year

Ke = Cost of Equity Capital

T = 1,2,3…n yr.

P/E = Price earning Ratio

EPS = Earning per share.

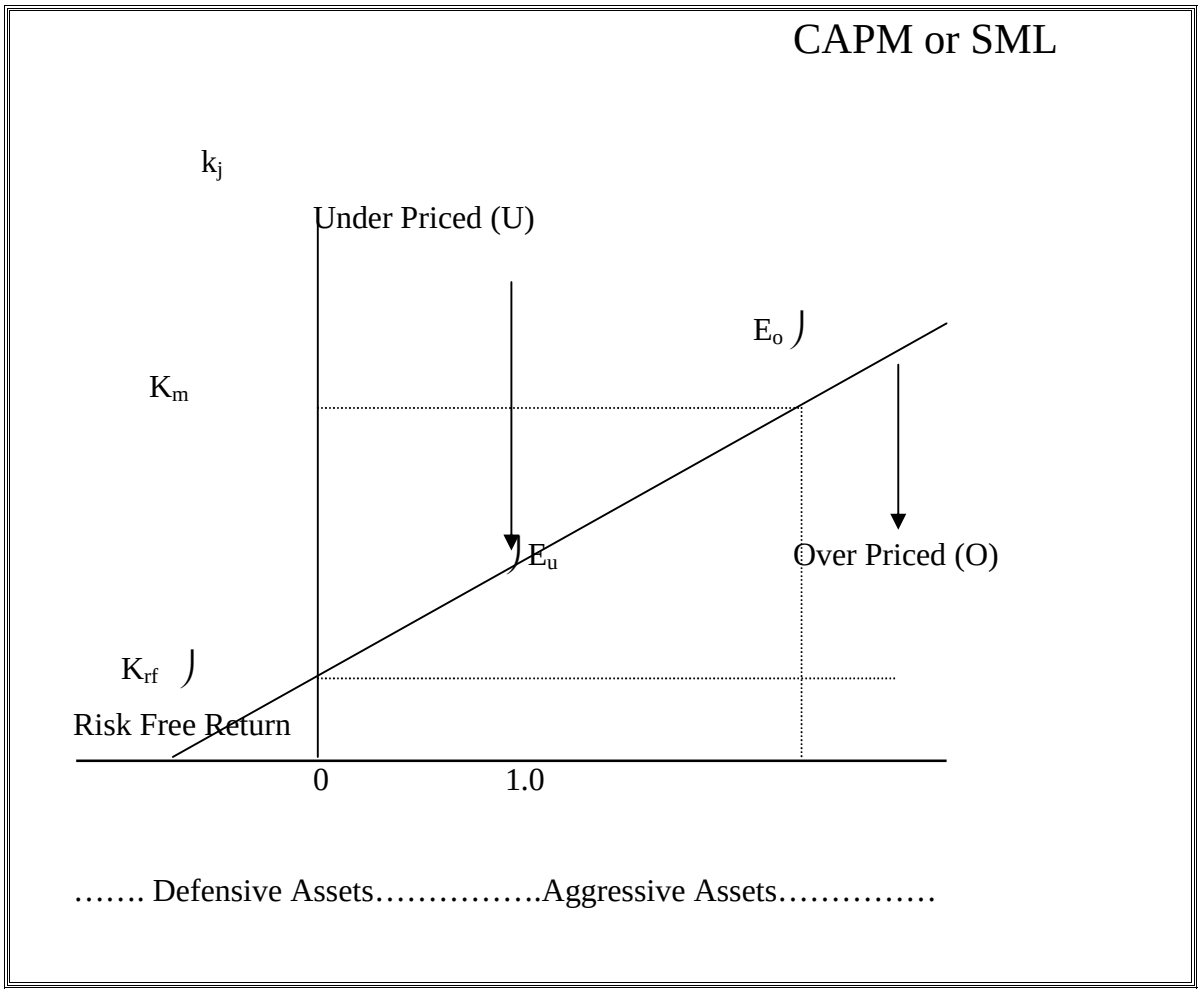
2.2.1.13 Capital Assets Pricing Model (CAPM) or (SML)

Sharpe & Litner developed, 'The capital assets pricing Model' (CAPM). This model provides the intellectual basis for a number of the current practices in the investment industry. Although many of these practices are based on various extensions and modifications of the CAPM, a sound understanding of the original version in necessary in order to understand them, CASPM is based on the following assumptions (John Litner 1990:13-37).

1. Investors evaluate portfolios by looking at the expected returns and standard deviations of the portfolio over a one-period horizon.
2. Investors are risk averse, so when given a choice between two otherwise identical portfolios, they will choose the one with the higher expected return.
3. Investors are never satisfied, so when given a choice between two otherwise identical portfolios, they will choose the one with lower standard deviation.
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 (that is invest) money or borrow money.
6. Taxes & transactions costs are irrelevant.
7. All investors have the same one period horizon.
8. The risk – free rate is the same one period horizon.
9. Information is freely and instantly available to all investors.
10. Investors have 'homogeneous expectation' meaning they have the same perception in regard to the expected returns, standard deviations, and covariance of Securities.

Figure - 1

The capital assets pricing model



Source: Jack Clark Francis and W. Taylor Richard (1991). Investment: Analysis and management: Fifth Edition Mc.Gaw HILL International editions New York, P-276.

Hence, the CAPM or SML is relationship in which the expected rate of return of the individual asset is a leaner function of that asset's systematic risk as represented by beta (β), symbolically. Accordingly to Sharpe & Litner (CAPM), study: the greater the beta of a security, the greater the risk and the greater the expected return required. The lower the beta, the lower will be the risk.

CAPITAL MARKET LINE (CML)

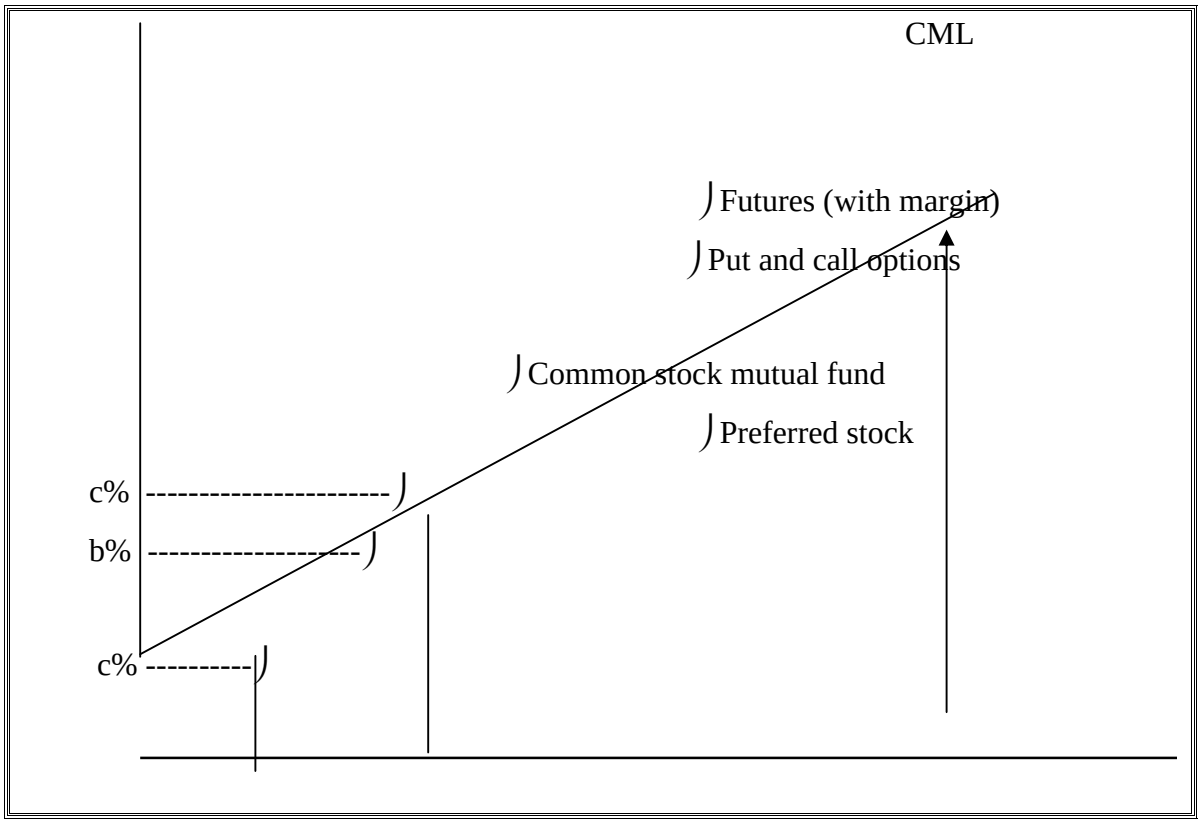
If borrowing and lending opportunities are included in the chart analysis, a linear set of investment opportunities is appeared called capital market line (CML) emerges. It is the locus of the portfolios that wealth seeking risk-averse investors will find more desirable than any other portfolios. CML illustrates the positive relationship between risk and average return. So, it is always be positive sloped because investors are risk averse i.e. sleepless.

The main focus of investment graphed in risk-return space which has (1) the maximum expected rate of return in their risk class or (2) the maximum risk at whatever rate of return is selected. The efficient investments are called efficient portfolios because individual assets are dominated and will not be able to attain the efficient frontier (William F. Sharpe, Alexander & Bailey 1996:19). So, if it is constructed, it will be found convex towards expected rate of return axis in risk rate space.

From the Fig. 2, it is noted that CML dominates every individual asset. The portfolios having risk reducing power is needed to reach a positive in risk-return space that is on or near the CML. CML is assumed to be the market equilibrium situation and is the locus of the most desirable, or most dominant, investment portfolios. CML concentrates how to form a portfolio that is efficient enough to lay on the CML.

Figure – 2

The capital Market Line (CML) and other investment opportunities



Source: Jack Clark Francis and W. Taylor Richard (1991). Investment: Analysis and Management: Fifth Edition Mc.Gaw HILL International editions New York, P.19.

2.2.2 THEORIES OF STOCK PRICE BEHAVIOUR

2.2.2.1 Fundamental analysis

The fundamentalists are of the opinion that the value of share depends upon the anticipated future stream of returns and corresponding capitalization rates. The capitalization rate is an appropriated risk related cost of equity. Therefore, value of share, under this model is equal to the present value of future incomes from an equity discounted at risk adjusted capitalization factor.

In its simplest form, fundamental analysis begins with the assertion that the true value of any financial asset equals the present value of all cash flows, the owner of the asset expects to forecast the timing and size of these cash flows and then converts the cash flows to their equivalent present value using an appropriate discount rate (Gordon J. Alexander, William F. Sharpe, & Jeffery V. Bailey, P. 12).

After estimating the true value of the stock of a particular firm, it is compared with the current market price of the common stock to determine whether the stock is fairly priced. Stocks whose estimated value or true value is less than their current market price are known as overvalued and vice versa. Fundamental analysts believe that any notable cases of miss pricing will be corrected by the market in the near future, meaning that prices of overvalued stocks will show unusual appreciation and prices of under valued stocks will show unusual depreciation.

Fundamental analysis involves making investment decision based on the examination of the economy, an industry, and company variables that lead to an estimate of value for an investment, which is then compared to the prevailing market price of the investment (Frank K. Reilly & Keith C. Brown, 2000:869-70).
Fundamental analysis use public information to calculate a fundamental value for a share, and then offer investment advice by comparing the fundamental value with the current market price. Fundamental analysis is not possible if capital markets are semi-strong from efficient, since security price will already fully and fairly reflect all publicity available information (Denzil Watson & Toni Head, 1998:31-32).

Fundamental analysis approach involves working to analyze various factors like economic influences, industry factors, firm's financial statement, and pertinent company information such as product demand, earnings, dividends and management in order to calculate an intrinsic value for the firm's securities. This theory assumes that knowledge about the future of companies is not perfect, some stocks are under priced and others are over- priced. The investor's task is to study certain fundamental factors that may enable them to select undervalued stocks for purchase and sell overvalued stocks.

The objective of fundamental analysis is to appraise the intrinsic value of a security. The intrinsic value is the true economic work of financial assess. Therefore, fundamental analysts work to find new information before other investors, so they can get into a position to profit from price changes they anticipate. Fundamental analysis use different models like Top- Down versus Bottom –up forecasting, probabilistic forecasting, econometric models, financial statement analysis etc. to estimate the value of security in an appropriate manner for making investment decision.

Some limitations of the fundamental analysis approach are as follows:

1. The approach though sound and based on basis financial figures dose suffer from drawbacks and to make this approach work effectively one must be aware of them.
2. The entire fundamental approach is based on a rational scientific analysis of data that the market is rarely rational.
3. The information and analysis itself may be incorrect.
2. Many companies with the help of creative/ innovative accounting and accounting cosmetics disguise real earnings.
3. The fundamentalist's estimate of intrinsic value may be incorrect. This is not only possible but also probable than not he has to often forecast growth, profit and other factors without having in his grasp all the facts.
4. The fundamentalists may not fully understand the economy or the industry, as there are several external factors.

Therefore, fundamental analysis is a never-ending process because values changes overtime. Ideally, revision in analysis should occur whenever new information affecting the future benefits to security holder becomes available.

2.2.2.2 Technical analysis

Technical theory involves study of the past volume and price data of the stocks to predict future price fluctuations. This approach studies various graphs and charts of past share prices and deduces from the analysis about future price movement. The chartist seeks to predict future movement by seeking to interpret past pattern on the assumption that "history tends to repeat itself (Simon M. Kean, 1983:11).

Technical analysis involves the study of stock market prices in an attempt to predict future price movements. Past prices are examined to identify recurring trends or patterns in price movements. Then more recent stock prices are analyzed to identify emerging trends or patterns that are similar to past ones. This analysis is done in the belief that these trends or patterns repeat themselves. By identifying an emerging trend or pattern, the analyst hopes to predict accurately future price movements for a particular stock (Gordon J. Alexander, Willam F. Sharpe, & Jefery V. Bailey, 2001:12).

Technical analysis is based on the widely accepted premise that security prices are determined by the supply and demand for securities. The tools of technical analysis are therefore designed to measure certain aspects of supply and demand (Jack C. Francis, 1991: 521-22).

Technical analysis can be defined as the use of published market data for the analysis of both the aggregate stock market and individual stocks. It is sometimes called market or internal analysis(Chrarles, parker Jones 1988:396).

So, the technical analysis is based on the assumption that the past information of prices and trading of stocks provides some picture of the future prices of stocks. Technicians seek to forecast security prices rather that then security value, especially trends in the price changes.

Prices and volume are the primary tools of the technical analyst. Technicians believe that the forces of supply and demand show up in patterns of price and volume. Volume data are used to gauge the general condition in the market and to help assess its trend. The

evidence seems to suggest that rising (falling) stock prices are usually associated with rising (falling) volume. If stock prices rise but volume activity dose not keep pace, technicians would be skeptical about the upward trend. A downside movement from some pattern or holding point, accomplished by heavy volume, would be taken as a bearish sign (ibid).

The technician usually attempts to predict short-term price movements and thus makes recommendations concerning the timing of purchase and sales of either specific stocks or groups of stocks (such as industries) or stock in general. It is sometimes said that fundamental analysis is designed to answer the question "what"? And technical analysis to answer the question "when? (Gordon J. Alexander, William F. Sharpe, & Jeffery v. Bailey, 2000:844) More especially the technical analyst seems to be trying to forecast short-run shifts in supply and demand that will affect the market prices of one or more securities.

Typically, technical analysts record historical financial data on charts, study these charts in search of patterns that they find meaningful, and endeavor to use the patterns to predict future prices. Some charts are used to predict movements of market index and, still others are used to predict the function of both individual assets and the market.([1] Frances, op cit. P. 522)

Technical analysis involves the examination of past market data, such as prices and the volume of trading which leads to an estimate of future price trends and, therefore, an investment decision is made feasible. Whereas, fundamental analysts use economic data that are usually separate from the stock or bond market, the technical analyst believes that using data from the market itself is a good idea because "the market is its own best predictor". Technical analyst base trading decisions on examinations of prior price and volume data to determine past market trends from which they predict future behavior for the markets as a whole and for individual securities (Frank K. Reilly & Keith C. Brown 2000:870).

Technical analysis maintain that the price of a share at any time (present price) is the balance struck by buyers and sellers at a point in time price movements take place on account of changes in buying and selling pressures. This occurs in account of diverse internal and external factors (profits, political environment, predictions and the likes). Prices stabilize when equilibrium between buyers and sellers is achieved. They believe that record of price movements over, a period of time in the past, as the whole theory is based on the assumption that history repeats itself. That human nature does not change and that man is likely to repeat his patterns of past movements will repeat them in the future (Raghu Palat, 1991:870).

Technical analysis is essentially the search for recurrent and predictable patterns in stock prices. Although technicians recognize the value of information regarding future economic prospects of the firm, they believe that such information is not necessary for a successful trading strategy. This is because whatever the fundamental reason for a change in stock price, if the stock price responds slowly enough, the analyst will be able to identify a trend that can be exploited during the adjustment period. The key to successful technical analysis is a sluggish response of stock prices to fundamental supply-and demand factors. This prerequisite, of course, is diametrically opposed to the notion of an efficient market. (Zvi Bodie, Alex Kane & Alan J. Marcus, 2002:343)

Technical analysis however may be useful in timing a buy or sell order that may be implied by the forecasts of return and risk. For example, the technical analysis may reveal that a drop in price is warranted. Postponement of purchase, then, if the technical analysis is correct, will raise the forecast holding period yield (HPY). Conversely, a sell order might be postponed because the charts reveal a raise in the price of the security in question (Donald E. Fisher & Ronald J. Jordon, 1995:510).

The methodology of technical analysis rests upon the assumption that history tends to repeat itself in the stock exchange. If a certain patterns of activity has in the past produced certain results nine times out of ten, one can assume a strongly likelihood of the same outcome whenever this pattern appears in the future. It should be emphasized,

however that a large part of the methodology of technical analysis lacks a strictly logical explanation (Sharpe et. Al, Cit Flix, Rosenfeld, Ed 1975:297-298)

The basic assumptions underlying technical analysis are as follows (Francis, Cit R.D.. Edwards & John Magee 1958:86)

1. Market value is determined by the interaction of supply and demand.
2. Supply and demand is governed by numerous factors, both rational and irrational.
3. Security prices tend to move in trends that persist for an appreciable length of time, despite minor fluctuations in the market.
4. Changes in a trend are caused by the shifts in supply and demand.
5. Shifts in supply and demand, no matter why they occur, can be detected sooner or later in charts of market transactions.
6. Some Chart Patterns tend to repeat themselves.
7. The pattern trends repeat it. (Frank K. Reilly 1986:48)

Various studies evidenced that technical analysis is useful in enabling investors to beat the market. Technical analysis, however, attempts to predict future stock prices by analyzing past behavior of stock prices. In general, tomorrow's stock price is influenced by to day's price. The direction of price change is important as the relevant size of change. With the application of various tools, the technicians attempt to correctly catch changes in trend and take advantage of them.

Technical tools:

a) **The Dow Theory**: this tool originated by Charles Dow, fonder of the Dow Jones'Company is one of oldest and most famous technical method of analyzing security prices. The aim of the Dow Theory is to identify long-term trends in stock market prices. "According to this theory it is believed that the market is always considered as having three movements, all going at the same time. The first is narrow movement from day to day. The second is the sort swing, running from two weeks to a month or more; the third is the main movement, cove rising at least 4 years duration".28. So, can stay that there are three forces simultaneously affecting the stock prices, tertiary or minor trends. The

primary price movements are held to constitute the bearish or bullish trends, whereas the secondary movements are regarded as passing phases. Tertiary price movements are daily price fluctuations to which Dow attributes to no significance or ignores the role of this trend.

The Dow Theory employs two indicators called Dow Jones Industrial Average (DJIA) and Dow Jones Transportation Average (DJTA). The DJIA is a key indicator of underlying trends, while the DJTA usually serves as check to confirm or reject that signal (Zvi Bodie, Alex Kane & Alan 2002:344).

The Dow Theory is built upon the assertion that stock prices tend to move together. If the DJIA is rising then the DJTA should also be rising. Such a simultaneous price movements suggests a strong bull market. Conversely, a decline in both the averages suggests a strong bear market. However if the averages are moving in opposite direction , the stock market is uncertain regarding to direction of future stock prices.
The forecasting result of Dow Theory is less accurate. It might work only when a long, wide, upward or downward movement is registered in the market. It is mostly unsuitable as a market predictor when the market trend frequently reverses itself in the short or the intermediate-term. This theory also fails to explain a consistent pattern of the stock price movements.

b) **Barron's Confidence index**: In literal sense, the confidence index is defined as the ratio of high grade bond yields divided by low grade bond yields. The ratio is supposed to revel how willing investors are to take investment risks. Barron's confidence index is constructed by using Barron's index of yields on high-grade bonds and low- grade bonds.

The confidence index is usually, but not always, a leading indication. Like most of other technical indicators, the confidence index may sometimes issues erroneous signals and should therefore not be used without confirming evidence from other indicators (Jack C. Francis1991:531).

c) **Odd lot theory**: this theory concerns the purchase and sales of securities by small investors. These investors do transaction of less than 100 shares. Some technicians take the ratio of these odd lot purchases to odd lot sales as an indicator of the direction of future prices. An increase in the index suggests relatively more buying; a decrease indicates relatively more selling. During most of the market cycle, odd lotters are selling the advance and buying the declines.

Odd lotters try to do the right thing most of the time; that is, they tend to buy stocks as the market retreats and sell stocks as the market advances. However, technicians feel that odd lotter is inclined to do the wrong thing at critical turns in the market (Donald E. Fisher & Ronald J. Jordan 1995:515).

2.2.3 EFFICIENT MARKET THEORY

In a competitive market, he equilibrium price of any good or service at a particular moment of time is such that the available supply is equated to aggregate demand. This is the true worth of the goods or services, based on all publicly available information. The new equilibrium price will hold until another bit of information is available for analysis and interpretation.

When security prices at all times rationally reflect all available, relevant information, the market in which they are traded is said to be efficient. This implies that any new information coming to light, which bears on a particular firm, will be incorporated into the market price of the security. An efficient capital market is one in which security prices adjust rapidly to the arrival of new information and therefore the current prices of securities reflect all information about the security.

An efficient market is one where shares are always correctly priced and where it is not possible to outperform the market consistently except by luck. (Richard Pike & Bill Neal 1996:41) In an efficient capital market, current market prices fully reflect available information.(Eugeme F. Fama, 1996:13)

Therefore if market is efficient, it uses all available information to it in setting price.

There are several concepts of market efficiency and there are many degrees of efficiency, depending on the market. Market in general are efficient when: I) prices adjust rapidly to new information; ii) these is a continuous market, in which each successive trade is made at a price close to the previous price (the faster that the price responds to new information and the smaller the difference in price changes, the more efficient the market): III) the market can absorb large amounts of securities without destabilizing the prices. (Stanley B. Block & Geoffrey A. Hirt, 1998:420)

An efficient market is defined as a market where there are large numbers of rational profit maximizes activity competing with each trying to predict future market values of individual securities, and where important current information is almost freely available to all participants. In an efficient market, competition among the many intelligent participants leads to a situation where at any point in time, actual prices of individual securities already reflect the effects of information based on both on events that have already occurred and on events which as of row, the market expects to take place in the future. In other words, in an efficient market at any point in time the actual price of a security will be a good estimate of its intrinsic values. (Eugene F.Fama, 1970:384-85)

In an efficient market, a security's price would correctly reflect the importance of variable for that security and would represent an unbiased estimate of its investment value. (John M. Cheney & Edward A. Moses, 1992:746) The efficient market hypothesis suggests that investors cannot expect to outperform the market consistently on a risk-adjusted basis over an extended period of time. This hypothesis is based on the premise that security prices reflect all available information concerning a firm and that security prices change rapidly in response to new information. Market efficiency also implies that as new information become available, the market quickly analyzes it, and any necessary price adjustments occur rapidly.

The requirements for a securities market to be efficient are:

1. A large number of rational, profit – maximizing investors exist who actively participate in the market by analyzing, valuing, and trading stocks. These investors are price takers; that is, one participant alone connote affect the price of a security.
2. Information is free of cost and widely available to market participants at approximately the same time.
3. Information is generated in random fashion such that announcements are basically independent of one another.
4. Investors react quickly and accurately to the new information, causing stock prices to adjust accordingly. (Charles, Parker Jones 1988 P. 425)

In an efficient market, all prices are correctly stated and there are no bargains in the stock market. 'Efficiency in this context means the ability of the capital markets to function so that prices of securities react rapidly to information. Such efficiency will produce prices that are appropriate in terms of current knowledge, and investors will be less likely to make unwise investments. A corollary is that investors will also be likely to discover great bargains and thereby earn extraordinary high rates of return.(V.K.Bhalla, Cit. James A. Lorie, 1973:3)

The degree of market efficiency has important implication for the economy and for investment decision markets. In an economics sense, it is important that security prices provide accurate signals that can be used to allocate capital resources correctly. Mispriced security would result in incorrect allocations of capital. (John M. Cheney & Edward A. Moses, 1992:746) Although efficient market may be vital and pleasing from an economic perspective, it presents complexity to investors in term of an appropriate investment strategy.

If a market is efficient, then there is a very important implication for market participants: all investment in that market is Zero NPV investment. The reason is not complicated, if prices are neither too low not too high, then the difference between the market value of an investment and its cost is Zero; hence, the NPV is Zero. As a result, in an efficient

market, investors get exactly what they pay for when they buy securities and firms receive exactly what their stocks and bonds are worth when they sell them.

In an efficient market, liquid capital will channel quickly and accurately where it will do the community the most good. Efficient market will provide ready financing for worth while business venture and drain capital away from corporations that are poorly managed or producing obsolete products. One of the main reason that some under developed countries do not advance is that they have inefficient capital markets, where prices may be fixed or manipulated rather than determined by supply and demand.

An efficient market is an assumed perfect market in which there are many small investors, each having the same information and expectations with respect to others. There are no restrictions on investment, no taxes, and no transaction costs; and all investors are rational view securities similarly, and are risk- averse, preferring higher returns and lower risk. (Lawrence J. Gitman, 2000: 265-66)

The security prices have been observed to move randomly and unpredictably. This randomness of security prices may be interpreted to imply that investors in the capital market take a quick cognizance of all information relating to security prices, and that the security prices quickly adjust to such information. Therefore, the capital market efficiency can also be defined as the ability of securities to reflect and incorporate all relevant information of its prices. So there is no question of the share price being under or over- valued.

In an efficient market there are neither free lunches nor expensive dinners. It is not possible to systematically gain or lose abnormal profits form trading on the basis of available information.(J.F. Weston & Thomas E. Copeland p 93-4) Not all market participants are believers in the efficient market hypothesis. Some feel that it is worthwhile to search for undervalued or overvalued securities and to trade them to gain profit from market inefficiencies. Others argue that it is mere luck that would allow market participants to correctly anticipate new information.

Although it may not literally be true that all relevant information will be uncovered, it is virtually certain that there are many investigators hot on the trial of most leads that seem likely to improve investment performance. Competition among these many well backed, highly paid, aggressive analysts ensure that, as a general rule, stock prices ought to reflect available information regarding their proper levels.(Zvi Bodie, Alex Kane & Alan J. Marcus, 2002:342)

If new information becomes known about a particular company, how quickly do market participants find out about the information and buy or sell securities of the company on the basis of the information? How quickly do the prices of the securities adjust to reflect the new information? If prices respond to all relevant new information in a rapid fashion, we can say the market is relatively efficient. If, instead the information disseminates rather slowly throughout the market, and investors take time in analyzing the information and reacting and possibly overreacting to it, prices may deviate from values based on a careful analysis of all available relevant information. Such a market could be characterized as being relatively inefficient (Robert A. Haugen, 2001:573).

There are three firms of efficient market hypothesis based on type of information used in making market decisions. They are; I) weak-form efficiency, II) Semi –Strong from efficiency and III) Strong-form efficiency. The difference between these forms relates to what extent information is reflected in the stock prices.

Under the weak form, stock prices are assumed to reflect any information that may be contained in the past history of the stock price itself.(Ibid. P. 575) This hypothesis holds that no investor can earn excess returns by developing trading rules based on historical prices or return information.

Weak form efficiency, suggest that, at a minimum the current price of a stock reflects the stocks own past prices. In other words, studying past prices in an attempt to identify mispriced securities is futile if market is weak form efficient Although this form of efficiency might seem rather mid, it implies that searching for patterns in historical prices

that will be useful in identifying mispriced stocks will not work (Stephen A. Ross, Rodolph W. Westerfield & Bradford D Jordon, 2003:407).

Under the semi-strong form, all publicly available information is pre assumed to be reflected in securities' prices. This includes information in the stock price series as well as information in the firm's accounting reports, the reports of competing firms announced information relating to the state of the economy, and any other publicly available information relevant to the valuation of the firm (Haugen op. Cit.P.575).

This form of efficiency is the most controversial. The reason this form is controversial is that it implies that a security analysts who tries to identify mispriced stocks using .for example, financial statement information is wasting time because that information is already reflected in the current price (Ross op. Cit. P. 407).

The strong –form takes the notion of market efficiency to the ultimate extreme. This form includes private or inside information as well as that which is publicly available. Under this form, those who acquire inside information act on it, buying or selling the stock. Their actions affect the price of the stock, and the price quickly adjusts to reflect the inside information (Haugen op. cit. p. 575).

One obvious way to check the validity of the strongly efficient market hypothesis is to examine the profitability of traders in securities, made by insiders to see if the insider's access to valuable information allows them to earn statistically significant trading profits (Jack C. Francis p.558. Ibid. p.543). Thus, the strong form of the efficient market hypothesis is equivalent to prefect markets in which the market correctly prices securities adjusting quickly to new information either public or private.

2.2.3.1 The random walk theory

The weakly efficient hypothesis stipulates that historical price and volume data for securities contain no information, which can be used to earn a trading profit above what could be attained with a naive buy- and –hold investment strategy (Ibid. P. 543). The past prices have no meaningful information to predict future course of price fluctuations, which can be used to earn above average return. The movements of future prices are independent from past prices, so the series of price changes are in random phenomenon.

If the price changes could be used to predict future prices changes, investors could make easy profits. But in competitive markets easy profits don't last. As investors try to take advantage of the information in past prices, prices adjust immediately until the superior profits from studying past prices will be reflected in today's stock price, not tomorrow's. Patterns in prices will no longer exist and price changes in one period will be independent of changes in the next. In other words, the share price will follow a random walk.(Richard A. Brealey & Stewart C. Myers, 200: 357-58)

The weak form says that the current prices of stocks already fully reflect all the information that is contained in the historical sequence of prices. Therefore, there is no benefit-as far as forecasting the future is concerned in examining the historical sequence of prices. This weak form of efficient market hypothesis is popularly known as the random- walk theory.(Donald E. Fisher & Ronald J. Jordon, 1995:540)

Random walk theory describes whether, past prices can predict future prices. "Random walk theory implies the future path of price level of a security is no more predictable then the path of series of cumulated random numbers. The series of price changes has no memory; that is, the past cannot be used to predict the future in any meaningful way." (Eugene F. Fama, 1965:34) It means that the current size and direction of price changes are independent and unbiased outcome of previous prices. "The underlying theory of random walk in stock price behavior statistically consists of two separate assumptions: a) price changes are independent random variable, b) price changes conforms to some probability

distribution without specifying the particular shape or form of the distribution."(Ibid. P.35)

Of the two hypotheses independence is much more important assumption which means that the previous price changes following the current change will not be influenced by the sequence of preceding price changes. Mathematically, independence means that.

$P_r [X_t = X / X_{t-1,} X_{t-2,} \ldots\ldots X_{t-n}] = P_r (X_t = X)$

Where left hand side of the equation is the conditional probability- that the price will take the value of X conditional upon knowledge of previous changes X(t-1), X(t-1)…….X(t-n). The tight hand side is the unconditional probability that price change in 't' will take the value of X.

Independence is of course an important prosperity of random walk theory. However this precise prosperity must be satisfied in order to make the theory as a valid representation. But here lacks prefect independence sanitation by the application of any statistical tools in general market. "Independence assumption of successive price changes can be justified if any outcomes produced by the testes there cannot allow the investor to beat the return provided by the market averages. Then one can refer that the independence hypothesis of the random walk theory is accepted as law governing the behavior of price series".(Ibid)

The stock market is always subjected to a steady inflow of information, much of which will have an effect on the set of anticipations that constitute price of a particular security. Some of the information has a whole market-wide impact such as change in monetary and fiscal policy on security prices. Some other information has an influence upon a group of stock price i.e. industry –wide impact. And still some information such as announcement of dividend, bonus shares may have an influence on the price of a particular security i.e. company –wide impact (Benjamin F. King 1996:136-190).

There are some participants who estimate the intrinsic value of the individual securities from the received information. “The existence of intrinsic value for individual securities is not inconsistent with random walk hypothesis.” (Eugene F. Fama, 1965:36) In the market, securities are over or under-valued because of in appropriate estimation of the incoming information by the investors. This means, there is a gap between the actual price and intense value of a particular security and this can be used by the speculator to evaluate the influence to improve his prospects of gain.

Any distribution is, consistent with the theory of random walk as it is correctly characterizes the process generating the price changes. The distribution of price changes provides descriptive information concerning the nature of the process generating price changes. The shape of the distribution provides help for the investor while committing his funds for particular security. Thus, by the careful analysis of distribution of price changes by the powerful statistical theory one can get important information either he may be investor, trader, market analyst or researcher.

The random walk theory says nothing more than that successive price changes are independent. This independence implies that prices at any time will on the average reflect the intrinsic value of the security. If a stock’s price deviates from its intrinsic value because among other thing, different investors evaluate the available information differently or have different insights into further prospects of the firm, professional investors and smart non professionals will seize upon the short term or random deviations from the intrinsic value, and though their active buying and selling of the stock in question will force the price back to its equilibrium position.(Donald E. Fisher & Ronald J. Jordon 1995:553)

If the random walk hypothesis holds, the weak form of efficient market hypothesis must hold (though not vice –versa). Thus, evidence supporting the random walk model is evidence supporting weak form of efficiency (Edwin J. Elton & Martin J. Gruber 1991:404). If prices follow a random walk, price changes overtime are random (independent). The price change for today is unrelated to the price change on previous

days. Any new information arrived randomly in the market results in the random changes in the prices. Random walk theory that involves random selection of securities is represented as the modern approach to investment decision.

2.3 REVIEW OF PREVIOUS STUDIES

Scholars have been studying the way security price fluctuate for over a century."The empirical evidence in the random-walk literature existed before the theory was established. This is to say, empirical results were discovered first, and then an attempt was made to develop a theory that could possibly explain the results. After these initial occurrences, more results and more theory were uncovered. This has led then to a diversity of theories, which are generically called the random-walk theory" (Fisher op. cit p. 539).

2.3.1 Foreign context

All of the empirical work on efficient markets can be considered within the context of the general expected return or "fair game" model; in particular, the expected profits to the speculators should be zero. The pioneer work in this field is due to French mathematician Louis Bachelor (1900) who used the data of commodity price during the period of 1894-1898. He concluded that commodity speculation in France was "fair game" that has no expected profits for buyers and sellers. Unfortunately, his insights were so far ahead of the time that was largely unnoticed for a long period until his paper was rediscovered and eventually translated into English and published in 1964.

Additional evidence that security prices follow a random walk was found by Holbrook in 1934. He extensively analyzed commodity prices and noted that speculative price patterns might be shown to be random comparing with artificially generated series of price. According to him, "it has several times been noted that time series commodity possess in many respects the characteristics of series of cumulated random numbers. The separate items in such time series are by no means random in character, but the changes between successive items tend to be largely random."(Halbrook Working 1934:11-24)

In 1953, Kendall examined the behavior of weekly changes in nineteen indices of British Industrial share prices and in spot prices for cotton (New York) and wheat (Chicago). He found no relationship between share price changes in the current week and the previous week. After extensive analysis of serial correlations, he suggested that" the series looks like a wandering one, almost as if once a week the demon chance or drew a random number from a population of fixed dispersion and added it to the current price to determine the next week's price."(Maurice G. Kendall 1953:11-25)

In 1959, H. v. Roberts's compared Dow Jones Industrial index with simulated price index generated on the basis of series of random numbers for 1956. He found considerable similarity in the graphic of these two series and it was difficult to distinguish between the series of random numbers and the stock market index. Thus, concluded that random movement of the past price s index cannot be used to forecast future share prices. 64 Another study conducted by Osborn, one of the distinguished physicists, ignorant about the stock market at that time watched the numbers representing stock prices to see whether they conformed to certain law governing the motion of physical objects. He found the movement of stock prices similar to that of the movement of small particles suspended in a chemical solution so called "Brownian Motion". Although, Osborne attempted to give the empirical Justification for his theory, most of his data were cross – sectional and could not provide an adequate test. Though his point of view is different, the findings are consistent with Robert's work (1959). (M. F. M. Osborne 1959:145-173)

Alexandar (1961) tested the filter, rule technique on the closing prices of two indices, the Dow Jones industrials from 1897 to 1959 and Standard & poors's industrials room 1929 to 1959 and reported that in general, filters of all different sized and all different periods yield substantial profits, significantly greater than that of simple buy –and –hold policy. Finally he concluded that the independence assumption is not validated as a description of reality by his data. But alter in 1964, he corrected the shortcomings of his previous study were the failure to realize that dividends were cost rather than benefit, Alexander found that his filler rules produced very large rates of return, particularly for small filters.

However, when transact on costs are considered, the abnormal returns disappear for all filter rules (Sidney S. Alexander 1961:7-26).

In1962, A. B. Moore examined weekly price changes of 29 randomly selected stocks for 1951-58 and found average serial correlation co-efficient of –0.06, this value is extremely low, indication that data on weekly changes are valueless in prediction future changes. The interpretation of this test is that a low co-efficient estimate suggests that previous price changes do not provide any reliable information in estimating future price changes(Paul H. Cootner 1962:24-45).

Granger and Morgenstern(1962) published article about the random walk hypothesis of stock market behavior applying spectral methods of analysis to the weekly, monthly end volume series from series New York stock market using Dow Jones, Standard & poor and other various indices as well as price series of individual stocks. Especially there exists no linear relationship of independence between lagged price changes.(C. Gragner & Morgenstern O 1962:24-45)

In 1965, Samuelson though lacked theoretical discussions in his paper, but his findings supports the independence hypothesis of random walk theory in stock prices. He concluded that if a market has Zero transaction costs, if all available information are free to all interested parties and if all market participants either potential and existing have the same time horizons and expectations about prices, the market will be efficient and prices will fluctuate randomly. (Paul A. Samuelson 1965:41-49)

In 1965, Fama analyzed the movement of stock market price changes of all the stocks that make up Dow Jones Industrial index for the period end of 1952-1962 and investigated the daily proportional price changes of those 30 industrial stocks and auto correlation were estimated for a variety of lags ranges from 1 to 10 days. In his study, he found that the auto correlation coefficients for daily changes are small the average being 0.03, near to zero. Out of thirty, eleven auto correlation coefficients were significantly different from Zero and lagged price changes show some degree of dependence. He

further analyzed the data by run tests by total number of runs, number of runs by signs, and distribution of runs by length. He found slight tendency for this to occur, but again the results were sufficient to accept the random walk hypothesis. (Eugence F. Fama, 1965:34-105)

King in 1966 also examined the behavior of 63 securities from six industries of New York exchange, from 1927 to 1960. This study also concludes that there exists low degree of co-efficient estimates of serial corer relation, i. e. 0.018 which is close to zero. This helped him in concluding that stock market prices follows random walk model.(Benjamn F. King, 1966:136-190)

Brealy (1970) examined the various stocks using similar methodology to that used by Fama in 1965 also supported the random walk model and concluded that successive price changed in stock market are independent.(Richard Brealy (1970)) Cootner (1964) tested the randomness of he series by using serial correlation on he logarithms of daily price changes of 45 companies stocks from new York stock Exchange. In his study he found the low serial correlation coefficients of –0.046, which are insufficient to predict the future price changes.(Paul H. Cootner 1964)

In 1966, Fama & Blume used the filter technique to overcome the shortcomings of Alexander's mechanical rules. They tested the profitability of 24 filters ranging from 0.5% to 50% to buy and hold return of each of the stock of the Dow Jones. Ignoring transaction costs, only two out of thirty is superior to buy and hold policy, when commissions are taken into consideration only four out of thirty have positive returns and not comparable with buy and hold return. (Euguene F. Fama & Blume M. E 1966:226-241) Therefore, according to their demonstration, it seems that filter technique cannot provide returns larger than those under a naïve buy and hold policy.

Sweeney (1988) developed a filter rule that was able to earn modest profits. He replicated Fama and Blume's resulted in the short positions usually generated the trading losses. In

contrast, Sweeney found that the long position were often profitable. So he used an X %filter rule as follows:

If the price of the security rises at last X%, buy and hold the security until its price drops at least x% from a subsequent high. Then, liquidate the long position and invest the proceeds in risk free short-term bonds until price reaches its next through and then rises X% Sweeney also found that filter rule trading tended to be fairly and consistently profitable in some stocks while being fairly consistently unprofitable year after year in other stocks. This filter rules could mechanically trade some stock and earn a statically significant rate of profit after deducting tiny trading costs incurred. However this filter rule seems to be unprofitable if the higher commission rates that most investors pay were deducted (Richard J. Sweeney 1988:285-300).

In 1971, Niarchos studied price series of 15 individual stocks from Athens stock Exchange for the period from 1957-1968. He found the serial correlation coefficients for individual stock as 0.036, close to zero. So, he concluded that he price fluctuations were random walk and past price has no meaningful information to predict future prices (N.A. Niarchos 1971).

Dryden (1970) concludes that the share price movements were not random. However in his later study, he used serial correlation and runs analysis to examine the daily closing price of 14 individual stocks of U. K. market and supported that the independence hypothesis of successive price change. (Miles M. Dryden 1970:369-389) Similarly, Kemp and Remp's study (1971) was also against the random walk theory. They derived the conclusion that share price movements were conspicuously non random over the period considered. (Alexander G. kemp & Reid Remp, 1971:28-51)

Fama, Fisher, Jensen and Roll examined the effect of stock splits on security prices. A number of prior studies had suggested that stock splits increase the value of the firm. This was disturbing to many because stock splits simply involve changing the percentage ownership of any shareholder or the asset or earning of the company. Fama and other

scholars argued that stock splits might be associated with other more fundamental change and the effects the researcher were attributing to stock splits might be better attributed to these other phenomena (Eugene F Fama, Lawrence Fisher, Michael Jensen & Richard Rol, 1969:1-21)

While talking about Indian context, Rao (1988) conducted the study on the weekend prices of the eight blue-chip stocks for five years from July 1982 to June 1987. He applied serial correlation analysis, runs tests, and filter rule technique. He result form all the tests supported the random walk hypothesis (N.k Rao, 1989: 203-218)

Thus, on the basis of above mentioned review of previous research works, it can be concluded that stock market price shows random movement and the security prices appear to be serially independent. So, investors cannot develop any profitable trading strategy using the information of past series.

2.3.2 Nepalese Context

In Nepalese context, there are few studies on the stock market prices. Some of the available relevant studies are reviewed in this part.

Bhatta (1995) has conducted a study on assessment of the performance of listed companies in Nepal. The study was based on 10 listed companies with data from 1990 `to 1995. In his study, he has focused on the performance of listed companies in terms of i) company's performance in market, P E multiples, dividend yield, liquidity, leverage, and profitability. ii) Risk and return in term of expected rate of return and internal rate of return, systematic risk and diversification of risk through portfolio. He has analyzed the companies' performance in relation to the market price of shares. He found that highly significant positive correlation between risk and return characters of the company. Investors expect higher return from those stocks, which associates higher risk. Nepalese stock market is not efficient so the stock prices do not contain all the information relating to market and company itself. Investors in Nepal have not yet participated to invest in portfolio of securities. An analysis of the two securities portfolio shows that the risk can

be minimized if the correlation is perfectly negative. The analysis shows some have negative correlation and some have positive. Negative correlation between securities return is preferred for diversification of risk. On the basis of findings he concludes that many companies have higher unsystematic or specific risk. There is a need of expert intuition, which will provide consultancy service to the investors to maximize their wealth through rational investment decision. (Gopal Prasad Bhatta 1995)

Gurung (1999) has also carried out a study on share price behavior of listed companies. He applied statistical tools like percentage, correlation coefficient, bar graphs, and line charts for analyzing the data. The market capitalization value was in erratic trend for every group in each year. The proportion of market capitalization of banking group was highest among other groups. During the study, the number of transactions in banking group was highest which showed that investment in this group was highly attractive and liquid. The capital market in Nepal was bullish in the initial periods but it turned bearish in the successive year. In the initial period share prices, trading turnovers market Index as well as earnings have moved positively except market capitalization, but they move negatively in the subsequent years. Thus, now the capital market is passing rough the bearish trend in Nepal and there is a lack of investor's opportunities and the economy is passing through the recession year-by-year.(Jas Bahadur Gurung 1999)

Paudal (2001) undertake his study on share price movements of joint venture commercial banks by using various financial and statistical tools like, standard deviation, correlation, beta t-test etc. the major objective of the study was to examine Nepal stock exchange market and to judge whether the market shares of different banking indicators (book value per share and major financial ratio) explain the share price movements. After applying the stated methodologies he concluded that the market shares of these banks do not capture the market share and the growth rates of different banking indicators used. The ordinary least square equation of book value per share on market value per share reveals that the independent variable does not fully explain the dependent variable on the basis of above mentioned points. So, Nepal stock exchange operates in a weak form of efficient market hypothesis, indicating that the market prices move randomly. The market

value per share does not accommodate all the available historical information. The beta coefficient which measure the riskness of individual security in relative term, suggests that the stocks of joint venture commercial banks are less risky as compared to other average stocks traded in the stock exchange. (Laxman Prasad Paudel, 2001)

Kharel (2002) also studied stock market efficiency and behavior of share prices. He used serial correlation test and runs tests as statistical tools, further he used technical trading rule named filter rule for analyzing the data. He found that standard deviations of each and every individual stock's price changes are higher than the mean. Thus, the general shape of empirical frequency distribution is flatter than normal distribution's shape. Most of he result obtained from the serial correlation test for 30 stocks are absolutely large and significantly isolated from zero. The results obtained from the runs test are also consistent with the of serial correlation tests. When the runs test analyzed by lengths, it was found that actual numbers of runs are not normally distributed. Therefore, there exists substantial persistence in the successive price changes series of Nepalese stock market. Similarly, the results obtained from the filter test showed that supplicated mechanical trading rule can beat the average market return. as most of the filter's trading returned higher than buy-and hold strategy, it supports the results of serial correlation and runs test. Thus, he concluded that today's price changes are not an unbiased outcome of yesterday's price changes. (Sanjay Lal Kharel 2002)

Thus, various studies have been conducted in the field of share price behavior. As the share price is the crucial phenomenon in the stock market and large numbers of investors are attracted in this investment, updating of precious studies is very important. The study of the daily prices of the shares to find out whether to buy or sell the stocks for the investors. In the same time risk and return of the sampled commercial banks are also examined to analyze the individual returns patterns and risk involved.

2.3.3 Research Gap:

- Research prior to this work was conducted only in two bank where as this research includes the four well established banks.
- Research prior to this work was conducted only in one aspect of banking where as this research includes more then one aspect of banking.
- Since Research prior to this work were only conducted in two banks, so there is no means to make comparison where as comparison among the banks on different aspect of banking is possible in this research.

CHAPTER - III

RESEARCH METHOLOGY

3.1 INTRODUCTION

Any systematic research study requires a proper methodology to achieve the set objectives. Research methodology is the systematic method of finding solution to a problem i.e. systematic collection, recollection, recording, analysis, interpretation, and reporting of information. This chapter deals about the research methodology by which the collected data are analyzed to get the results. Serial correlation and runs tests are used to test the independence assumption of successive price changes. The aim of this research work is to find out the efficiency of Nepalese stock market and the effect o investor's rationality on the level of efficiency. Therefore the research starts with the attempt to exploring the efficiency of NEPSE; it will proceed to find out this rationality of the Nepalese investors and its impact on the level of market efficiency.

3.2 RESEARCH DESIGN

This study is carried out to get the empirical result of the stock price movements. To conduct the study, analytical and descriptive research approach is adopted for the readily available historical data. All the data used in this study are secondary in nature. Though the research tried to concentrate on quite a specified subject area, it could not ignore some other relevant area of study, which may give further support to the research. Moreover some subject matters are so interrelated that ignoring one may halt the whole research. Thus, this study is much diversified within the topic of market efficiency and Nepalese investors' behavior. It is historical data to develop a generalization. It is descriptive and analytical as well as in the sense that it tries to find some fact about the Nepalese stock market and the Nepalese investors.

3.3 POPULATION AND SAMPLE

All the companies listed in NEPSE are considered to be the total population of the study. Out of them the commercial banks that were listed and are doing share transaction is NEPSE were considered as the sample of the study. This study will try to explore the objectives set in the previous section and it is also expected that this study will help in analyzing the stock market scenario. This study is aimed at producing tested affect of historical information on future price movements of the commercial bank's stocks.

3.4 SOURCES OF DATA

The research uses both primary and secondary data for the analysis. The test of market efficiency is much depended on the data that are to be collected from secondary sources and other relevant data. The data used in this study consists of daily closing price of each of the listed commercial banks in NEPSE. All the obtained price series data that are used in this study are from the daily newspaper and records of NEPSE. For the study of stock price behaviour. For the other related objectives of the study, it starts from 2000/01 to 2004/2005 almost five years period.

3.5 TEST METHODOLOGY

The study uses both parametric (serial correlation coefficient test) and non- parametric test (run test) to explore the randomness of stock return. In order to test the friskiness of shares, the standard deviation the coefficient of variation and the beta coefficient for individual stock will be used in form of statistical tools.

1.5 Runs test

A run can be defined as a sequence of consecutive price change of the same sign followed and preceded by price change of other sign. There exist three types of price

changes in a series i. e. positive, negative and zero. Runs test is a non- parametric test, which can also be used to examine the independence of a series as a check of results generated by serial correlation tests. Runs test is performed to examine whether the actual number of runs confirmed to the expected number of runs under the independent Bernoulli process. If the observed runs and the expected runs are not significantly different from each other, then it is concluded that the independence assumption of the successive price changes is maintain.

The difference between expected and actual numbers of runs has been analyzed by two methods: I) by total expected numbers of runs and ii) by total number of runs of each sign.

3.5.2 Analysis by total expected number of runs

Under the independence assumption of the series of price changes, the total expected number of runs of all kinds i. e. positive, negative, and zero for a stock is given by:

$$M = \left[\frac{N(N \Gamma 1)\, Z \sum_{t X 1}^{3} ni2}{N} \right]$$

Where,

M = total expected number of runs of all signs.

ni = the number of price changes of each sign.

N = total number of observations.

The standard error or the “m” is:

$$\exists_m = \sqrt{\frac{\sum_{i X 1}^{3} ni^2 [\sum_{i X 1}^{3} ni^2 \Gamma N(N \Gamma !)] Z 2N \sum_{i X 1}^{3} ni^3 \, Z N^3}{N^2 (N Z 1)}}$$

If the total actual number of runs(R) is an independent random variable with expected number of runs (m) and standard error ∃M, the standardized variable (K) is given as:

$$K= \frac{fR \Gamma 1/2 \AA Z m}{\pm m}$$

Where, ½ in the numerator is a discontinuity adjustment. For large sample "k" will be approximately normal with mean 0and variance 1.

3.5.3 Analysis by runs of each sign

The expected number of runs of price changes is also of three kind i. e. positive, negative and zero. The expected numbers of each sign is just the breakdown by sign of the total expected number of runs of all signs. In this case, if there is significant inconsistency between total actual numbers of runs of all sign and total expected numbers, obviously there will be greater deviations between total actual number of runs of each sign and the total expected number of runs of each sign. If the signs were generated by an independent Bernoulli process, the expected number of runs of price changes for each sign is given by:

R (+) =R [p (+ $\overline{\text{r}}$un)]
R (-) =R [p (- r$\overline{\text{u}}$n)]
R (0) =R [p (0 $\overline{\text{r}}$un)]

Where,
R (+),R (-) and$\overline{\text{d}}$ R ($\overline{0}$) are the $\overline{\text{e}}$xpected number of positive, negative and Zero runs, p (+run), p (-run) and p(0run) are the probabilities of each run.
R= total actual number of runs.

Probability of each run can be defined as the ratio of the expected number of run in sample size N to the expected number of runs of all sings or is given by:

$$P(+\ run) = \frac{NP(\Gamma)[1 Z p(\Gamma)}{m}$$

$$P(-\ run) = \frac{NP(Z)[1 Z p(Z)}{m} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (xi)$$

$$P(0\ run) = \frac{NP(0)[1 Z p(0)}{m}$$

Where, P(+), P(-) and P(0) are the probabilities of each sign i.e. positive, negative and zero respectively.

Where, p(+) , p(-) and p(0) are the probabilities of each sign i. e. positive, negative and Zero respectively.

If the expected number of runs and actual number of runs are not significantly different, then the independence assumption can be valid, other wise not. Runs test can also be used in order to verify the results generated by serial –correlation test.

1.6 3.5.4 The Expected Rate of Return

The expected rate of return is computed in the base of the expected cash receipts over the holding period and the expected ending or selling price. (J Fred Weston & Brigham (1990). P.14) The expected return on an investment is the mean value of the summation of the possibility distribution of its possible returns. (John. M. Chenny and Edward A. Moses (1992)p.34) It can be expressed as an equation.

$$E(r_t) = \sum_{t X 1}^{r} P_t r_t$$

Where,

rt = Possible returns of each event

pt = Probability of the return for that event

t = Different

In case of single holding period the expected rate of return can be computed by cash dividends paid during the together with an appreciation in market price, or capital gain realized at the end of the year.

$$E(r) = \frac{Dividend \Gamma (Ending\ Price\ Z\ Beginning\ Price)}{Beginning\ Price}$$

Here, Ending price and Beginning price indicates the cost of investment and the return realizes from that investment at the end of holding period. The nature of investment should be in revenue type of expenditure. The investors expect a regular payment of dividends over the Holding period with less chance of risk and price variations. The high expected rate of return is appreciated by investor s to invest such type of business and vice versa. Therefore, the investor decisions are larger influenced by the nature of investors.

1.6.1

1.7 3.5.5 Capital Assets Pricing Model (CAPM) or (SML)

Sharpe & Litner developed, 'The capital assets pricing Model' (CAPM). This model provides the intellectual basis for a number of the current practices in the investment industry.

Generally, the CAPM indicates that as asset's required return should be related to the risk free rate of return plus a risk premium based on beta of the asset using the CAPM equation, the required rate of return of an asset is given by (William E. Sharpe, Alexander & Bailey (1996)Pp 261 – 263)

$K_J = Kr_f + (K_m - Kr_f)\ \wp$

Where,

Kj = required rate of return on the jth stock

Krj = risk free rate of return. The Yield on short-term government's Treasury bond is often used as a proxy for the risk free rate.
Km-Krj = market risk premium, i.e., the additional return over the risk free rate required to compensate an average investor for assuming on average amount of risk.

1.8 3.5.6 Risk

Total risk of stock consists two parts of risks; one is systematic (market risk) and another is unsystematic (unique risk) and commonly denoted by standard deviation (∃). Statistically, systematic risk and unsystematic risk can be measured by coefficient of determination or beta coefficient (symbolically denoted by; p2) and by subtracting the systematic risk through 1 (symbolically denoted by 1 – p2) respectively. Less standard deviation and beta coefficient indicate less risk and vice versa. So, these are applied to each sample bank for testing and categorizing the form of stock relation to risk.
Beta coefficient is computed by;

$$\text{Bj} = \frac{Co\,\text{var}\,iance(Rj, Rm)}{\pm m^2}$$

Where, Bj = beta coefficient of stock
Covariance (Rj,Rm) = Covariance of the returns of stock j and market.
$\exists_m^2$ = variance of the market.

1.9 3.5.7 Standard deviation

It is quantitative measure of total risk of assists. It provides more information about the risk of the asset. The standard deviation of a distribution is the square root of the variance of returns around the mean. The following formula is applied to calculate the standard deviation, using historical returns:

$$\exists_j = \sqrt{\frac{(Rj \; Z \; Rj)}{n}}$$

Where,

∃j = standard deviation of stock j

Rj = realized rate of return at a time.

R j = expected realized rate of return.

n = number of observations in sample.

Symbolically,

$$Rj = \frac{(Pt \; Z \; P_{(t Z 1)}) \; \Gamma \; D_t}{p_{(t Z 1}}$$

Where,

p_t = current market price of share

$P_{(t-1)}$ = previous market price of share

D_t = dividend in cash or stock (if any)

In case of dividend other than cash.

Total dividend = cash dividend + stock dividend % * next year MPS

1.10 3.5.8 Coefficient of Variation

1.10.1

1.10.2 The risk per unit of expected return can be measured by coefficient of variation, which is computed as follows:

$$CV_J = \frac{\pm j}{Rj}$$

Where,

CV_j = coefficient of variation.

T.11 Rj = expected realized rate of return

$\exists_j$ = standard deviation of stock j

2.1 CHAPTER - IV

DATA PRESENTATION AND ANALYSIS

4.1 INTRODUCTION:

This chapter deals with data presentation, analysis and interpretation following the research methodology presented in the third chapter. Data presentation and analysis are the central steps of the study. The main purpose of this chapter is to analyze and elucidate the collected data to achieve the objective of the study following the conversion of unprocessed data to an understandable presentation. The chapter deals with the main body of the study.

Data presentation is the interpretation of the study. Data analysis summarizes the collected data and its interpretation presents the major findings of the study. Analysis is not complete without interpretation and interpretation cannot proceed without analysis. In this course of analysis, data gathered from various sources have been inserted in the tabular form and shown in diagram form. The data have been analyzed by using financial and statistical tools. The results of the computation have also been summarized in appropriated tables. The samples of computation of each model have been included in annexes. The first section shows the descriptive analysis of the sampled banks. The second section of this chapter examines the three run tests of the daily prices of stocks of the sampled banks. The third section considers the risk and return analysis and evaluate the under or over priced of the sampled stocks. The last section highlights the empirical findings of the analysis.

2.1.1 4.2 A GLIMPSE OF STOCK MARKET TRADING

The main purpose of this section is to simply provide quantitative information of stock market functioning. The organized stock market is a recent phenomenon in Nepal. In the beginning of organized open cry- out system, there was a brisk in stock market activities. Share prices increase tremendously and the turnover volume was also high. The increase share price could not last for long and soon the prices began to fall.

4.3 BEHAVIOUR OF NEPSE INDEX

Market index has always been of great importance in the world of security analysis and portfolio management. This index is used as a benchmark by the individual and institutional investor to evaluate the performance of their own or institutional portfolio. Market indices are used to determine the relationship between historical price movements and economic variables and to determine the systemic risk for individual securities and portfolios. The index can also be used as measuring tool whether the performance of stock market is good or not. This clearly focuses on the price of stocks that is increasing or decreasing in the market. Higher the index means the better performance of stock market and vice versa.

From the below table it is clear that by the end of this fiscal year, NEPSE index increased by 86.78 from the beginning to end of fiscal year point close at 386.83 points. NEPSE index at the end of the last fiscal year was 386.83 points. During this fiscal year the highest point of NEPSE index was 386.83 recorded in the month Jun/July, while the lowest point was 293.30 recorded on Aug/Sept. The monthly trend of NEPSE index is presented in below chart.

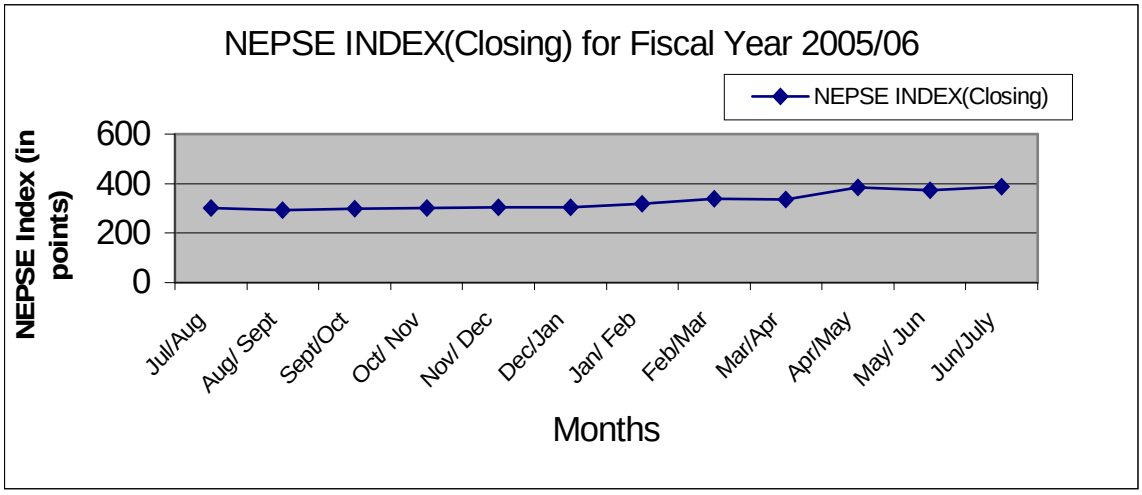
Table 2

Monthly closing NEPSE index (Fiscal year 2005/2006)

Month	NEPSE INDEX(Closing)
Jul/Aug	300.05
Aug/ Sept	293.30
Sept/Oct	297.34
Oct/ Nov	302.39
Nov/ Dec	303.12
Dec/Jan	305.50
Jan/ Feb	317.69
Feb/Mar	339.79
Mar/Apr	334.77
Apr/May	385.89
May/ Jun	372.01
Jun/July	386.83

(Source: NEPSE Annual Trading Report, 2005/2006)

Figure – 1



4.4 NO OF LISTED COMPANIES:

As concerned with the number of listed companies present in table 4 shows that the increased rate of listing companies for the fiscal year 2005/2006 is 8 % but in the year 2002/03 is 12.50 % which is highest increase rate.

Table 3

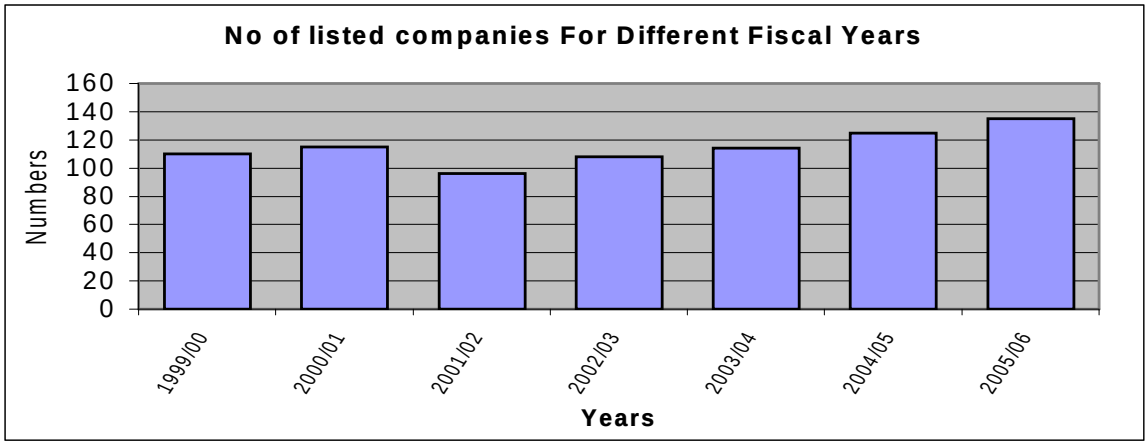
Listing rate of companies in NEPSE for different Fiscal years

Year	No of listed companies	Percentage change
1996/97	95	-
1997/98	101	6.32 %
1998/99	107	5.94 %
1999/00	110	2.80 %
2000/01	115	4.55 %
2001/02	96	-16.52 %
2002/03	108	12.50 %
2003/04	114	6.25 %
2004/05	125	9.65 %
2005/06	135	8.00 %

(Source: NEPSE Annual trading Report, 2005/2006)

While talking about in terms of numbers it is 115 for the fiscal year 2000/2001. This is decrease in number of listed companies for the fiscal year 2001/2002 with 16.52% lesser than that of previous year. This is due to delisting of the companies by NEPSE as there is a prevision provided by stock exchanges act. But in the fiscal year 2005/06 there is increased in the listed companies by 8 % then the previous year.

Figure 2



2.1.3 4.5 Present Situation of Stock Market in Nepal*:*

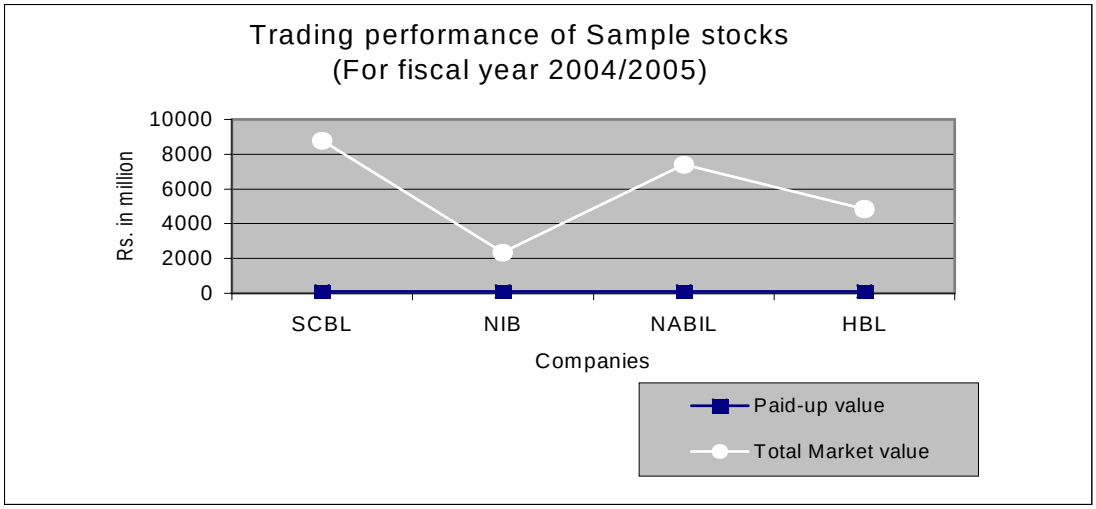
Out of the 135 listed companies more than 85% of the transactions took place in the stock exchange related to the securities of the commercial banks and financial institution. Present Government is taking more seriousness to develop the securities market in the country. Currently, we are operating the exchange through manually basis. There are no custodians. The government has given higher priority to strengthen the Capital Market, and has lunched Corporate Financial Governance Project for the trading automation under the assistance of Asian Development Bank.

2.1.5 4.6 TRADING PERFORMANCE OF SAMPLE STOCKS:

The table in appendix- F (I) gives different quantitative information about the stock market functioning during the fiscal year 2005/2006 for companies taken as sample. In the first column of the table the number of outstanding shares has been demonstrated. In second column, closing price of securities has been given. Column 3, 4, 5, and 6 contains the paid up value, number of transactions, shares traded in units and traded amount respectively. Within the samples highest number of transaction has been secured by Standard Chartered Bank, which is 1496 along with highest number of shares traded which is 1319 thousand shares. But the highest traded amount among the samples also belongs to Standard Chartered Bank with Rs. 2319.90 millions. Column 7, presents total paid–up values of common stocks. Multiplying the outstanding equity with paid-up values derives each entry in this column. The highest total paid-up capital is Rs.525

million for Himalayan Bank and the lowest value belongs to NIB with Rs. 295.29 millions. Multiplying the outstanding equity and closing price of share of each company derives column 8, which contains total market value. The highest total market value is Rs. 8785.32 millions which is for SCBL among all whereas the lowest total market value is Rs 2362.34 millions recorded for Nepal Investment Bank.

Figure – 3



2.1.6 4.7 Trend Analysis of NEPSE Index

In the trend analysis, the trends of yearly NEPSE index have been analyzed by using the least square method. Here the forecasting for the next five year from the previous five year study has also been performed. The following assumptions have been made for the projection:

- It has been assumed that all other things remain unchanged.
- The projection holds true only when the limitations for least square method is carried out.
- It has been assumed that the economy will run in the present status.
- It has been assumed that the banks will run in the position.

Table - 4

Trend of NEPSE Index Previous and Next Five year

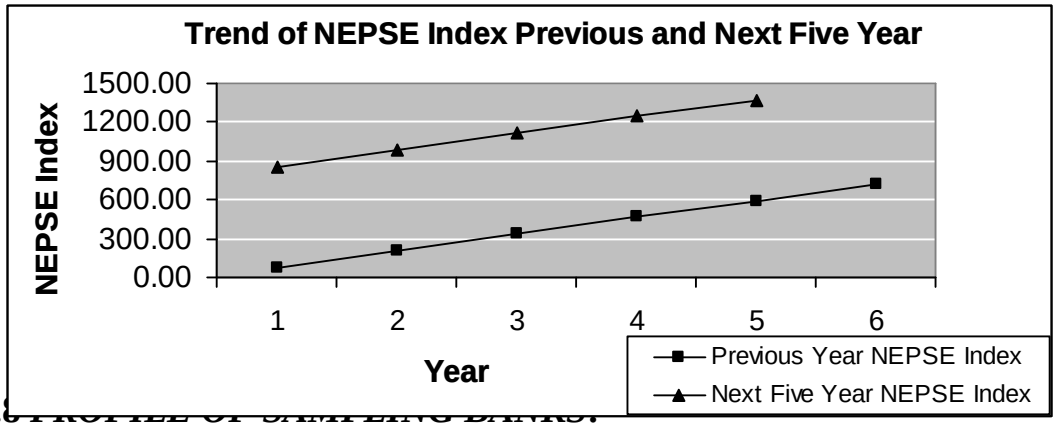
Year	NEPSE Index

2001	74.13
2002	204.04
2003	333.95
2004	463.86
2005	593.77
2006	723.68
2007	853.59
2008	983.50
2009	1113.41
2010	1243.32
2011	1373.23

Above table highlights that a i.e. y-intercept and b i.e. slope of the trend line of NEPSE Index were 333.95 and 129.91 respectively. Through out the study period NEPSE Index revealed increasing trend. Therefore the trend equation of the NEPSE index is:

Yc = 333.95 + 129.91 x. The above table-5 shows that the above trend equation forecasted NEPSE index for coming five years would be 853.59, 983.50, 1113.41, 1243.32 and 1373.23 respectively. The above calculation has been derived from Appendix – H. The trend of the index of NEPSE for the previous and next five years can also be presented in the following chart. Although the chart shows that the NEPSE index has increased.

Figure -4



4.8 PROFILE OF SAMPLING BANKS:

4.8.1 STANDARD CHARTERED BANK

Table 5

MPS, Dividend, EPS, P/E Ratio & Market Book Value Ratio of SCBL

Year	Closing Price Rs.	DPS Rs.	Stock Dividend %	EPS Rs.	Price Earning Ratio	Market Book Value Ratio
00/01	2144	100		126.88	16.90	6.55
01/02	1550	100		141.13	10.98	4.26
02/03	1640	110		149.30	10.98	4.07
03/04	1745	110		143.55	12.16	4.37
04/05	2345	120		143.93	16.29	5.55
05/06	3375	130	10:1=10%	175.84	21.47	8.06

Closing market price of share has been decreased in year 01/02 and increased in rest of the year. Bank has been distributed cash dividend to the investors each and every year ranging Rs. 100 to Rs.120 in five year review period.

4.8.2 NEPAL INVESTMENT BANK

Table 6

MPS, Dividend, EPS, P/E Ratio & Market Book Value Ratio of NIBL

Year	Closing Price Rs.	DPS Rs.	Stock Dividend Rs.	Right Share	EPS Rs.	Price Earning Ratio	Market Book Value Ratio
00/01	1150	0	1:1 = 100%		33.17	34.67	4.17
01/02	760	0			33.59	22.63	2.47
02/03	795	20	40%	33%	39.56	20.10	3.68
03/04	940	15			51.70	18.18	3.81
04/05	800	12.50			39.50	20.25	3.98
05/06	1260	20	35.46%		59.35	21.23	5.26

Closing market price of share has been decreased in year 01/02 & 04/05 and increased in rest of the year. Nepal Investment bank has distributed stock dividend 100% in year

00/01 and in year 02/03 bank distributed 40% & right share 33% too. Bank has been distributed cash dividend to the investors ranging Rs. 15 to Rs.20 in five year review period.

4.8.3 NABIL BANK LIMITED

Table 7

MPS, Dividend, EPS, P/E Ratio & Market Book Value Ratio of Nabil

Year	Closing Price Rs.	DPS Rs.	Stock Dividend Rs.	EPS Rs.	Price Earning Ratio	Market Book Value Ratio
00/01	1500	40	1:4 = 25%	59.26	25.31	6.94
01/02	735	30		55.25	12.67	3.15
02/03	735	50		84.66	8.74	2.75
03/04	1000	65		92.61	10.80	3.32
04/05	1505	70		105.49	14.27	4.47
05/06	2240	85		129.21	17.34	5.88

Closing market price of share has been decreased in year 01/02 and increased in rest of the years then after. Nabil bank has distributed stock dividend 25% only in year 00/01. Bank has been distributed cash dividend to the investors each and every year ranging Rs.30 to Rs.70 in five year review period.

4.8.4 HIMALAYAN BANK

Table 8

MPS, Dividend, EPS, P/E Ratio & Market Book Value Ratio of HBL

Year	Closing Price Rs.	DPS Rs.	Stock Dividend %	EPS Rs.	Price Earning Ratio	Market Book Value Ratio
00/01	1500	27.50	1:4 = 25%	93.56	16.03	6.24
01/02	1000	25.00	30%	60.26	16.59	4.54
02/03	836	1.31	1:10 =10%	49.45	16.91	3.37
03/04	840	0.00	1:5 =5%	49.05	17.12	3.40

04/05	920	11.58		47.91	19.20	3.84
05/06	1100	30	5%	59.24	18.57	4.81

Closing market price of share has been decreased in year 02/03 and increased in the rest of the year then after. Himalayan bank has distributed stock dividend 25%, 30%, 10% & 5% in year 00/01, 01/02, 02/03 & 03/04 respectively. Bank has been distributed cash dividend to the investors each and every year ranging Rs.1.31 to Rs.27.50 in five year review period.

Market to book value ratio of the bank ranges from 3.37 to 6.24 in five year review period. In the 02/03 fiscal year, market to book value ratio was 3.37 implying that the bank was worth 237% more than the funds the share holders put into it where as at the 00/01 year of review period, it was 6.24 that implies the bank is worth 524% more than the funds the share holders put into it.

,

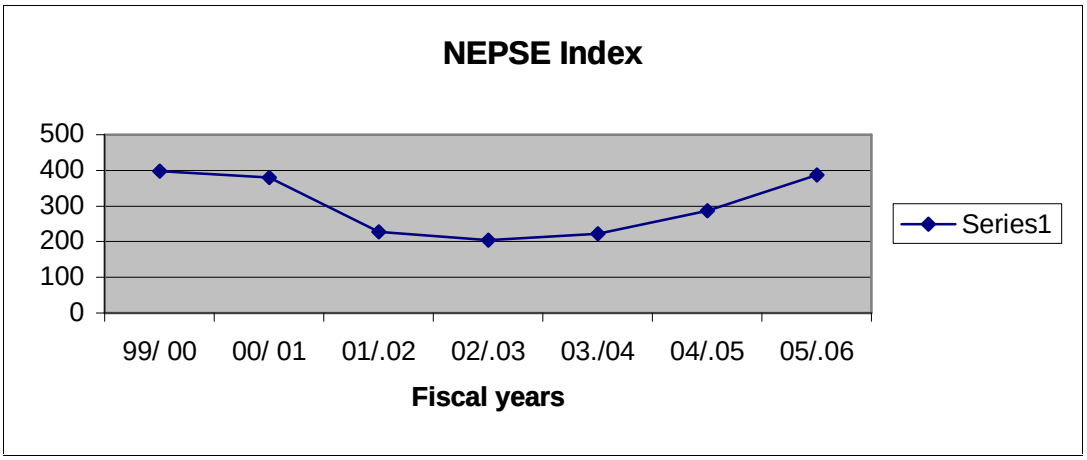
4.9 NEPSE (Market)

Expected Return on Market (R_{MKT}**)** = the market return is the return on the market portfolio of all traded securities. Year ended the NEPSE index is used as the market return into account.

Table 9

NEPSE Index & Annual Return

Year	NEPSE Index	Annual Return (R)
99/ 00	397.17	
00/ 01	379.38	-0.0448
01/ 02	227.54	-0.4002
02/ 03	204.86	-0.0997
03 /04	222.04	0.0839
04/ 05	286.67	0.2911
05/ 06	386.83	0.3794
Total		0.2096

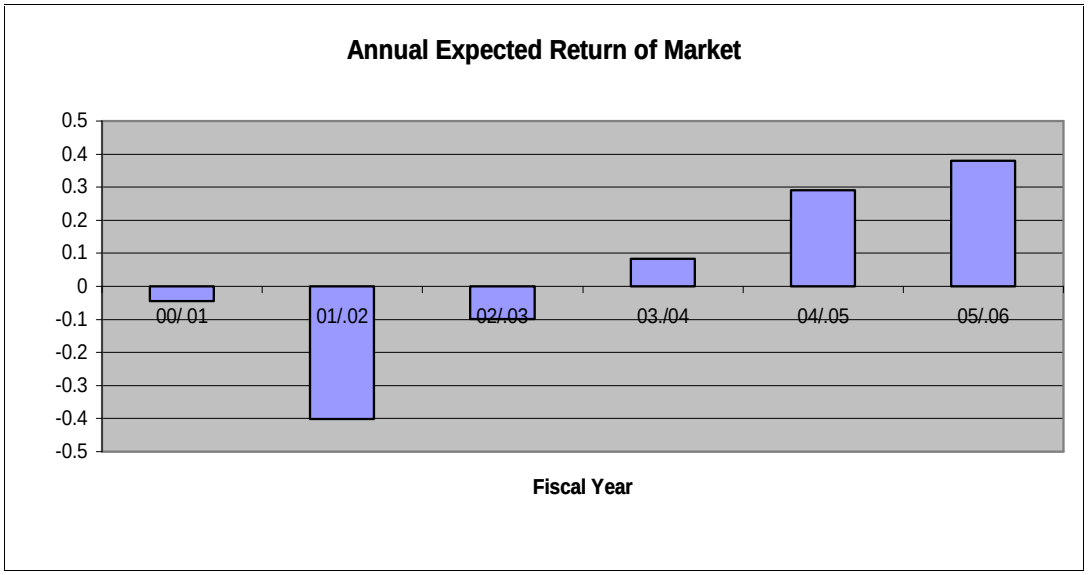


NEPSE index

By the end of fiscal year 05/06, the price index of the listed securities (NEPSE Index) remained at 386.83 points, which is higher by 100.16 points than that of the last fiscal years 04/05 index 286.67 points. In this research fiscal year, the highest index of 397.17 was noted on year 99/00 and the lowest index of 204.86 was noted on year 02/03.

Expected Return on market

Figure – 5



2.1.7 4.10 RANDOMNESS OF SHARE PRICES

A Run test is used for testing the randomness of sequence of sample events on the basis of the order of sample events. The sequence or order of sample events may be defective and no defective events, rise and fall of stream. It is based on the order or sequence on which the individual scores or observations originally were obtained.

A run is defined as a succession of identical symbols, which are followed and preceded by different symbols or by no symbols at all. The run test examines a series of prices changes and designates each change as a +, - or 0 as figure which obviously depicts the sequence of prices changes and outcomes of different run. Positive price changes are denoted by +, negative changes by - and no changes as 0. A run occurs when consecutive positive or consecutive negative price changes occurs more than once when the price changes then count the number of positive sign is denoted by n_1 and number of negative signs is denoted by n_2. Before measuring n_1 and n_2 the median of each sample under the period is subtracted from the consecutive price if either n_1 or n_2 is larger than 20.
H0 (Null Hypothesis: the order of market share price of stock was random) may be tested by:

$$Z = \frac{r - \left(\frac{2n_1n_2}{n_1 + n_2} + 1\right)}{\sqrt{\frac{2n_1n_2(2n_1n_2 - n_1 - n_2)}{(n_1 + n_2)^2 (n_1 + n_2 - 1)}}}$$

The observed value obtained from above formula may be determined by reference to the normal curve table which gives the one tailed probabilities associated with occurrence under H0 of values as extreme as an observed Z and for two tailed test the probabilities should do twice of one tailed probabilities. The below table is constructed for tabulating and finding.

Table No. 10

Run Test Finding

H0: The order of market share price of stock was random/ independent.								
H1: The order or market share price of stock was not random/ dependent.								
Banks	Sample Size	r	n_1	n_2	|Z|	Z tab	Decision Criteria |Z| < 1.96 : H0 |Z| > 1.96 : H1	Accept
HBL	108	12	54	54	8.31	1.96	8.31 > 1.96	H1
NABIL	108	22	55	53	6.38	1.96	6.38 > 1.96	H1
NIBL	108	10	56	52	8.70	1.96	8.70 > 1.96	H1
SCBNL	108	28	59	49	5.18	1.96	5.18 > 1.96	H1

The table reveals that the run test has been done under 108 samples (108 MPS of each sample banks) where 54:54 positive and negative signs were observed in HBL. The market share price of SCBNL fluctuates more rather than other banks due to covering higher run (r = 28), following NABIL, HBL and NIBL 10, 12 and 10 covering respectively. High fluctuation in MPS of SCBNL is observed and NIBL share prices have less fluctuation in sample. I have shown the above calculation in the Appendix-I.

According to the normal curve distribution, if the observed value of Z is 1.96 then probabilities occur in this value is 0.025 and for two tailed it would be double (i.e. 2 x p = 2 x 0.025). Therefore the observed value of Z is single sample is if greater than 1.96 the two tailed probabilities associated with occurrence under H0: would be less than 0.05 level of significance that notifies the rejection of null hypothesis and acceptance of alternative hypothesis which depicts that the order or sequence or market share price of stock was not randomly moving.

So that regarding to this aspect, all the sampled commercial banks Z value under run test has found the greater value ± 1.96 which implies the market share price of the stocks of sampled banks was not randomly move. In order words the market prices of share of

sample banks imply positive dependence, i.e. the movement of share price of sample banks occurs on the base of historical data. The finding from the above test was similar with that of Joshi (2007). To examine whether the successive price changes of stock market are independent of each other's or not? He took sample data of five commercial banks and found that the share price changes are dependent on each other's.

Run test is determine to see how many positive, negative and zero, or total run may be expected to occur in a series of truly random numbers of size The outcomes are shown in the below tables. Since it is not possible to take whole year's daily share price as a study. Hence, I have taken only November 2006 daily share prices of sampled commercial banks as traded in the NEPSE for a study.

ANALYSIS BY THREE DIFFERENT RUNS

Table 11

Share Trading for the month of February 2006 – Nepse index

Day	Share Value in Rupees		Change		
	Closing (A)	Previous Closing (B	(A-B)	% Change	Run analysis
1-Feb	519.05	531.34	-12.29	-2.31	run 1 is negative run
2-Feb	519.05	519.05	0	0.00	run 2 is zero run
3-Feb	519.05	519.05	0	0.00	
4-Feb	519.77	519.05	0.72	0.14	run 3 is positive run
5-Feb	520.2	519.77	0.43	0.08	
6-Feb	520.65	520.2	0.45	0.09	
7-Feb	519.69	520.65	-0.96	-0.18	run 4 is negative run
8-Feb	523.11	519.69	3.42	0.66	run 5 is positive run
9-Feb	523.11	523.11	0	0.00	run 6 is zero run
10-Feb	523.11	523.11	0	0.00	
11-Feb	524.79	523.11	1.68	0.32	run 7 is positiver run
12-Feb	523.94	524.79	-0.85	-0.16	run 8 is negative run
13-Feb	525.08	523.94	1.14	0.22	run 9 is positive run
14-Feb	525.86	525.08	0.78	0.15	
15-Feb	526.97	525.86	1.11	0.21	
16-Feb	526.97	526.97	0	0.00	run 10 is zero run
17-Feb	526.97	526.97	0	0.00	
18-Feb	525.69	526.97	-1.28	-0.24	run 11 is negative run
19-Feb	525.69	525.69	0	0.00	run 12 is zero run
20-Feb	523.2	525.69	-2.49	-0.47	run 13 is negative run
21-Feb	520.46	523.2	-2.74	-0.52	
22-Feb	519.07	520.46	-1.39	-0.27	
23-Feb	519.07	519.07	0	0.00	run 14 is zero run
24-Feb	519.07	519.07	0	0.00	
25-Feb	517.79	519.07	-1.28	-0.25	run 15 is negativer run
26-Feb	514.66	517.79	-3.13	-0.60	
27-Feb	511.85	514.66	-2.81	-0.55	
28-Feb	511.81	511.85	-0.04	-0.01	

There are three different runs namely positive, zero and negative runs. If the price of stock increases then the run is positive and if it declines there will be a negative run and if the price remains same then there will be a zero run.

Run test is determine to see how many positive, negative and zero, or total runs may be expected to occur in a series of truly random numbers of size The outcomes are shown in the below tables. Since it is not possible to take whole year's daily share price as a study.

Hence I have taken February 2006 daily share prices of some listed commercial banks as a study.

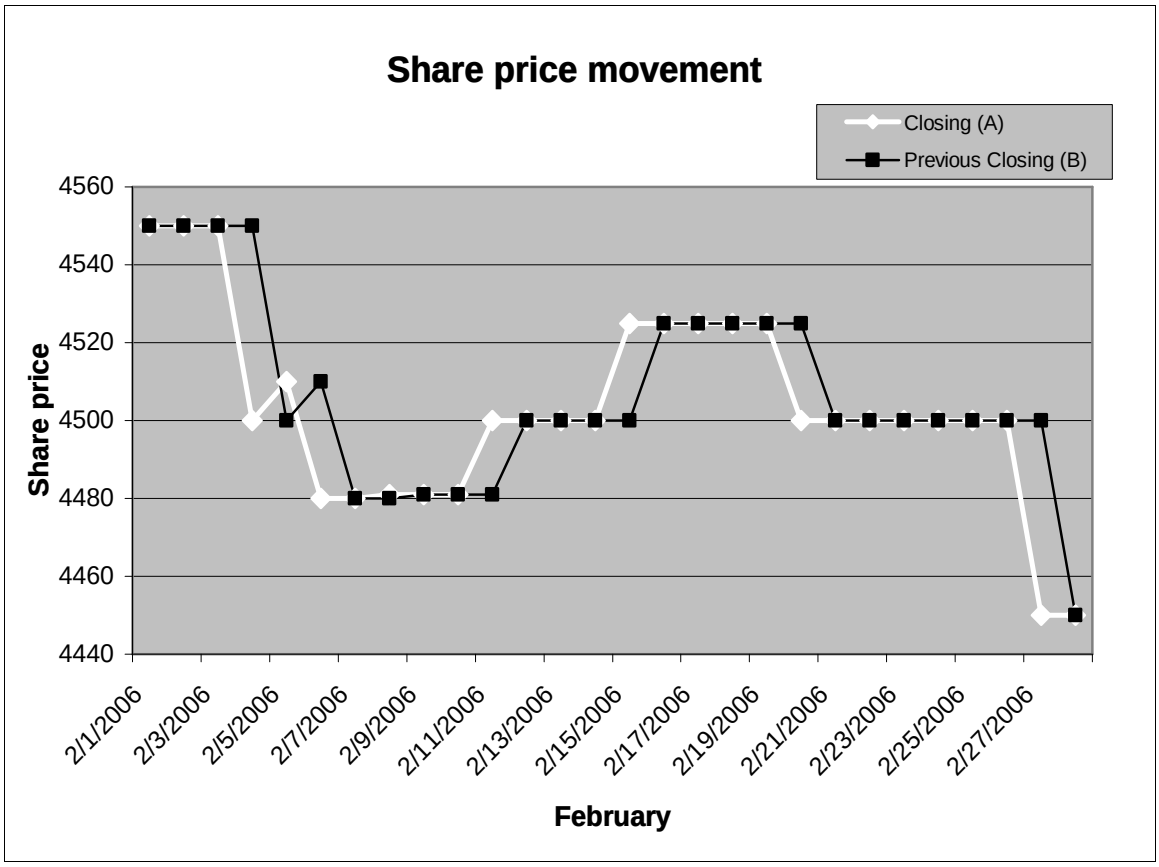
Table 12

Share Trading for the month of February 2006

Standard Chartered Bank

Day	Share Value in Rupees		Change		
	Closing (A)	Previous Closing (B	(A-B)	% Change	Run analysis
1-Feb	4550	4550	0	0.00	run 1 is zero run
2-Feb	4550	4550	0	0.00	
3-Feb	4550	4550	0	0.00	
4-Feb	4500	4550	-50	-1.10	run 2 is negative run
5-Feb	4510	4500	10	0.22	run 3 is positive run
6-Feb	4480	4510	-30	-0.67	run 4 is negative run
7-Feb	4480	4480	0	0.00	run 5 is zero run
8-Feb	4481	4480	1	0.02	run 6 is positiver run
9-Feb	4481	4481	0	0.00	run 7 is zero run
10-Feb	4481	4481	0	0.00	
11-Feb	4500	4481	19	0.42	run 8 is positive run
12-Feb	4500	4500	0	0.00	run 9 is zero run
13-Feb	4500	4500	0	0.00	
14-Feb	4500	4500	0	0.00	
15-Feb	4525	4500	25	0.56	run 10 is positive run
16-Feb	4525	4525	0	0.00	run 11 is zero run
17-Feb	4525	4525	0	0.00	
18-Feb	4525	4525	0	0.00	
19-Feb	4525	4525	0	0.00	
20-Feb	4500	4525	-25	-0.55	run 12 is negitive run
21-Feb	4500	4500	0	0.00	run 13 is zero run
22-Feb	4500	4500	0	0.00	
23-Feb	4500	4500	0	0.00	
24-Feb	4500	4500	0	0.00	
25-Feb	4500	4500	0	0.00	
26-Feb	4500	4500	0	0.00	
27-Feb	4450	4500	-50	-1.11	run 14 is negitive run
28-Feb	4450	4450	0	0.00	run 15 is zero run

Figure – 6



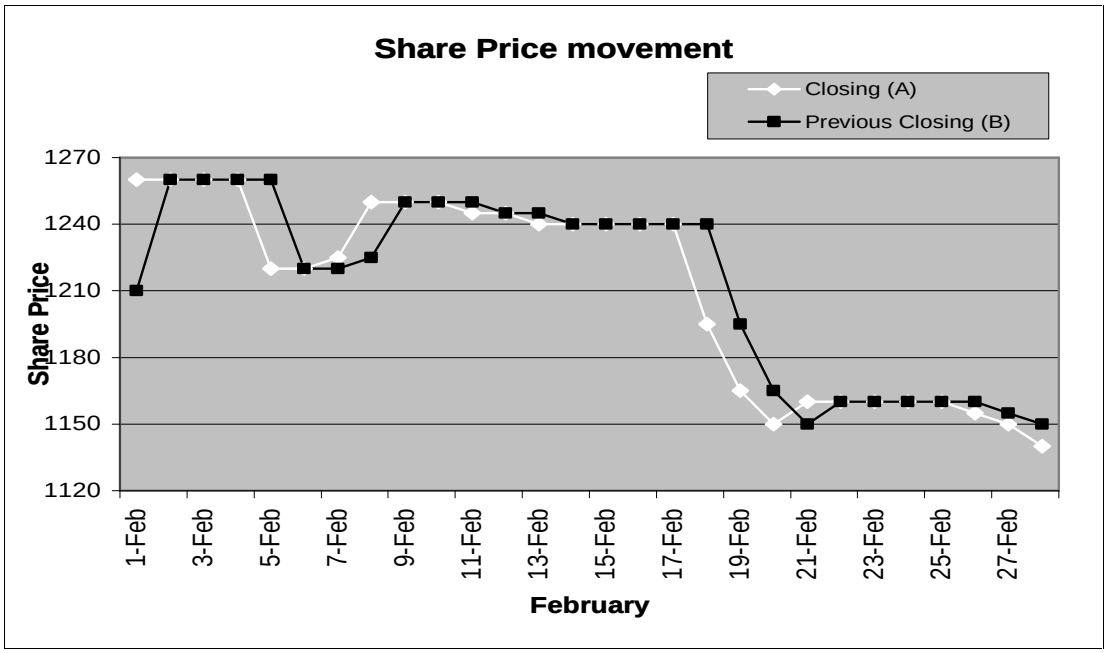
The above table and figure shows as how the share prices fluctuate from each consecutive days and thus delivering three different runs. The above study shows that there are 15 different runs for the month of August. It has 4 positive run, 4 negative and 7 zero run.

Table 13

Share Trading for the month of February 2006 – Nepal Investment Bank

Day	Share Value in Rupees		Change		
	Closing (A)	Previous Closing (B)	(A-B)	% Change	Run analysis
1-Feb	1260	1210	50	4.13	run 1 is positive run
2-Feb	1260	1260	0	0.00	run 2 is zero run
3-Feb	1260	1260	0	0.00	
4-Feb	1260	1260	0	0.00	
5-Feb	1220	1260	-40	-3.17	run 3 is negativer run
6-Feb	1220	1220	0	0.00	run 4 is zero run
7-Feb	1225	1220	5	0.41	run 5 is postive run
8-Feb	1250	1225	25	2.04	
9-Feb	1250	1250	0	0.00	run 6 is zero run
10-Feb	1250	1250	0	0.00	
11-Feb	1245	1250	-5	-0.40	run 7 is negative run
12-Feb	1245	1245	0	0.00	run 8 is zero run
13-Feb	1240	1245	-5	-0.40	run 9 is negativer run
14-Feb	1240	1240	0	0.00	run 10 is zero run
15-Feb	1240	1240	0	0.00	
16-Feb	1240	1240	0	0.00	
17-Feb	1240	1240	0	0.00	
18-Feb	1195	1240	-45	-3.63	run 11 is negative run
19-Feb	1165	1195	-30	-2.51	
20-Feb	1150	1165	-15	-1.29	
21-Feb	1160	1150	10	0.87	run 12 is positive run
22-Feb	1160	1160	0	0.00	run 13 is zero run
23-Feb	1160	1160	0	0.00	
24-Feb	1160	1160	0	0.00	
25-Feb	1160	1160	0	0.00	
26-Feb	1155	1160	-5	-0.43	run 14 is negative run
27-Feb	1150	1155	-5	-0.43	
28-Feb	1140	1150	-10	-0.87	

Figure – 7



The above table shows the three different runs delivered in the month of February 2006. In this month the share price has shown more fluctuation in the share price thus delivering 14 different runs showing 3 positive runs, 5 negative runs and 6 zero run.

Table 14

Share Trading for the month of February 2006 –Himalayan Bank

Day	Share Value in Rupees		Change		
	Closing (A)	Previous Closing (B)	(A-B)	% Change	Run analysis
1-Feb	1105	1100	5	0.45	run 1 is positiver run
2-Feb	1105	1105	0	0.00	run 2 is zero run
3-Feb	1105	1105	0	0.00	
4-Feb	1100	1105	-5	-0.45	run 3 is negative run
5-Feb	1110	1100	10	0.91	run 4 is positive run
6-Feb	1110	1110	0	0.00	run 5 is zero run
7-Feb	1125	1110	15	1.35	run 6 is postive run
8-Feb	1130	1125	5	0.44	
9-Feb	1130	1130	0	0.00	run 7 is zero run
10-Feb	1130	1130	0	0.00	
11-Feb	1145	1130	15	1.33	run 8 is postiver run
12-Feb	1150	1145	5	0.44	
13-Feb	1150	1150	0	0.00	run 9 is zero run
14-Feb	1150	1150	0	0.00	
15-Feb	1150	1150	0	0.00	
16-Feb	1150	1150	0	0.00	
17-Feb	1150	1150	0	0.00	
18-Feb	1125	1150	-25	-2.17	run 10 is negative run
19-Feb	1125	1125	0	0.00	run 11 is zero run
20-Feb	1125	1125	0	0.00	
21-Feb	1100	1125	-25	-2.22	run 12 is negative run
22-Feb	1100	1100	0	0.00	run 13 is zero run
23-Feb	1100	1100	0	0.00	
24-Feb	1100	1100	0	0.00	
25-Feb	1100	1100	0	0.00	
26-Feb	1100	1100	0	0.00	
27-Feb	1100	1100	0	0.00	
28-Feb	1049	1100	-51	-4.64	run 14 is negative run

The above table shows the different share price of the Month February 2006 and thus showing as how the prices are traded in the days. The table and figure clearly showed that the three different runs and delivering 14 different runs of 4 positive runs, 4 negative runs and 6 zero runs. However, we can study that the variation of price fluctuations is relatively less.

Figure – 8

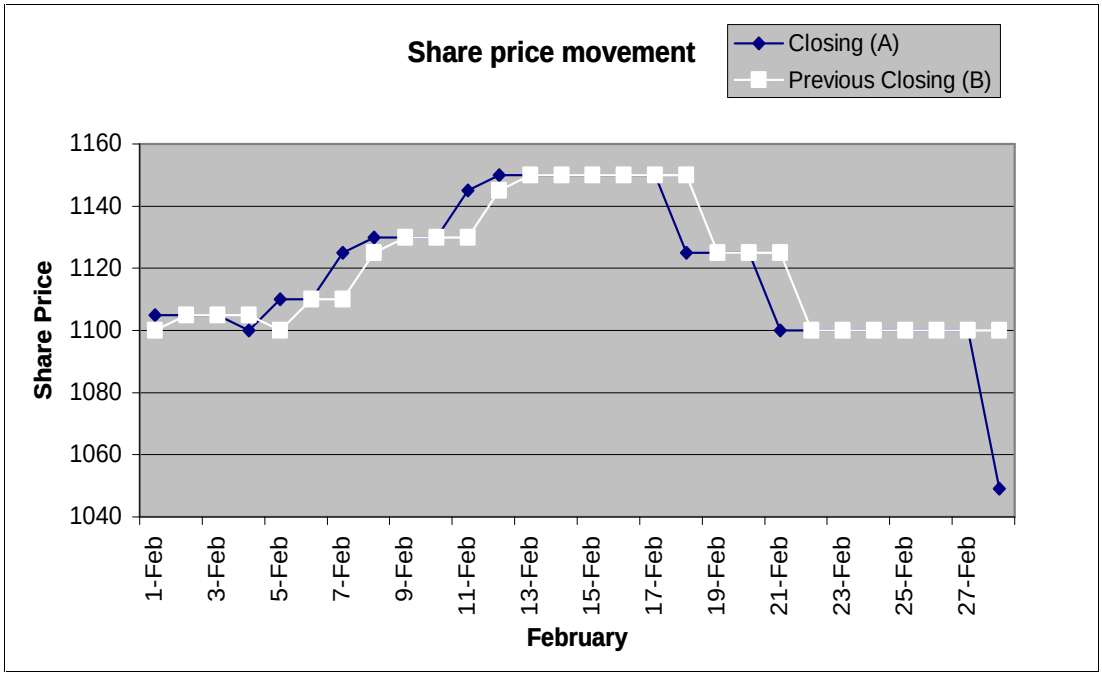
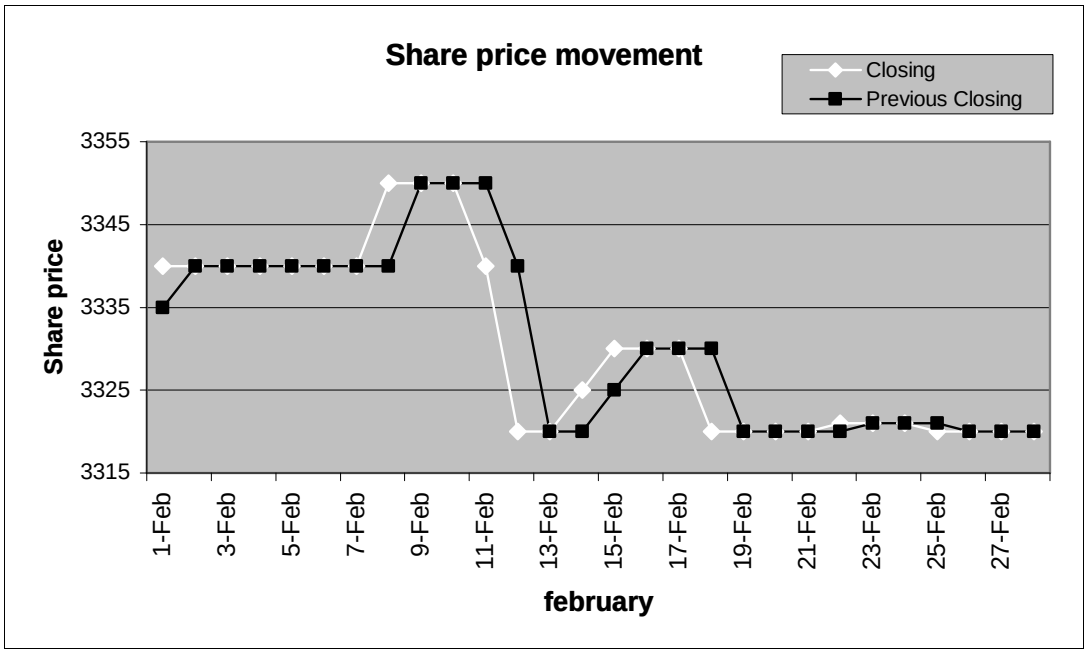


Table 15

Share Trading for the month of February 2006 – Nabil Bank

Day	Share Value in Rupees		Change		
	Closing (A)	Previous Closing (B)	(A-B)	% Change	Run analysis
1-Feb	3340	3335	5	0.15	run 1 is positive run
2-Feb	3340	3340	0	0.00	run 2 is zero run
3-Feb	3340	3340	0	0.00	
4-Feb	3340	3340	0	0.00	
5-Feb	3340	3340	0	0.00	
6-Feb	3340	3340	0	0.00	
7-Feb	3340	3340	0	0.00	
8-Feb	3350	3340	10	0.30	run 3 is positive run
9-Feb	3350	3350	0	0.00	run 4 is zero run
10-Feb	3350	3350	0	0.00	
11-Feb	3340	3350	-10	-0.30	run 5 is negative run
12-Feb	3320	3340	-20	-0.60	
13-Feb	3320	3320	0	0.00	run 6 is zero run
14-Feb	3325	3320	5	0.15	run 7 is postive run
15-Feb	3330	3325	5	0.15	
16-Feb	3330	3330	0	0.00	run 8 is zero run
17-Feb	3330	3330	0	0.00	
18-Feb	3320	3330	-10	-0.30	run 9 is negative run
19-Feb	3320	3320	0	0.00	run 10 is zero run
20-Feb	3320	3320	0	0.00	
21-Feb	3320	3320	0	0.00	
22-Feb	3321	3320	1	0.03	run 11 is positive run
23-Feb	3321	3321	0	0.00	
24-Feb	3321	3321	0	0.00	
25-Feb	3320	3321	-1	-0.03	run 12 is negative run
26-Feb	3320	3320	0	0.00	run 13 is zero run
27-Feb	3320	3320	0	0.00	
28-Feb	3320	3320	0	0.00	

Figure 9



The above table shows the share prices of the Month February 2006 and showing as how the prices are traded in the days. The table shows the three different runs and delivering 13 different runs of 4 positive runs, 3 negative runs and 6 zero runs. However, we can study that the variation of price fluctuations is less.

2.2 4.11 SIGNALING EFFECTS:

Nepalese stock market is not perfect and matured one. Lack of the knowledge in investors, lack of the proper government policy, manipulated activities of brokers and in unstable politics has directly affected the sock market. Sometimes, national and international signaling effects may be the price determining factor of Nepalese securities market.

For seeing the signaling effect, we can use the pure statistical tools, i.e. Paired t-test. Impact of signaling effect on the NEPSE index can be analyzed with the help of the NEPSE index and t-test formula. NEPSE index can be seen in the above tables.

We have,

$$t = \frac{\bar{d}}{s/\sqrt{n}}$$

where,

t = Paired t-test

s = Standard error

n = Number of observation

d = different between two data

$\bar{d}$ = mean of different between two data

where standard error(s) can be calculated by using following formula

$$s = \frac{1}{n\,Z1} \quad d^2\,Z\frac{\int \quad d\text{Å}}{n}$$

The result obtained by using t-test is presented as follows in the table

Table 16

BANKS	Tabulated value at 9 d.f at 5%	Calculated value at 9 d.f at 5%	Test of Significant
Standard chartered Bank	2.052	0.5135	Accept
Nepal investment Bank	2.052	0.7673	Accept
Nabil Bank	2.052	0.05314	Accept
Himalayan Bank	2.052	0.7536	Accept

From the above table it is clear that paired t-test tabulated value at 9 degree of freedom at 5% level of significance level is 2.052, while calculated value are lower than tabulated .

so null hypothesis is selected and alternative hypothesis is rejected. So it is clear that signaling factors affects the price of the sock

2.3 4.12 RISK AND RETURN ANALYSIS

Risk measures the degree of volatility in the market price movements of individual securities. The higher the magnitude of fluctuations, higher will be degree of risk though it is difficult to measure risk, some statistical tools like standard deviation, coefficient of variation and beta coefficient are used to measure the risk involved in individual security. All these are calculated by using the formula described in research methodology chapter.

2.4 4.12.1 CORRELATION COEFFICENT ANALSIS:

Correlation coefficient analysis between NEPSE index and MKT price of the selected banks are as follows.

We have,

$$r = \frac{n\sum XY - \sum X \sum Y}{\sqrt{n\sum X^2 - \left(\sum X\right)^2}\sqrt{n\sum Y^2 - \left(\sum Y\right)^2}}$$

And

$$P.E.(r) = 0.6745 \times \frac{1 - r^2}{\sqrt{n}}$$

Name of the company	Correlation coefficient (r)	Probable Error (P.E)	Test of Significant
Standatd chatared bank	0.7474	0.1331	Significant
Nepal investment bank	0.7970	0.1100	Significant
Nabil bank	0.8529	0.0822	Significant
Himalayan Bank	0.9129	0.0502	Significant

Above table showed that the correlation coefficient between NEPSE index and MKT price. when tested the correlation coefficient with the probable error the result of the all sample bank are significant because the value of r is greater than the P.E.

2.4.1 *4.12.2 STANDARD DEVIATION*

Standard deviation is a strong statistical device to measure the total risk involved in an investment, which consists of both market risk and diversifiable risk. Moreover it denotes the volatility of the expected rate of return. The calculated value of expected realized return and standard deviation of four different banks are presented in the following table.

Table 17

Standard Deviation of Sampled Commercial Banks

Stocks	Expected Realized Return (%)	Standard Deviation (%)	Ranking of riskiness based on Standard Deviation
Standard Chartered Bank	11.46 %	20.42 %	3
Nepal Investment Bank	17.48 %	39.19 %	1
Nabil Bank	16.67 %	37.19 %	2
Himalayan Bank	-0.27 %	9.59 %	4

Based on the assumption of the standard deviation, investment in the common stocks of Nepal Investment Bank are more risky followed by Nabil Bank. Stock of Himalayan Bank could be considered as less risky than the other three banks, being the standard deviation lower than other. The common stock of Nepal Investment Bank is associated with 39.19 % of the highest risk, which indicates that the expected return can be deviated, by 39.19 % in case of common stock investment than the other three sampled banks taken into study. I have shown the above calculation in the Appendix – C (I), C (II), C (III) & C (IV) respectively.

2.4.2 4.12.3COEEFICIENT OF VARIATION

The standard deviation may not be appropriate measure of risk when the realized rates of returns are not same in all of the companies taken under consideration. Hence also the average realized rates of return are not same for the entire sample. Therefore, it is recommended to use the coefficient of variation to measure the risk involved in individual bank. The coefficient of variation measures the risk per unit of return. The coefficients of variation of the realized rates of return of the sampled banks are shown in the following table.

Table 18

COEFFICIENT OF VARIATION OF SAMPLED COMMERCIAL BANKS

STOCKS	COEFFICIENT OF VARIATION
Standard Chartered Bank	1.7818
Nepal Investment Bank	2.2420
Nabil Bank	2.2316
Himalayan Bank	-34.91

On the basis of coefficient of variation common stock of Nepal Investment Bank seems to be most risky. The common stock of Himalayan Bank seems to be less risky in comparison with the other banks. The above calculation has been derived in the Appendix – C (I), C (II), C (III) & C (IV) respectively.

4.12.4BETA COEFFICIENT

Standard deviation measures the total risk of an investment and the coefficient of variation measures the risk per unit of return. But the beta coefficient measures the market sensitivity or systematic risk of an investment. As we know, systematic risk is that portion of risk which is directly associated with market phenomenon and cannot be reduced by diversification. The beta coefficient of an individual stock provides the clear picture about the tendency of movement of the stock with market. It measures the stock

volatility relative to that of the average stock. An average stock is that which trends to move up or down with the general market as measured by some index. Here, capital NEPSE index is taken into consideration to measure the movements of the general market regarding the stocks of listed commercial banks. Higher beta indicates the greater reaction by individual common stock with the given movement in the market status. The following table shows the degree of risk ness of each stock of entire sample in relation to the general market.

Table 19

2.4.2.1 Beta Coefficients of Sampled Commercial Banks

Stocks	Beta Coefficient	Ranking of risk ness based on Beta Coefficient
Standard Chartered Bank	0.8681	2
Nepal Investment Bank	0.1872	4
Nabil Bank	1.5974	1
Himalayan Bank	0.3948	3

By analyzing the above table, we note that Nabil Bank is much more sensitive to the market than the other three sampled banks because the Beta coefficient of this bank is more than one.

The stocks of Standard Chartered Bank, Himalayan Bank and Nepal Investment Bank have beta coefficient less than one and can be concluded defensive stocks. Following these Nabil with 1.5974 beta coefficient. For example in the case of Nabil, the calculated beta coefficient imply that one percent variation in the market rate of return leads to 1.5974% variations in their realized rate of return. Hence highly sensitive stocks make quick response to the market change. The above calculation has been derived from Appendix – C (I), C (II), C (III) & C (IV) respectively.

4.12.5 *PRICE ANALYSIS:*

In this section the pricing of the shares of the sample companies were analyzed and interpreted. The result derived from the calculation by using Security Market Line equation was presented in the below Table, studying the period of 99/01 to 04/05.

Table 20

2.4.2.2 Valuation of Stocks of Sampled Commercial Banks

Stocks	Required rate of return	Average Rate of return	Status of the Bank
Standard Chartered Bank	-2.25 %	11.46 %	Under valued
Nepal Investment Bank	3.66 %	17.48 %	Under Valued
Nabil Bank	-8.59 %	16.67 %	Under Valued
Himalayan Bank	1.86 %	-0.27 %	Over Valued

From the Table No. 17 It was found that all the banks taken as samples were found under-prices except Himalayan bank. This shows that the market of the sampled banks was very much inefficient. The detailed calculation of the values of shares is presented in the Appendix – C (I), C (II), C (III) & C (IV) respectively.

4.13 MAJOR FINDINGS

Based on the analysis of data and their interpretation, the major findings of the study in relation to the objectives set could be summarized as follows:

- Because of the persistence in the stock price movements, professional traders either individual or institutional can beat the market. Therefore to make greater profit than naïve buy and hold strategy, acute fundamental and other analysis are required which accurately predict the appearance of the new information in the market that have impact on prices.

- The run analysis of the Month February of the sampled banks shows that the prices of stock tend to change from time to time hence delivering three different run. The total number of run delivered in the month of February of Standard Chartered Banks was 15 runs of 4 negative, 7 zero and 4 positive runs, likewise of Nepal Investment Bank there was 13 runs of 5 negative, 6 zero and 3 positive runs. Nabil bank showed 13 runs of 3 negative, 6 zero and 3 positive runs and lastly Himalayan Bank showed 14 runs of 4 negative, 6 zero and 4 positive runs. The study showed that the price of shares of each banks doesn't remain same all the time, it tend to fluctuate from time to time due to different factors.

- Common stock of Nepal Investment Bank is yielding the highest Average rate of return of 17.48 % whereas it is negative in the case of Himalayan Bank and Standard Chartered Bank. Regarding the total risk, Nepal Investment Bank consists of highest 15.36 % of total risk which is risky among the sample. The stock of Himalayan Bank is recorded as least risky as it contains 9.59 % of total risk which is less than the other sampled banks in terms of Variance.

- Through the coefficient of variation analysis, it is found that there is highest percent of unit risk for the stocks of Nabil Bank. Stocks of Nabil Bank are more aggressive to market changes as revealed by the highest beta coefficient of 1.5974 followed by Standard Chartered Bank whose beta coefficient is recorded 0.8681.

CHAPTER - V

SUMMARY, CONCLUSIONS, & RECOMMENDATIONS

This chapter deals with the findings and conclusions derived from the study of share price behavior of four sampled commercial banks. The chapter consists of three sections; the first section provides the summary of the study; the second section draws the conclusions of the study. Finally, the third section proposes recommendations to deal the problems observed on the basis of the findings.

5.1 SUMMARY

The study was conducted with the main objective to analyze the share price behaviors of four commercial banks namely Standard Chartered Bank, Nepal Investment Bank, Nabil and Himalayan Bank. It is mainly focused to developed the model accordingly and its empirical test in previous chapter. The model consists of run analysis along with standard deviations; coefficient of variations, beta coefficient and under and overpricing of shares were adopted as test methodologies.

Before analyzing the results of test, the overview of the Nepalese stock markets has been sketched. The recent position and performance of market in Nepal has been analyzed. The Nepalese stock market has not developed remarkably in the economy because of various market imperfections like limited number of buyers and sellers, stringent government policies, negligible development of corporate sector etc.

The run analysis of the sampled banks for the month of August showed that the prices of shares do not remain same. Due to various factors like internal and external the prices of the shares are sometimes valued at higher and sometimes lower. Hence, it can be concluded that the market of the four sampled banks is inconsistent. It can be observed that there are more negatives run as compared to positive runs.

The required rate of return of all the sampled banks is less than Expected rate of return. Hence, the share prices of all the banks are undervalued.

Besides these tests, other statistical tools such as standard deviation, coefficient of variations and beta coefficient are also calculated to examine the risk involved in the common stock of the commercial banks. Common stocks seem to be riskier than that of average stock; lots of investors are attracted in trading these stocks. This is due to the good track record of financial position, market penetration and continuous declaration of dividends, which encourage the potential investors to buy the shares of commercial banks.

2.5 5.2 Conclusions

The run tests of the sampled banks showed that the prices of shares tends to fluctuate from time to time as a result the investors can buy shares when the value of shares decreases and hold till the share price increase. The dependence in the series of price changes observed implies that the price changes in the future market will not be independent from the price changes of the future days. It brings about that the information of the past price changes is helpful in predicting future price changes. Therefore, sufficient opportunities are available to institutional and individual investors to make higher expected profits in future based on those historical price series. In the mean time while the statistical analysis regarding the risk and return of the sampled stocks shows that the all the banks seems to be risky than the average stock. But as most of the banks are offering cash dividends every year which may not be applicable to other

types of non-banking firms, there is race of investors towards the stocks of banking sectors.

2.6 5.3 RECOMMENDATIONS

- The findings of this study may provide important information for those who are concerned directly or indirectly with the stock market activities. Thus, the following recommendations can be outlined.

- Because of the persistence in stock price movements, professional traders either institutional or individual can beat the market. Thus, it is recommended that the investors should be alert to exploit the opportunities through short-term speculation.

- There exists excessive price fluctuation as observed from the stock market while collection the data. To control such erratic price fluctuations the regulatory body should impose effective provisions to the exchange members.

- The stocks of all the sampled banks are undervalued .so, the stock market investors are recommended to buy those securities.

- The public investors should not direct their savings in shares haphazardly. They should at least analyze or get suggestions from expert about the financial position and the level of risk prior to taking an investment decision.

- It is also recommended to the concerned body to carry out or help to carry out further research on stock market behavior for the betterment of stock market.

Appendix – A (I)

STANDARD CHARTERED BANK LTD.
NAYA BANESHWOR, KATHMANDU

Authorized Capital	Rs. 1000000000.00	Paid-Up value/share	Rs. 100 & Rs. 0
Issued Capital	Rs. 500000000.00	No. of Shareholder/s:	5037
Paid-Up Capital	Rs. 374640400.00	Incorporation Year-B.S.:	2042 A.D.: 1985
Par value/share	Rs. 100 & Rs. 0	Listing Date - B.S.:	03/21/45 A.D.: 1988

CHANGES IN PAID-UP CAPITAL (Rs. in Million)

Year	Before	After	Remarks
00/01	339.55	339.55	
01/02	339.55	339.55	
02/03	339.55	339.55	
03/04	339.55	374.64	
04/05	374.64	374.64	

Equity Share Data

Year Ended	07/15/01	07/15/02	07/15/03	07/15/04	07/15/05
Paid-Up Price Per Share(Rs)	100.00	100.00	100.00	100.00	100.00
Market Price Per Share					
(i) Closing Price(Rs)	2144.00	1575.00	1640.00	1745.00	2345.00
(ii) High Price(Rs)	3111.00	2100.00	1760.00	1800.00	2350.00
(iii) Low Price(Rs)	1860.00	1000.00	1380.00	1520.00	1553.00
Earning Per Share(Rs)	126.88	141.13	149.30	143.55	143.93
Book Value Per Share(Rs)	327.50	363.86	403.15	399.25	422.38
Dividend Per Share(Rs)	100.00	100.00	110.00	110.00	120.00
Dividend %	100.00	100.00	110.00	110.00	120.00
PE Multiple	16.90	10.98	10.98	12.16	16.29
Market Capitalization of Closing Price (Rs. in Million)	7279.95	5263.03	5568.62	6537.47	8785.32
Market Price/Book Value	6.55	4.26	4.07	4.37	5.55
Dividend Cover	1.27	1.41	1.36	1.31	1.19
Dividend Yield %	4.66	6.45	6.71	6.30	5.11
Dividend Payout %	78.81	70.86	73.68	76.63	83.37
Earning Yield %	5.92	9.11	9.10	8.23	6.13

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Appendix – A (II)

NEPAL INVESTMENT BANK LTD
DURBAR MARG KATHMANDU

Authorized Capital	Rs. 1000000000.00	Paid-Up value/share	Rs. 100 & Rs. 0
Issued Capital	Rs. 590586000.00	No. of Shareholder/s:	2780
Paid-Up Capital	Rs. 587738500.00	Incorporation Year-B.S.:	2042 A.D.: 1985
Par value/share	Rs. 100 & Rs. 0	Listing Date - B.S.:	05/08/44 A.D.: 1987

CHANGES IN PAID-UP CAPITAL (Rs. in Million)

Year	Before	After	Remarks
00/01	135.35	169.98	BONUS 1:1
01/02	169.98	169.98	
02/03	169.98	295.29	ISSUED BONUS 40% & RIGHT SHARE 33%
03/04	295.29	295.29	
04/05	295.29	587.74	

Equity Share Data

Year Ended	07/15/01	07/15/02	07/15/03	07/15/04	07/15/05
Paid-Up Price Per Share(Rs)	100.00	100.00	100.00	100.00	100.00
Market Price Per Share					
(i) Closing Price(Rs)	1150.00	760.00	795.00	940.00	800.00
(ii) High Price(Rs)	2730.00	1150.00	890.00	942.00	1430.00
(iii) Low Price(Rs)	1080.00	575.00	635.00	745.00	760.00
Earning Per Share(Rs)	33.17	33.59	39.56	51.70	39.50
Book Value Per Share(Rs)	275.96	307.95	216.24	246.89	200.80
Dividend Per Share(Rs)	0.00	30.00	20.00	15.00	12.50
Dividend %	0.00	30.00	20.00	15.00	12.50
PE Multiple	34.67	22.62	20.10	18.18	20.25
Market Capitalization of Closing Price (Rs. in Million)	1954.77	1291.85	2347.56	2775.73	2362.34
Market Price/Book Value	4.17	2.47	3.68	3.81	3.98
Dividend Cover	0.00	0.00	1.98	3.45	3.16
Dividend Yield %	0.00	0.00	2.52	1.60	1.56
Dividend Payout %	0.00	0.00	50.56	29.01	31.64

Earning Yield %	2.88	4.42	4.98	5.50	4.93

http:www.nepalstock.com/4.txt

Appendix – A (III)

NABIL BANK LTD
KANTIPATH KATHMANDU

Authorized Capital	Rs. 500000000.00	Paid-Up value/share	Rs. 100 & Rs. 0
Issued Capital	Rs. 491654400.00	No. of Shareholder/s:	5076
Paid-Up Capital	Rs. 491654400.00	Incorporation Year-B.S.:	2041 A.D.: 1984
Par value/share	Rs. 100 & Rs. 0	Listing Date - B.S.:	08/09/42 A.D.: 1986

CHANGES IN PAID-UP CAPITAL (Rs. in Million)

Year	Before	After	Remarks
00/01	392.80	491.65	BONUS 4:1
01/02	491.65	491.65	
02/03	491.65	491.65	
03/04	491.65	491.65	
04/05	491.65	491.65	

Equity Share Data

Year Ended	07/15/01	07/15/02	07/15/03	07/15/04	07/15/05
Paid-Up Price Per Share(Rs)	100.00	100.00	100.00	100.00	100.00
Market Price Per Share					
(i) Closing Price (Rs)	1500.00	735.00	735.00	1000.00	1505.00
(ii) High Price (Rs)	2301.00	1500.00	875.00	1005.00	1515.00
(iii) Low Price (Rs)	1310.00	465.00	700.00	705.00	1000.00
Earning Per Share (Rs)	59.26	55.25	84.66	92.61	105.49
Book Value Per Share (Rs)	216.18	233.18	267.30	301.37	337.00
Dividend Per Share (Rs)	40.00	30.00	50.00	65.00	70.00
Dividend %	40.00	30.00	50.00	65.00	70.00
PE Multiple	25.31	12.67	8.74	10.80	14.27
Market Capitalization of Closing Price (Rs. in Million)	7374.75	3613.63	3613.63	4916.50	10998.29
Market Price/Book Value	6.94	3.15	2.75	3.32	4.47
Dividend Cover	1.48	1.84	1.69	1.42	1.51

Dividend Yield %	2.67	4.08	6.80	6.50	4.65
Dividend Payout %	67.49	54.30	59.06	70.19	66.36
Earning Yield %	3.95	7.52	11.52	9.26	7.01

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Appendix – A (IV)

HIMALAYAN BANK LIMITED
THAMEL KATHMANDU

Authorized Capital	Rs. 1000000000.00	Paid-Up value/share	Rs. 100 & Rs. 0
Issued Capital	Rs. 650000000.00	No. of Shareholder/s:	7210
Paid-Up Capital	Rs. 643500000.00	Incorporation Year-B.S.:	2048 A.D.: 1992
Par value/share	Rs. 100 & Rs. 0	Listing Date - B.S.:	03/21/50 A.D.: 1993

CHANGES IN PAID-UP CAPITAL (Rs. in Million)

Year	Before	After	Remarks
00/01	240.00	300.00	BONUS 1:4
01/02	300.00	390.00	BONUS 30%
02/03	390.00	429.00	BONUS 1:10
03/04	429.00	536.00	BONUS 1:5
04/05	536.00	643.00	

Equity Share Data

Year Ended	07/15/01	07/15/02	07/15/03	07/15/04	07/15/05
Paid-Up Price Per Share(Rs)	100.00	100.00	100.00	100.00	100.00
Market Price Per Share					
(i) Closing Price (Rs)	1500.00	1000.00	836.00	840.00	920.00
(ii) High Price (Rs)	2726.00	1530.00	950.00	1010.00	1181.00
(iii) Low Price (Rs)	1325.00	610.00	750.00	600.00	855.00
Earning Per Share (Rs)	93.56	60.26	49.45	49.05	47.91
Book Value Per Share (Rs)	240.20	220.03	247.82	246.93	239.59
Dividend Per Share (Rs)	27.50	25.00	1.31	0.00	0.00
Dividend %	27.50	25.00	1.31	0.00	11.58
PE Multiple	16.03	16.59	16.91	17.12	19.20
Market Capitalization of Closing Price (Rs. in Million)	4500.00	3900.00	3586.44	4504.50	4830.00
Market Price/Book Value	6.24	4.54	3.37	3.40	3.84
Dividend Cover	3.40	2.41	37.61	0.00	4.14
Dividend Yield %	1.83	2.50	0.16	0.00	1.26
Dividend Payout %	29.39	41.49	2.66	0.00	24.17
Earning Yield %	6.24	6.03	5.91	5.84	5.21

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Appendix – B (I)

Standard Chartered Bank

Year	Closing price	Cash Dividend	Stock dividend	Total dividend
99/00	1985	100		100
00/01	2144	100		100
01/02	1550	100		100
02/03	1640	110		110
03/04	1745	110		110
04/05	2345	120		120
05/06	3375			

Appendix – B (II)

Nepal Investment Bank

Year	Closing price	Cash Dividend	Stock dividend	Total dividend	Right Share
99/00	1401	25		25	
00/01	1150	0	1:1 (100%) = 760	760	
01/02	760	0			
02/03	795	20.00	40% = 376	396	33% = 165*
03/04	940	15.00		15	
04/05	800	12.50		12.50	
05/06	1260				

* Adjustment
Value of right = (760-100)/3+1

Appendix – B (III)

Nabil Bank

Year	Closing price	Cash Dividend	Stock dividend	Total dividend
99/00	1400	55		55
00/01	1500	40	1:4 (25%) = 183.75	223.75
01/02	735	30		30
02/03	735	50		50
03/04	1000	65		65
04/05	1505	70		70
05/06	2240			

* If bonus share is issued shareholders will receive extra number of share. Consequently the price of dividend will be changed. Total dividend amount has been calculated as follow.

Total dividend amount = Cash Dividend + % of stock dividend * next year MPS

Appendix – B (IV)

Himalayan Bank

Year	Closing price	Cash Dividend	Stock dividend	Total dividend
99/00	1700	50	1:4 (25%) = 375	425
00/01	1500	27.50	1:4 (25%) = 250	277.5
01/02	1000	25	30% = 250.80	275.80
02/03	836	1.31	1:10 (10%) = 84	85.31
03/04	840	0.00	1:5(5%) =46	46
04/05	920	11.58		11.58
05/06	1100			

Appendix – C (I)

Standard Chartered Bank

Year	Closing Price	D_{SCBL}	R_{SCBL}	X $(R_{SCBL}-\overline{R_{SCBL}})$	X^2	Y	XY
99/ 00	1985						
00/ 01	2144	100	0.1305	0.0159	0.0003	-0.0108	-0.0002
01/ 02	1550	100	-0.2304	-0.3450	0.1190	-0.3662	0.1263
02 /03	1640	110	0.1290	0.0144	0.0002	-0.0657	-0.0009
03/ 04	1745	110	0.1311	0.0165	0.0003	0.1179	0.0019
04/ 05	2345	120	0.4126	0.2980	0.0888	0.3251	0.0969
05/ 06	3775						
Total			0.5728		0.2086		0.2241

Where;
D_{SCBL} = Total Dividend of Standard chartered Bank
R_{SCBL} = Annual Return of Standard chartered Bank
X = $(R_{SCBL}-\overline{R_{SCBL}})$ Standard chartered Bank
Y = $(R_{MKT}-\overline{R_{MKT}})$ Market
Risk Free Rate of Return (Rf) = 0.0529

Annual Return of Standard chartered Bank (R_{SCBL})

$$R_{SCBL} = \frac{Div + (Endingprice - Beginningprice)}{Beginning\ price}$$

$$= \frac{100 + (2144 - 1985)}{1985}$$

$$= 0.1305$$

Average rate of Return of Standard Chartered Bank (R_{SCBL})

$$\overline{R_{SCBL}} = \frac{R_{SCBL}}{N}$$

$$= \frac{0.5728}{5}$$

$$= 0.1146$$

Standard deviation of Standard Chartered Bank ($\pm_{SCBL}$)

$$\exists_{SCBL} = \sqrt{\frac{(R_{SCBL} - R_{SCBL})^2}{N}}$$

$$= \sqrt{\frac{0.2086}{5}}$$

$$= 0.2042$$

Standard deviation of Market ($\pm_{MKT}$)

$$\exists_{MKT} = \sqrt{\frac{(R_{MKT} - R_{MKT})^2}{N}}$$

$$= \sqrt{\frac{0.2581}{5}}$$

$$= 0.2272$$

Coefficient of Variation of Standard Chartered Bank (CV)

$$CV = \frac{\pm_{SCBL}}{\overline{R_{SCBL}}}$$

$$= \frac{0.2042}{0.1146}$$

$$= 1.7818$$

Covariance (R_{SCBL},R_{MKT})

$$Cov(R_{SCBL}, R_{MKT}) = \frac{(R_{SCBL} - R_{SCBL})(R_{MKT} - R_{MKT})}{N}$$

$$= \frac{0.2241}{5}$$

$$= 0.0448$$

Beta coefficient (b)

$$b = \frac{\text{Covariance}\,(R_{SCBL}, R_{MKT})}{Var(R_{MKT})}$$

$$= \frac{0.0448}{0.05162}$$

$$= 0.8681$$

Required rate of return (R_{SCBL})

$$R_{SCBL} = Rf + (\overline{R_{MKT}} - Rf)b$$

$$= 0.0529 + (-0.0340 - 0.0529)\ 0.1972$$

$$= 0.0358$$

Systematic and unsystematic risk

Total risk = Systematic risk + Unsystematic risk

$Var(R_{SCBL}) = b_{SCBL}^2$ var (R_{MKT}) + var(e)

Where;

$Var(R_{SCBL})$ = Variance of the individual bank (standard chartered bank)

b_{SCBL} =Beta of stock of Standard Chartered Bank

$Var(R_{MKT})$ = Market Portfolio's Variance

Var (e) =Residual Variance

$Var(R_{SCBL}) = b_{SCBL}^2$ var (R_{MKT}) + var(e)

var(e) $=Var(R_{SCBL})- b_{SCBL}^2$ var (R_{MKT})

$=0.0417-0.8681*0.8681*0.0516$

$=0.0028$

Unsystematic risk of the standard chartered bank is 0.0028

Now;

The systematic risk of the standard chartered bank

Systematic risk =Total risk – unsystematic risk

$=0.0417- 0.0028$

$=0.0389$

Systematic risk of the Standard Chartered Bank is 0.0389

Appendix – C (II)

Nepal Investment Bank

Year	Closing Price	D_{NIB}	Value of right	R_{NIB}	X $(R_{NIB}-\overline{R_{NIB}})$	X_2	Y	XY
99/ 00	1401	25						
00/ 01	1150	760		0.3633	0.1885	0.0355	-0.0108	-0.0020
01/ 02	760	0		-0.3391	-0.5139	0.2641	-0.3662	0.1882
02/ 03	795	396	165	0.7842	0.6094	0.3714	-0.0657	-0.0400
03/ 04	940	15		0.2013	0.0265	0.0007	0.1179	0.0031
04/ 05	800	12.5		-0.1356	-0.3104	0.0964	0.3251	-0.1009
05/ 06	1260							
Total				0.8740		0.7681		0.0483

Appendix – C (III)

Nabil Bank

Year	Closing price	D_{NABIL}	R_{NABIL}	X $(R_{NABIL}-\overline{R_{NABIL}})$	x2	y	xy
99/ 00	1400	55					
00/ 01	1500	223.75	0.2313	0.0646	0.0042	-0.0108	-0.0007
01/ 02	735	30	-0.4900	-0.6567	0.4313	-0.3662	0.2405
02/ 03	735	50	0.0680	-0.0987	0.0097	-0.0657	0.0065
03/ 04	1000	65	0.4490	0.2823	0.0797	0.1179	0.0333
04/ 05	1505	70	0.5750	0.4083	0.1667	0.3251	0.1327
05/ 06	2240						
Total			0.8333		0.6915		0.4123

D_{NABIL} = Total Dividend of Nabil Bank
R_{NABIL} = Annual Return of Nabil Bank
X = $(R_{NABIL}-\overline{R_{NABIL}})$ Individual bank,
Y = $(R_{MKT}-\overline{R_{MKT}})$ Market

Appendix – C (IV)

Himalayan Bank

Year	Closing price	D_{HBL}	R_{HBL}	X $(R_{HBL}-\overline{R_{HBL}})$	X_2	Y	XY
99/ 00	1700	425					
00/ 01	1500	277.5	0.0456	0.0483	0.0023	-0.0108	-0.0005
01/ 02	1000	275.8	-0.1495	-0.1467	0.0215	-0.3662	0.0537
02/ 03	836	85.31	-0.0787	-0.0760	0.0058	-0.0657	0.0050
03/ 04	840	46	0.0598	0.0625	0.0039	0.1179	0.0074
04/ 05	920	11.58	0.1090	0.1118	0.0125	0.3251	0.0363
05/ 06	1100						
Total			-0.0137		0.0460		0.1019

Appendix – C (V)

NEPSE Index & Annual Return

Year	NEPSE Index	R_{MKT}	Y $(R_{MKT}-\overline{R_{MKT}})$	Y^2
99/ 00	397.17			
00/ 01	379.38	-0.0448	-0.0108	0.0001
01/ 02	227.54	-0.4002	-0.3662	0.1341
02/ 03	204.86	-0.0997	-0.0657	0.0043
03/ 04	222.04	0.0839	0.1179	0.0139
04/ 05	286.67	0.2911	0.3251	0.1057
05/ 06	386.83			
Total		-0.1698		0.2581

R_{MKT} = Annual Return of Market
$Y = (R_{MKT}-\overline{R_{MKT}})$ Market

Appendix – D (I)

Required rate of return in descending order of Banks

Banks Indicators	Required rate of return (%)
Standard Chartered Bank	-0.0225
Nepal Investment Bank	0.0366
Nabil Bank	-0.0859
Himalayan Bank	0.0186

Appendix – D (II)

Beta in descending order of Banks

Banks Indicators	Beta
Standard Chartered Bank	0.8681
Nepal Investment Bank	0.1872
Nabil Bank	1.5974
Himalayan Bank	0.3948

Appendix – D (III)

Coefficient of Variation in descending order of Banks

Banks/Indicators	Coefficient of Variation
Standard Chartered Bank	1.7818
Nepal Investment Bank	2.2420

Nabil Bank	2.2316
Himalayan Bank	-34.9082

Appendix – E (I)

Average rate of return in descending order of Banks

Banks/Indicators	Average rate of return (%)
Standard Chartered Bank	11.46
Nepal Investment Bank	17.48
Nabil Bank	16.67
Himalayan Bank	-0.27

Appendix – E (II)

Variance, Coefficient of Variation

Banks/Indicators	Variance (%)	Coefficient of variation
Standard Chartered Bank	4.17%	1.7818
Nepal Investment Bank	15.36%	2.2420
Nabil Bank	13.83%	2.2316
Himalayan Bank	0.92%	-34.9082

Appendix – E (III)

Risk of Banks

Banks Indicators	Total Risk	Systematic Risk	Unsystematic Risk	Systematic Risk (%)	Unsystematic Risk (%)	Total Risk (%)
Standard Chartered Bank	0.0417	0.0389	0.0028	3.89	0.28	4.17

Nepal Investment Bank	0.1536	0.0018	0.1518	0.18	15.18	15.36
Nabil Bank	0.1383	0.1317	0.0066	13.17	0.66	13.83
Himalayan Bank	0.0092	0.0080	0.0011	0.80	0.11	0.92

Appendix – E (IV)

Risk and Return of Banks

Banks	Characteristics		
	Price	Return	Risk
Nabil Bank	Under priced	Higher than the market	Aggressive with high systematic risk, more volatile than market
Himalayan Bank	Over priced	Lower than the market	Aggressive with high systematic risk, less volatile than market
Standard Chartered Bank	Under priced	Higher than the market	Defensive with high systematic risk, less volatile than market
Nepal Investment Bank	Under priced	Higher than the market	Defensive with high systematic risk, less volatile than market

Appendix – F

Name of the co	Outstanding Equity	Closing Price	Paid-up value	No. of transaction	Traded shares in units'000'	Traded amount (Rs. On Million)	Total Paid
SCBL	3746404	2345	100	1496	1319.00	2317.90	374.6
NIB	2952930	800	100	1392	127.70	137.51	295.2
NABIL	4909950	1505	100	1441	169.50	211.21	491
HBL	5250000	920	100	1249	106.40	101.61	525

(Source: NEPSE: Annual Trading Report, 2005/2006)

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